

**INDUSTRIAL DEVELOPMENT PLANNING: THE CASE OF
DEVELOPMENT INDUCING AND DEVELOPMENT
SUPPORTING INDUSTRIES IN WESTERN KENYA. //**

**BY
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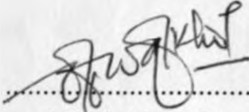
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**A THESIS SUBMITTED IN PARTIAL FULFILMENT FOR
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GEOGRAPHY) IN THE UNIVERSITY OF NAIROBI**

1996

DECLARATION

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


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This thesis has been submitted for examination with my approval as the University supervisor.


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DEDICATION

This work is dedicated to my father Mr. William Wafukho and mother Mrs Martha Nasike for their struggles to ensure that I attain meaningful education and encouraging me to work hard amidst the difficult financial circumstances of the family. This is an inspiration to my brothers Ken Wafukho of the department of Electrical Engineering University of Nairobi and Moses Wafukho of Lodwar High School - Turkana District.

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ABSTRACT

In Kenya as elsewhere in East Africa, regional industrial development planning has been based on growth pole(s) and centre periphery strategies that tend to create a polarised space economy. Although industries are agents of regional development, they have continued to concentrate in the Kenya highlands' and a few of the places where returns to investments are high, creating an industrial landscape of varying socio-economic disparities.

In the light of the above, the present study examines and evaluates two aspects of industrial development planning in Western Province namely; a) government influence in regional location of industries, and b) regional industrial structure *vis a vis* i) equitable regional development, and, ii) regional resource transfer. This study attempts to provide an intuition;

- i) as to whether the government has played a significant role in regional industrial location.
- ii) into the industries in Western Province in as they may have advanced inequitable regional development through their structure and;
- iii) if the disproportionate regional resource extraction and transfer is due to the structure and patterning of regional industries.

The objectives are thus; a) To seek to establish the role of influence of the government on regional industrial location in Western Province. b) Attempt an examination and evaluation of the industrial structure of the development inducing industries (*dii*) and development supporting industries (*dsi*) in Western Province. The concern is; i) the assessment of the nature of products manufactured and their corresponding raw material source(s), and ii) the investigation of benefits accrued to the region from the location of these industries.

The formulated hypotheses are thus; firstly, given that Kenya is a mixed economy, industrial location decision(s) are expected to be borne by both public and private investors. The influence of the government is expected to be minimal. The hypothesis stated in this respect is that 'the Kenyan government has had an insignificant influence on regional location and patterning of industries in Western Province'. Secondly, that, 'the structure of development inducing and development supporting industries has resulted in inequitable regional development in the Province'. Lastly, the hypothesis that 'biased resource extraction has led to imbalances in regional production of goods and services' is used to confirm the extent of regional resource extraction through regional industrial development. How appropriate regional industries are in promoting growth and development is determined by the nature of goods manufactured and their end users.

In testing the null hypotheses, the Inter Regional Trade Multiplier is employed in the analysis of the importance of industries in the regional economy, the 'Regional Goods Produced' is used in assessing the relevant industrial goods in regional development and the industries that manufacture them and lastly the Common Factor Analysis is used in the evaluation of the extent of government influence in regional location and patterning of industries.

This study establishes that though the government has attempted to increase industrial growth through improved infrastructure and policy framework(s), its efforts have instead reinforced polarisation of the space economy. The regional industrial structure is more exploitative than beneficial first; to the raw material suppliers and secondly; to the growth of the region where such industries operate. These industries are found to have weak development impulses. The study concludes first; that although direct government influence has been minimal, industries have favourably responded to government infrastructural development such as roads, water, power and sites, thus, explaining the tendency to urban location. Secondly; that although regional industries make profits, the suppliers of raw materials do not benefit as expected. More industrial investment(s) is needed resource hinterlands. Establishment of many local raw material using industries will provide a range of products that are currently imported, hence increase the regional multiplier.

It is recommended that in order to achieve balanced regional development through industrial growth and development, the government should be willing to deliberately pattern industries based on (among others) their development potential and the accompanying activity radii. Industries with long, medium and short activity radii are ideal for attaining effective spatial development. Problems of regional resource development and their imbalanced exploitation lie in policy rather than market failure. The government and its administrative institutions should take the first and overall thrust in interpreting development policies and transforming the regional economy in the wake of a liberalised economy in which it now operates.

It is noted that to achieve balanced regional industrial development painful choices have to be made which apparently rest on the will of the government as expressed through its development approaches and strategies at both the national and regional level(s).

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LIST OF ACRONYMS

<u>ACRONYM</u>	<u>MEANING</u>
AEZ	Agro-Ecological Zone(s)
AFP	Agricultural Food Processing Industries
ANFP	Agricultural Non-Food Processing Industries
asl	Above Sea Level
BAT	British American Tobacco
BBK	Barclays Bank of Kenya
CBK	Central Bank of Kenya
CBS	Central Bureau of Statistics
CG	Consumer Goods
CLSB	Cotton Lint and Seed Marketing Board
CO-OP BANK	Co-operative Bank of Kenya
CSR	Cane Sugar Ratio
DANIDA	Danish Development Agency
DAO	District Agricultural Office
DC	Development Centres
DFCK	Development Finance Company of Kenya
DFRD	District Focus for Rural Development
Dii	Development Inducing Industries
DP	Development Points
Dsi	Development Supporting Industries
EA	East Africa
EG	Export Goods
FAO	Food and Agricultural Organisation
H	High Potential Industries
ICDC	Industrial and Commercial Development Corporation
IG	Intermediate Goods
IRDP	Integrated Rural Development Programme
ISIC	International Standard Industrial Classification
KCB	Kenya Commercial Bank
KEFINCO	Kenya Finland Co-operation
KIE	Kenya Industrial Estates
Km2	Kilometres Squared
KPLC	Kenya Power and Lighting Company
L	Low Potential Industries
LBDA	Lake Basin Development Authority
LG	Luxury Goods
M	Medium Potential Industries
MNC	Multi-National Corporations
MSC	Mumias Sugar Company
MTK	Master-Mind Tobacco Kenya
NAM	Non Agricultural Manufacturing
NBK	National Bank of Kenya
nec	Not elsewhere Classified
NGO	Non Governmental Organisation
NIC	Newly Industrialised Countries
PDP	Potential Development Points
SAP	Structural Adjustment Programme
SC	Service Centres
SI	Service Industries
SRDP	Special Rural Development Programme
TNC	Trans-National Corporations

CHAPTER ONE

1.0 INTRODUCTION

1.1 STATEMENT OF THE RESEARCH PROBLEM

This study seeks to examine and evaluate two aspects of industrial development planning in Western Province of Kenya. These are: a) government influence in regional location of industries, and b) regional industrial structure *vis a vis* i) equitable regional development, and, ii) regional resource transfer. The research seeks to answer the following questions:

- a) Has the government played any significant role in regional industrial location and patterning ?
- b) Have the industries in Western Province advanced inequitable regional development through their structure ?... and;
- c) Is the disproportional regional resource extraction and transfer caused by ill planned industries?

During the colonial era and the earlier years after independence, Kenya has continued to use industrial development planning framework(s) for regional development that have resulted in; first; a biased industrial development that favours the Kenya highlands and a few alienated regions and, secondly; disaggregated development policies and plans based on Perroux's, Boudeville's and largely on Friedmann's development models which localise manufacturing and create a polarised space economy. Though the planning framework(s) aim at widespread and equal industrial development, such goals are practically illusive and hard to achieve. Considering these two facts, this study attempts to establish firstly; the extent of government influence in location of development inducing and development supporting industries which are known to induce faster regional industrial development, and secondly the nature of the industrial structure of these industries with the aim of examining the type of the relationship exhibited between the industries and their resource hinterland(s) on the one hand and the nature of manufactured industrial goods on the other.

The first of these two aspects reveals the strength of the government in directing the spatial pattern of industries and the trend in the utilisation of regional industrial resources. While the second shows, i) the flow of benefits between the study area and other regions (any other area that is not the study area) in terms of industrial products manufactured and consumed between them,

and ii) the nature and level of resource transfer from the study area to regions outside (of the study area) in form of manufactured industrial products.

It is puzzling to note that though the government has the ability to modify the conditions affecting industrial location in such a manner as to alleviate regional inequality in development, there still exists a few prosperous areas within extensive zones of impoverishment. One is provoked to ask how practically committed is the government in patterning regional industries to achieve equitable development?

Western Province is noted as having the second highest industrial development potential after the Nairobi Macro-econogeographic development region (Ogendo, 1980). But the question is, where are the study area's industrial development resources utilised? Are the resources utilised within or outside the study area? If within the study area, where are the fruits of such resources?

Pred (1967) notes that the growth of an industry at a place attracts a large population which stimulates the growth of commercial activities leading to further expansion of manufacturing. Nevertheless if this is the case what could be happening to industries such as Mumias sugar factory, Pan Paper Mills, Nzoia sugar factory and Nambale cotton ginnery among others? One wonders whether the industries emit weak development impulses whose effects do not develop large areas or is it that their structure is deliberately planned to deprive resources from the hinterland(s) without replenishing them. Obiero (1980) notes that Mumias sugar factory has had an ill-planned industrial structure such that it does not induce enough growth to its immediate hinterland as expected.

It is appreciated that regional development may be difficult in a free market economy if the aim is to achieve equally and spatially distributed development. Nonetheless one expects the study area to be equitably developed because of the prevalence of many kinds of resources. This is not the case however. In using Ogendo's Centrifugal model in regional industrial development it is hoped that the desired goal of rural industrialisation and equitable regional development can be achieved.

1.2 LITERATURE REVIEW

Introduction:

Though abundant literature on industrial development has been gathered, specific literature on development inducing and development supporting industries is quite inadequate. An attempt is made here to review the relevant literature for purposes of:

- (i) Evaluating what past researchers have contributed that is relevant to the current study. Focus is on the contributions of previous researches to the field of planning for industrial development in Western Province.
- (ii) Pointing out the weaknesses of past researchers with a view to suggesting possible remedial measures, and;
- (iii) Isolating gaps that were left by past researchers and offering possible ways of filling them.
- (iv) Identifying topics already researched on with an aim of avoiding duplication of investigations that leads to waste of valuable time and funds.

1.2.1 Theoretical Bases

Introduction

In the nineteenth century, industrial location theory was most appropriate in the analysis of location of such basic, heavy industries as iron and steel which were on the vanguard of contemporary industrial progress. Emphasis was on individual factory as the aspect of study, and especially, upon the variables influencing the choice of new sites (Chapman and Walker, 1991:147). Today the subject of industrial location is approached from an entirely different viewpoint. The argument is based on the fact that firms have undergone many changes just as the wider economic and social systems in which they are found. For instance the 'Least Cost Approach' emphasises the search for the least cost location, the 'Market Area' school of thought assumes that sellers always seek to control the largest possible market area and therefore will locate in a manner that allows larger volume sales, while the 'Behavioural' school of thought argues that it is not possible to have a single model to explain all the variety of location behaviour that exist(s) within an industry. Instead, there exists a whole range of explanations as to the behaviour of various firms in space.

Industry, as one of the principal economic activity of humanity is of great interest to many scholars drawn from a wide range of disciplines including geography. For instance, industrial geographers are preoccupied with the analysis of location of industry, industrial structure and regional industrial development. In the past, most of the work on industrial studies was a preserve of economists.

The following theoretical and conceptual review examines some of the contributions of geographers, economists and regional planners who have added to the stock of knowledge on industrial location and its effects on regional development.

Richard Hartshorne (1926, 1927)

Hartshorne (1927) is credited for citing problems of industrial location. He notes that the factor of relative location has an important influence on economic activity than physical factors such as soils and relief. His recognition of a general formula of industrial location has revolutionised studies in this area. Walter Christaller (1933), attempts to determine the number, size and the distribution of towns and cities. Christaller (1933) offers a general understanding of spatial arrangement of service centres from which development impulses are emitted to the surrounding. Though he fails to encompass the development of industrial concentrations, his theory explains in part the location of tertiary activities relevant to manufacturing. In the study area the spatial arrangement of the manufacturing firms has led to regional inequality and biased development and the contributions of these two scholars helps to identify areas that lag behind in industrial development.

The Economic Base Theory (1930s)

The Economic Base Theory is a formulation of the 1930s. However the first attempt to utilise the idea started in the 1950s by geographers such as Alexander (1954) and Murphy (1966). The Theory differentiates between industries producing for a given town and those producing for an external market. It identifies the basic industries as those producing for export while non basic as those producing for the domestic market. The theory compares the value of production in the basic and the non basic industries and gives a ratio of employment in the two categories. The resulting ratio is used to predict the prevailing economic structure of a given region. Cities do have a higher ratio than rural areas. This ratio normally varies between 1:0.5 and 1:2. The theory however is

wanting as it is practically difficult to find its ratios and that no precise significance can be attached to the figure (Blumfield, 1955). As a descriptive device the ratio has no value in explaining why specific industries occur in the study area. Nevertheless it is useful as a predictive index that points out the minimum requirement for every industry needed to satisfy local demand. The theory's knowledge helps to set a benchmark for assessing the level of resources utilised in various industrial sectors in Western Province and hence in prediction of the impact of new industrial development. There is some degree of regularity between the size of a region's contribution and aspects of its industrial structure. It offers a conceptual framework within which distinction between industrial sectors can be undertaken.

Alfred Weber (1909)

Alfred Weber is considered as the father of modern industrial location theory (Smith 1971, 113). An economist, Weber's (1909) theory is based on the primary factors influencing location of manufacturing firms contained in his seminal work 'Über den Standort der Industrien'. These are;

- (i) transportation costs;
- (ii) labour costs and;
- (iii) Agglomerative and deglomerative forces.

In building the model, Weber makes several simplifying assumptions about the real world as;

- (i) the presumption that many raw materials are localised i.e. raw materials are not found everywhere all the time. (the originator of this idea was Wilhem Launhardt, 1882, 1885);
- (ii) that some raw materials are ubiquitous such as air and water which can be found virtually everywhere.
- (iii) the surmise that markets for finished products are fixed at certain specific points and do not consist of continuous areas. Each producer, has therefore an unlimited market free of monopolistic advantages from choice of location.
- (iv) that transport costs depend on the weight of the product and distance which it has to be transported. i.e. the cost of transporting a raw material or a finished product is proportional to the distance to be travelled.
- (v) the supposition that perfect competition exists, meaning that there is a very large number of buyers and sellers in an industry and the individual buyers or sellers cannot influence the

price of the product by their own actions. This results in equal revenue everywhere hence "best location" is where costs of production are minimised and finally;

- (vi) the existence of several fixed labour locations. Labour is as immobile and unlimited in supply at any given wage rate.

Weber considers transport costs to be the major determinant of industrial location. He contends that the least transport cost between the consumption and the material point occurs when the total ton-miles of getting the material to a place of production and the finished products to the market is minimum. He introduces the "material index" which he defines as, "the proportion of weight of a localised material used to the weight of the product". He highlights the bases of "material orientated" and "market orientated" industrial location. When the material index is greater than one (1) the industry locates near the material source. The reverse is true for other locations. However, in applying this model, Smith (1955) notes that Weber's analysis offers a blunt tool. He (Smith) demonstrates that some industries locate away from raw material sources despite the fact that they have a material index of greater than one (1).

Weber also argues that the deviation of industrial firms from the minimum transport location occurs if labour offers overall low costs. The situation occurs when savings exceed additional transport costs. A new optimum location point can be identified inside a critical isodapane i.e. if the ratio of an industry's labour costs to the combined weight of the material inputs and product outputs are high, a pool of cheap labour tends to attract that industry to a location different from the one based on least transport costs

Agglomerative and deglomerative forces are treated just as labour. Firms are thought of as locating only where all other firms intending to benefit from agglomeration incur less than agreed transport costs. Agglomerative forces reduce costs of production due to industrial localisation. While, deglomerative forces reduce costs of production due to advantages of decentralisation.

Weber's analysis in terms of raw material orientated industries is crucial in this study. Since most industries are agro-based and have a high material index (which is the proportion of the weight of localised material used to the weight of the product) necessitating their rural location. Optimal location of rural based industries induces regional development. Furthermore, labour is an important production factor in agro-based industries such as tobacco, sugar, tea and coffee which are prevalent in the study area. Weber's suggestions are not strong enough to influence industrial location and regional development since labour is abundant and mobile. Given other

spatial conditions that are socio-culturally and economically distinct, the arising scenario deviates from Weber's. For example, Nixson (1973) indicates that labour is in abundant supply and is not a crucial industrial location factor in East Africa. The deglomerative forces are crucial in industrial decentralisation — reducing regional polarisation and initiating equitable development. This can apply only to small industries as opposed to large ones, as Smith observes;

“..... Small firms generally have more to gain from a location in an existing industrial concentration than have large ones who can create economies internal to themselves which others have to obtain elsewhere (Smith, D.M 1970)

Despite these contributions, Weber's model suffers from a number of weaknesses;

(i) its **a priori**, especially in relation to:

(a) transport rates; (b) agglomeration process and (c) the spatial uniformity of demand conditions, are wild and inapplicable in the study area. Demand is a function of income which varies spatially. Kenyan labour is very abundant and quite mobile and cannot cause industrial movement to new places. Labour moves to where industries are located;

(ii) the great emphasis on transport costs as causing industrial location is not so crucial in the contemporary world where technological progress in the transport sector has considerably reduced transport costs.

(iii) Weber's conception of industrial organisation and its decision making process is quite inconsistent with modern industrial location and,

(iv) the theory of "least cost" location is highly abstract and rather inapplicable unless major modifications are done.

Edgar Hoover (1937)

In reaction to Weber's model, Hoover (1948) varies the costs to reflect length, direction of haul and composition of the goods involved. He shows that, the cost of extraction of raw material(s) does not vary with output. Transport cost is the only variable affecting price. As the market area expands, He notes that average cost of extractive industries rise leading to diminishing returns and later affect the market area. If location occurs away from the raw material sources without marketing occurring simultaneously, then the industry cannot be transport-orientated but rather relevance is for a low labour-cost location.

Hoover's work advances useful understanding on land-use competition, location change and location significance of boundaries in economic activities. The market of various products of industries such as sugar, tea, paper and tobacco are scattered over the whole Kenyan space economy and in contrast to transport cost variations, the prices offered are more or less the same. The location of these industries in material-source regions is crucial to regional development.

Despite these contributions, Hoover's approach fails due to overemphasis on the supply component in the production process while ignoring the demand aspects. It is unrealistic to think of a firm as being capable of selling "all it produces wherever it is located". This is because market varies just as the buyers are scattered.

August Lösch (1940)

In his book *Die Raumliche der Wirtschaft* Lösch offers a general theory of location with demand as the major spatial variable. His interest is to show the optimum location of industry as he writes;

“...The question of the best location is far more dignified than the determination of the actual one..” (Lösch, 1954, 4).

He attempts to show what pattern of location will, in a given simplified situation, fulfil certain conditions which define a state of equilibrium. He seeks to show the arrangement of economic activities in space under the assumptions that; a) there is homogeneous raw material distribution and transport rates; b) even population distribution with c) identical tastes; d) technical knowledge and e) economic opportunities. He suggests that the following conditions should be satisfied in order to achieve an equilibrium; i) advantaged location of both consumers and suppliers; ii) numerous production locations, and iii) indifferent consumers at the boundaries of neighbouring producing locations. Lösch (1954) rejects the concept of locating where revenue is greatest and suggests a place of maximum profit where revenue exceeds total costs as the ideal location point.

In varying spatial demand and costs he finds that the problem of optimum location is insoluble especially for an individual firm. The action of location of one firm (industry) relocates the existing firms. On many occasions, such industrial relocation is of little benefit to regional development since more than one industry is relocated to other urban concentrations. As such it is possible to locate development supporting industries in a specific region for purposes of regional development and not necessarily profit maximisation. Lösch (1954, 5) contemplates a government intervention in some cases of industrial location. In Western Province the government too can

locate industries in less developed areas. However, Greenhut submits that this neglects the chance of competition. He writes thus;

"...In a sense, he (Lösch) therefore offered a theory of location where the profit motive was either stifled or controlled"
(Greenhut, 1956, 269)

Nevertheless, in a mixed economy like Kenya's state intervention is appreciated as a mechanism of achieving balanced space development. Ogendo (1989) notes that government involvement is the sure way of locating industries at relevant Development Centre (DCs), Development Points (DPs), Potential Development Points (PDPs), Service Centre 1 (SC₁) and Service Centres 2 (SC₂). This ensures equitable resource acquisition and distribution. It increases national welfare without declining profits to industrialists.

Additional Interdependence (1950)

In an endeavour to solve the shortcomings of the "least-cost location" theory, the "market area" school of thought emerged. The approach here assumes that; all firms have identical production costs, and; sales to a spatially distributed market as opposed to Weber's punctiform market. In making location choice, sellers seek to maximise control over the market area whose extent is influenced by consumer behaviour and location of the firms. It assumes that every firm has monopoly advantages over its area of supply since the price of its products will be lower than that of its rivals. The ensuing spatial demand variation does not only create a varied market but also a spatial pattern of industries based on supply.

Hotelling (1929) argues that two firms locate their plants near the market if the demand for their products is inelastic and further apart if elastic. (However, Lösch (1954) and Greenhut (1957) have argued that duopolists locate plants with an aim of dividing so that they can gain more than half the market area). Such firms locate back to back and serve the same market but dividing their boundaries thus creating industrial agglomeration.

Hotelling's (1929) information is useful when considering areas dominated by a single raw material necessitating the location of more than one industry. Nzoia and Mumias sugar factories are located close to each other within the same sugar belt due to the available raw material supply under market conditions. Location of industries in raw material regions ensure equitable regional development as their products have a long radius (depending on the nature of raw material used) and thus fetch more income.

In their work, Estall and Buchanan (1973) explain that other objectives and motives other than maximum returns are quite rational. As such, it is complimentary to think of economically optimum location as the only rational one for entrepreneurs. True optimum location is an unlikely concept given the imperfect knowledge and the suspect data that man uses. Moreover, if it is found (optimum location), it only remains viable in the prevailing economic, technological and socio-political conditions which incidentally are dynamic. For instance, the Kenyan government can participate in industrial development through offering incentives that increase profit margins to far located industries. The fact that optimal location is hard to arrive at and that industrial location is a function of a series of variables, gives credence to industrial development planning with emphasis on regional development as opposed to the desire for profit maximisation. Hamilton (cited in Chorley and Haggett 1967, 364), observes that there exists judgement problems between industrialists and states on maximum profit, what constitutes social costs, social benefits and national interests which affect industrial location. He says;

“...Divergence of entrepreneurial opinion allows greater flexibility of location choice by increasing the range of optima” indeed, “most human decision making whether individuals or organisations, is concerned with the discovery and selection of satisfactory alternatives. Only in exception cases is it concerned with optimal alternatives” Hamilton(in Chorley and Hagget 1967, 364).

This does not mean one is necessarily inferior to the other. Faced with the above intricate considerations, Hamilton introduces a general model for industrial location incorporating most of the location variables. The model is important as it shows the influence of the government on regional industrial location. (fig.1.1).

The "classical" and "neo-classical" contributions to the general theory of industrial location fall short of the needs of the contemporary location of the manufacturing activity. Nixon (1973) notes that the efforts of the Classists have continued to prove useless in the current world in an attempt to guide industrial location. Moreover, their evasion of the spatial dimensions of location, considered important in real world, renders their contributions inadequate. Lately, both the developed and developing countries have primary conditions to meet before allowing the location of any manufacturing firm. Environmental issues, local raw material utilisation and community participation are some of the aspects contemplated.

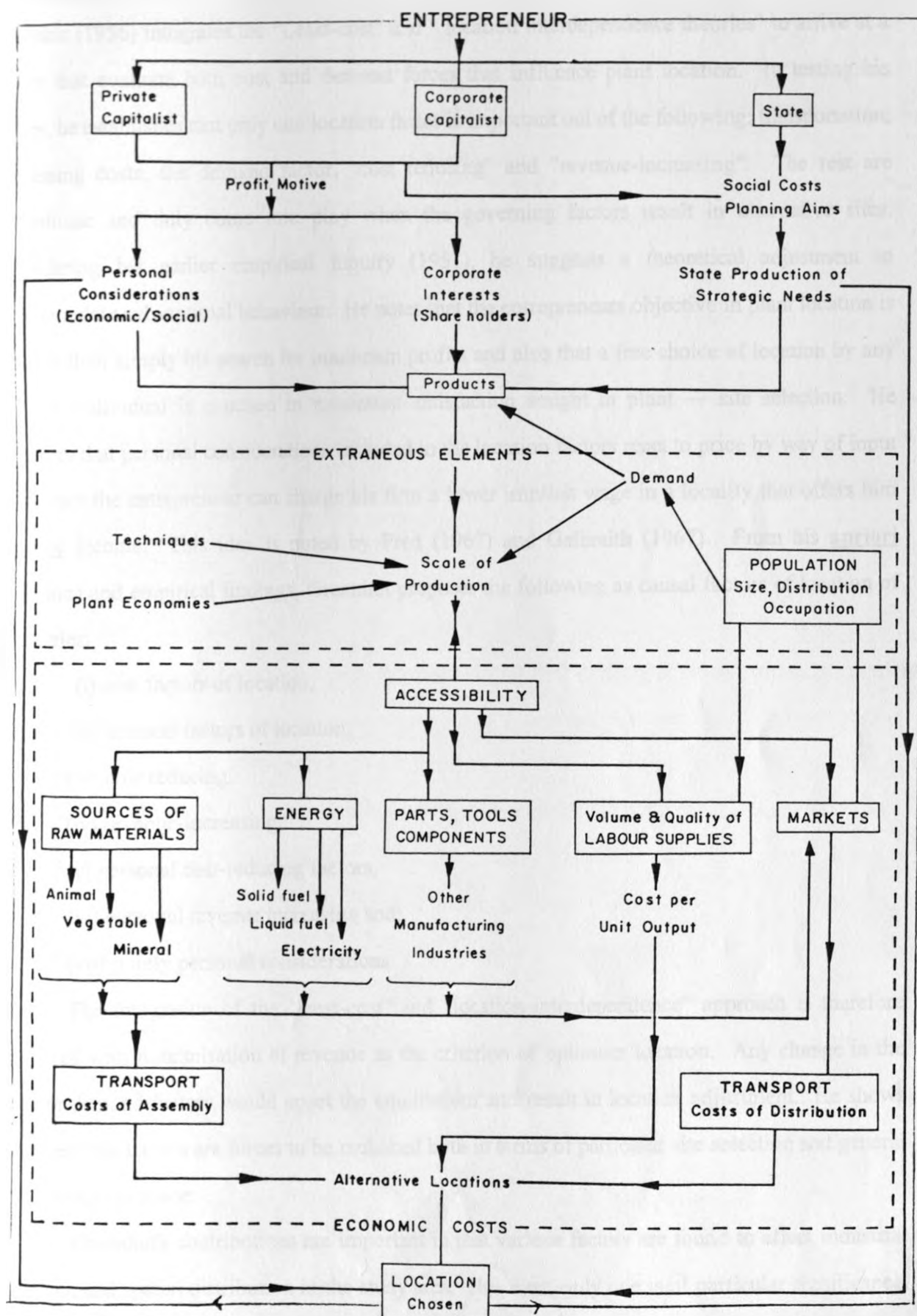


Fig: 1.1 A Basic Model of the Factors Influencing Industrial Location Decisions.

Source: Modified From Hamilton F.E.I's Industrial Location Model
(in Chorley, J and Hagget P ...Models in Geography)

Melvin Greenhut (1956)

Greenhut (1956) integrates the "Least-cost" and "location interdependence theories" to arrive at a theory that evaluate both cost and demand forces that influence plant location. In testing his theory, he establishes that only one location factor is important out of the following; transportation, processing costs, the demand factor, "cost reducing" and "revenue-increasing". The rest are subordinate and only come into play when the governing factors result in alternative sites. Considering his earlier empirical inquiry (1951), he suggests a theoretical adjustment to accommodate sub-optimal behaviour. He notes that the entrepreneurs objective in plant location is broader than simply his search for maximum profits and also that a free choice of location by any rational individual is couched in maximum satisfaction sought in plant — site selection. He observes that personal considerations included in the location factors react to price by way of input cost since the entrepreneur can charge his firm a lower implicit wage in a locality that offers him psvchic income. This idea is noted by Pred (1967) and Galbraith (1967). From his apriori reasoning and empirical findings, Greenhut proposes the following as causal factors of location of industries:

- (i) cost factors of location,
- (ii) demand factors of location,
- (iii) cost reducing,
- (iv) revenue-increasing,
- (v) personal cost-reducing factors,
- (vi) personal revenue increasing and;
- (vii) purely personal considerations

The integration of the "least-cost" and "location-interdependence" approach is therefore achieved with maximisation of revenue as the criterion of optimum location. Any change in the cost or demand factors would upset the equilibrium and result in location adjustment. He shows that personal factors are forces to be reckoned both in terms of particular site selection and general equilibrium in space.

Greenhut's contributions are important in that various factors are found to affect industrial location and spatial distribution in the study area. However, only one is of particular significance. The reality is that the overlying factor is a stronger basis for location choice, while, the rest are only supportive. His consideration of the demand factor and "total" revenue maximisation, shows

how the government can intervene in regional development by locating firms in less developed places where the motive is the acquisition of socio-economic goals rather than profit maximisation. Nonetheless Greenhut's contributions do not offer a general operational model in which there is areal fusion of the "least-cost" and "location interdependence approaches". The explanation leans so much on the demand factor as an important location factor when clearly location choice is a function of a set of variables. The model is therefore inapplicable if relevant modifications are not made.

Behavioural Approach

Behavioural studies focus directly on variables actually perceived and interpreted by decision makers. They contend that an entrepreneur makes decisions based on many variables most of which are personal and have no monetary inclinations. Chief proponents of this theory are Smith (1966) and Allen Pred (1967)

Smith (1966)

Smith (1966) endeavours to integrate the idea of personal preference in industrial location by combining the notion of psychic income and Weber's concept of forces diverting factories from the least-cost location. For instance, given a map of isolines of average unit below (fig 1.2), the least cost location is at the centre 'O' (Point of maximum profit). At the margin the profit is nil. If 'X', is a point within the margin with certain attraction, say, good housing, and if the isolines are taken to be some unit of same satisfaction, the manufacturer will locate at 'X' if the units of satisfaction there exceed the loss of satisfaction resulting from location at 'O'. In the Weberian parlance, 'X' will be exactly on the critical isodapane. This explanation reveals the fact that a manufacturer can still operate outside the profit margins at a loss if he maximises his satisfaction by so doing — say at a point 'Y'. While the illustrated circumstance is conceivable in the study area among small manufacturers, it is an eccentric behaviour that hardly happens among large firms.

In a bid to relax the rigid concept of "optimal location" and make allowance for "sub-optimal behaviour" Rawstron (1958) and Smith (1966) formulate the concept of the "spatial margins to profitability". This is a combination of Weber's space cost curves and Lösch's space revenue curves. The framework refines the idea of an optimum point location and mal

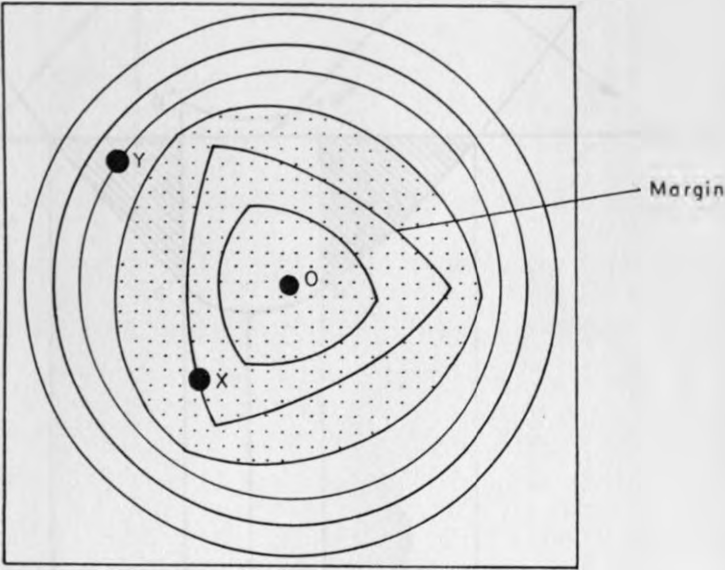


Fig: 1.2 An Interpretation of the Effect of Personal Factor in Industrial Location.
Source: Smith, (1966).

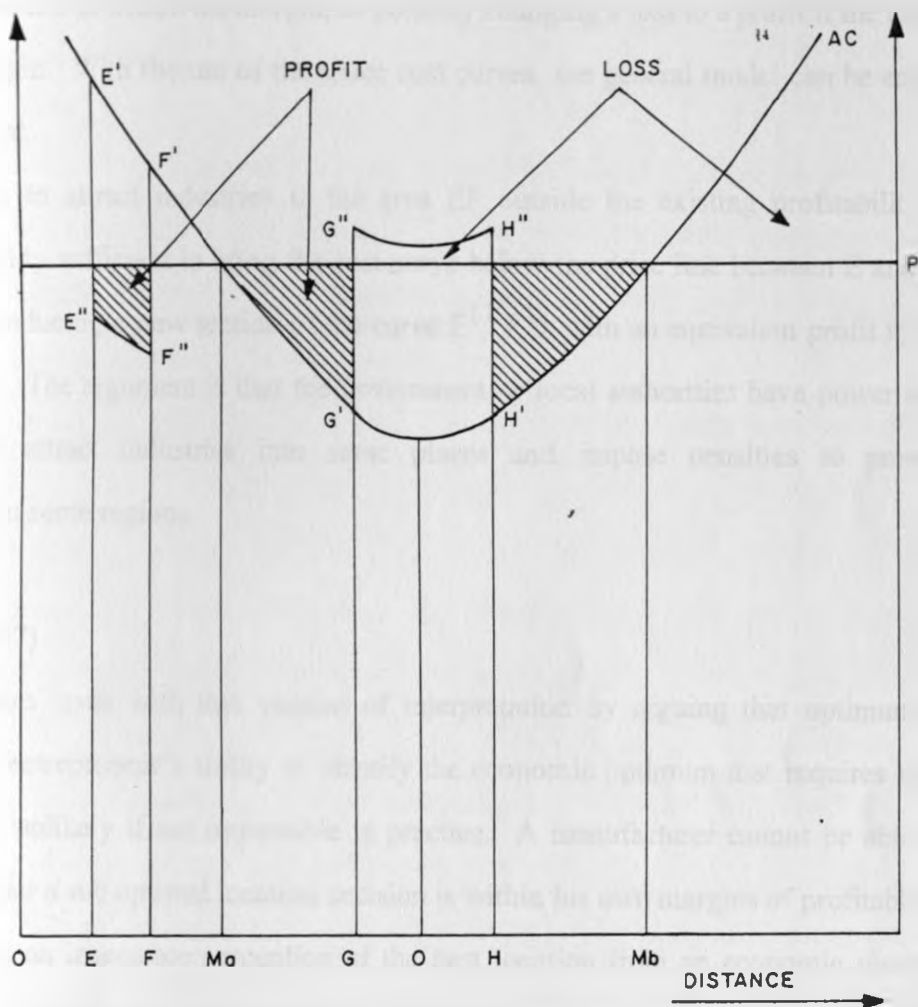


Fig: 1.3 The Effects of Areally Selective Subsidy and Taxation
Source: Smith, (1966).

allowances for "sub-optimal behaviour". It recognises that firms can perform below maximum profits within an area of considerable size, but will not be able to operate for very long outside an area within which some profit cannot be obtained. Nonetheless, if subsidised, firms can operate in relatively high-cost locations. Subsidy reduces costs, thus increasing the profit obtainable at the point in question if it is within the margin; or possibly changing a loss to a profit if the location is beyond the margin. With the use of the space cost curves, the general model can be employed to explain this point.

In order to attract industries to the area EF outside the existing profitability margins (fig:1.3), a subsidy sufficient to bring the cost curve below the price line between E and F should be provided (producing a new section of the curve $E^{11} F^{11}$ with an equivalent profit to the small shaded region). The argument is that the government or local authorities have power to provide incentives that attract industries into some places and impose penalties to prevent over concentrations in some regions.

Allen Pred (1967)

Pred (1967) takes issue with this version of interpretation by arguing that optimum location depends on the entrepreneur's ability to identify the economic optimum that requires knowledge which is highly unlikely if not impossible in practice. A manufacturer cannot be able to judge accurately whether a sub optimal location decision is within his own margins of profitability. If an entrepreneur has an inaccurate perception of the best location from an economic viewpoint, he weighs what he thinks he can gain personally from an alternative location against what he loses financially by not being at what he believes to be the economic optimum and making his decision on the basis of the results of the psvchic arithmetic. A skilful entrepreneur with good perception of economic advantage can be in a better position to judge the *psychic* and *pecuniary* payoffs of alternative positions than a less skilled counterpart. Moreover, he has wider spatial margins within which to indulge personal whims. Pred (1967), introduces the behavioural matrix to interpret location. Within the matrix, entrepreneurs can be differentiated in accordance to the information at their disposal and their ability to use it. Industrial location depends on;

- (i) quantity and quality of available information to each decision maker and;
- (ii) the ability of each entrepreneur to use the information.

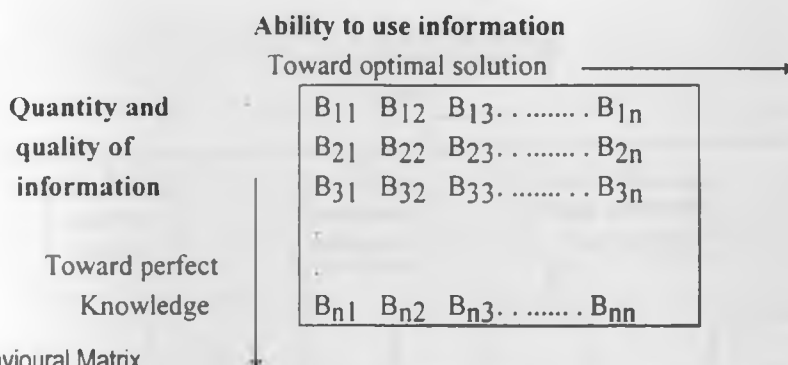


Figure 1.4 The Behavioural Matrix

Source: Pred (1967)

A firm's success depends on its position on the behavioural matrix. Well informed firms are likely to select well (fig: 1.4). Bale (1976) notes that firms lying at the top left of the matrix locate on the basis of chance due to failure to use the available information. Pred (1967) views 'man' as having limited knowledge and power to use such information rationally.

The above framework assists in the understanding of real world deviations from location patterns produced by deterministic models based on the assumptions of an "economic man". The variations in the spatial distribution of industries is explained by the differences and ability to use the matrix. Ideally B_{nn} is the optimum location. Despite the use of the model, it fails to exactly predict how a good choice is made. However, the model ascribes to us the spatial distribution of the manufacturing as bound by a broad spectrum of rational, satisfying actors and not by undifferentiated profit maximisers. The behavioural matrix is limited in its application especially in developing countries where information for industrial location is not easily available. Nevertheless it is useful in pointing out actual decisions that can be made by private entrepreneurs and how this affect plant location and regional development (Krumme 1969, Stafford 1969, Townroe 1969, Wood 1969).

John Bale (1976)

In reaction to Greenhut's (1956) assertion that entrepreneurs earn non pecuniary satisfaction from particular location which is regarded as some kind of psychic income, Bale (1976) explains this thought that initial location decision for industrialists normally favours a home town but changes with the need to expand. Most small industrialists are happy with income of a psychic rather than a monetary nature — exhibiting a satisfying behaviour. However, industrialists encountering a relocation problem have to grapple with the forces of "Push and Pull". Bale (1976) identifies a number of reasons that prevent *insitu* expansion ("Push") even if conditions are favourable.

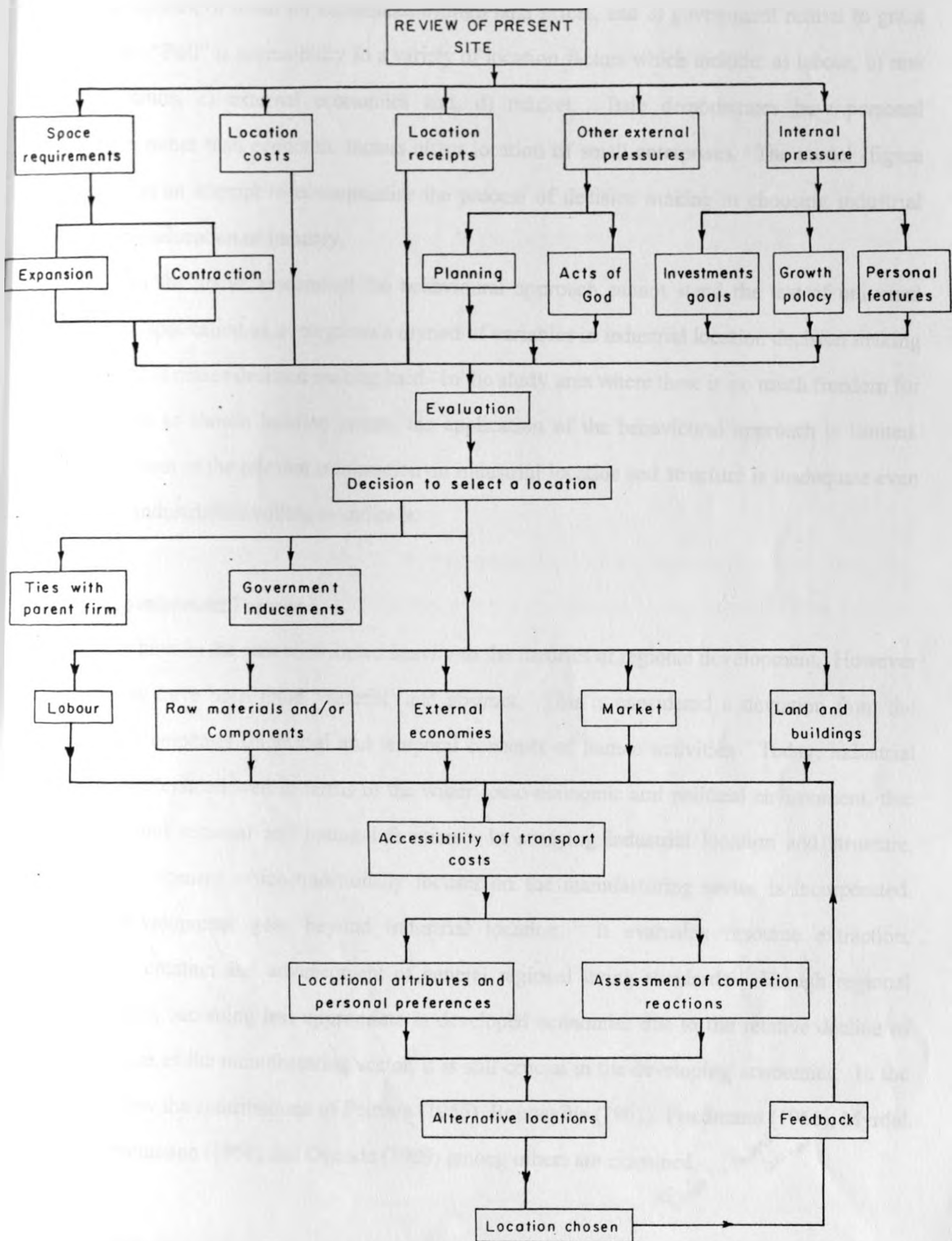


Fig: 1.5 Some Pressure to Select a New Location and the Search for a New Site
Source: Modified From: Bale, J. (1977).

These are: a) lack of room for expansion, b) high land prices, and c) government refusal to grant permission. “Pull” is accessibility to a variety of location factors which include: a) labour, b) raw material inputs, c) external economies and, d) market. Bale demonstrates how personal preferences rather than economic factors affect location of small enterprises. The model (figure 1.5) below is an attempt to conceptualise the process of decision making in choosing industrial location and relocation of industry.

From the above assessment the behavioural approach cannot stand the test of universal validity and application as it integrates a myriad of variables in industrial location decision making — a factor that makes decision making hard. In the study area where there is no much freedom for entrepreneurs to choose location points, the application of the behavioural approach is limited. Moreover, most of the relevant information on industrial location and structure is inadequate even if there are industrialists willing to utilise it.

Regional Development Theories

Economists have in the past contributed heavily to the theories of regional development. However their theories have been more ‘aspatial’ and abstract. This is considered a deviation from the geographical emphasis on spatial and temporal concepts of human activities. Today, industrial location is understood well in terms of the wider socio-economic and political environment, that extends beyond regional and national frontiers. In studying industrial location and structure, regional development which traditionally focuses on the manufacturing sector is incorporated. Regional development goes beyond industrial location. It evaluates resource extraction, employment creation and advancement of general regional living standards. Though regional development is becoming less appropriate in developed economies due to the relative decline of the importance of the manufacturing sector, it is still crucial in the developing economies. In the ensuing review the contributions of Perroux (1955), Boudeville (1961), Friedmann (1966), Myrdal (1956), Hirschmann (1958) and Ogendo (1989) among others are examined.

Perroux (1955)

Perroux (1955), formulates the growth pole(s) model and defines the growth pole only and specifically in relation to an abstract economic space instead of geonomic space. His concern is with growth rates within the economic sector (thus mainly firms and industries) to which he asserts

that growth does not appear everywhere at once but rather appears in points. Such growth has varying intensities and spread along diverse channels resulting in terminal effects to the whole economy. Among his abstract spaces, Perroux considers only one, "space as a field of forces" as opposed to space as either a plan or a homogeneous aggregate. Within the space pole(s) are centres from which centrifugal forces emanate and to which centripetal forces are attracted. The centres are considered as having both attracting and repulsing forces and these forces are firms or industries. It is within these pole(s) that growth is initiated while being transmitted by the connections between them. Innovative activities take place in large economic units that dominate the surrounding by virtue of their size, strength and nature of operation. This results in dominant propulsive firms that form industrial complexes. Perroux notes that location of such industries in some focal points are due to;

- (i) the localisation of natural resources;
- (ii) intensification of one or more man-made advantages such as transport lines of communication, service-based central places with labour and infrastructural advantages;
- (iii) possibility of chance.

It is true that initial growth of a place(s) or region(s) begins at a point and spreads development to the surrounding. The growth of urban centres has initiated some development in the study area. The dominant Webuye Paper Mill has induced some development in Kimilili, Bukembe and even parts of Kakamega. The location of development inducing industries at the various spatial growth centres is likely to achieve equitable regional development. Such industries may have new and dynamic technology capable of creating growth "mindedness" in the region and built strong inter-industry linkages for regional benefits. Perroux's work on the influence of propulsive firms, assists in analysing changes in demand arising from anticipation of smaller firms and changes in balance of factor inputs. The results are crucial for industrial planning. Any incorrect structure of propulsive firms is likely to hurt the intended smaller development inducing and development supporting industries.

Perroux's work is wanting in regard to the growth pole(s) concept where a chaotic disarray of terminology such as growth poles, growth centres and growth points are used. Such indistinct and ill-defined concepts render the application of the model impossible (Darwent, 1969, Hansen, 1972). The fact that clusters become growth pole(s) if served with leading propulsive industries which localise to form an industrial complex large enough to exert a determining influence over its

industrial hinterland is not well explained (Misra *et al.* 1974). It is also unclear how a leading industry with strong inter-industry linkages finds a location to serve as a nucleus around which other industries cluster.

Perroux's focus on the economic space structural characteristics of growth pole(s) and interrelationship between industries to the exclusion of the spatial dimension is unrealistic. This study observes that growth occurs in geographic space where it is influenced by spatial organisation. Likewise, Perroux's propositions are likely to cause industrial localisation in a few places hence over-reliance on large industries at the expense of a number of well distributed growth inducing small industries. Such big firms will never solve the problem of spread, backwash effects and those of polarisation due to diseconomies of scale and "foot loose" firms. Alonso (1967) observed that Perroux's advanced technology as a prerequisite for functioning of growth pole(s) was out of reach for developing countries and inappropriate in terms of factor inputs and can reduce employment levels — the very thing that industrialisation seeks to redress. Finally, Perroux's description of polarisation is too theoretical and therefore practically inapplicable in solving problems of regional development.

Nevertheless, an understanding is gained from Perroux's propulsive industry that can transmit development impulses. This assists in planning for industrial structure and location tailored along such objectives. The polarisation process shows how growth via-interlinkages between sectors occur. The growth pole notion points out the biased growth whose emerging progress is hindered due to over reliance on maximisation of flows between sectors of the economy. The goal is to generate multiplier effects beneficial to a region (Hirschmann, 1958).

Myrdal (1956) and Hirschmann (1958)

Myrdal (1956) and Hirschmann (1958), independently attempts an integration of "a geographical incidence of growth" theory, with a hypothesis of the mechanism of the "geographical transmission of development impulses". To them spatial imbalance of development occurs at initial development. Hirschmann observes that high income acquisition in a region requires that regional centres of economic strength develop first. Myrdal and Hirschmann disagree on exactly how regional centres transmit development that creates spatial inequalities. Myrdal notes that once growth is initiated in a particular centre, market forces tend to increase rather than decrease regional inequalities. He calls this process "Circular and Cumulative Causation" (Fig. 1.6).

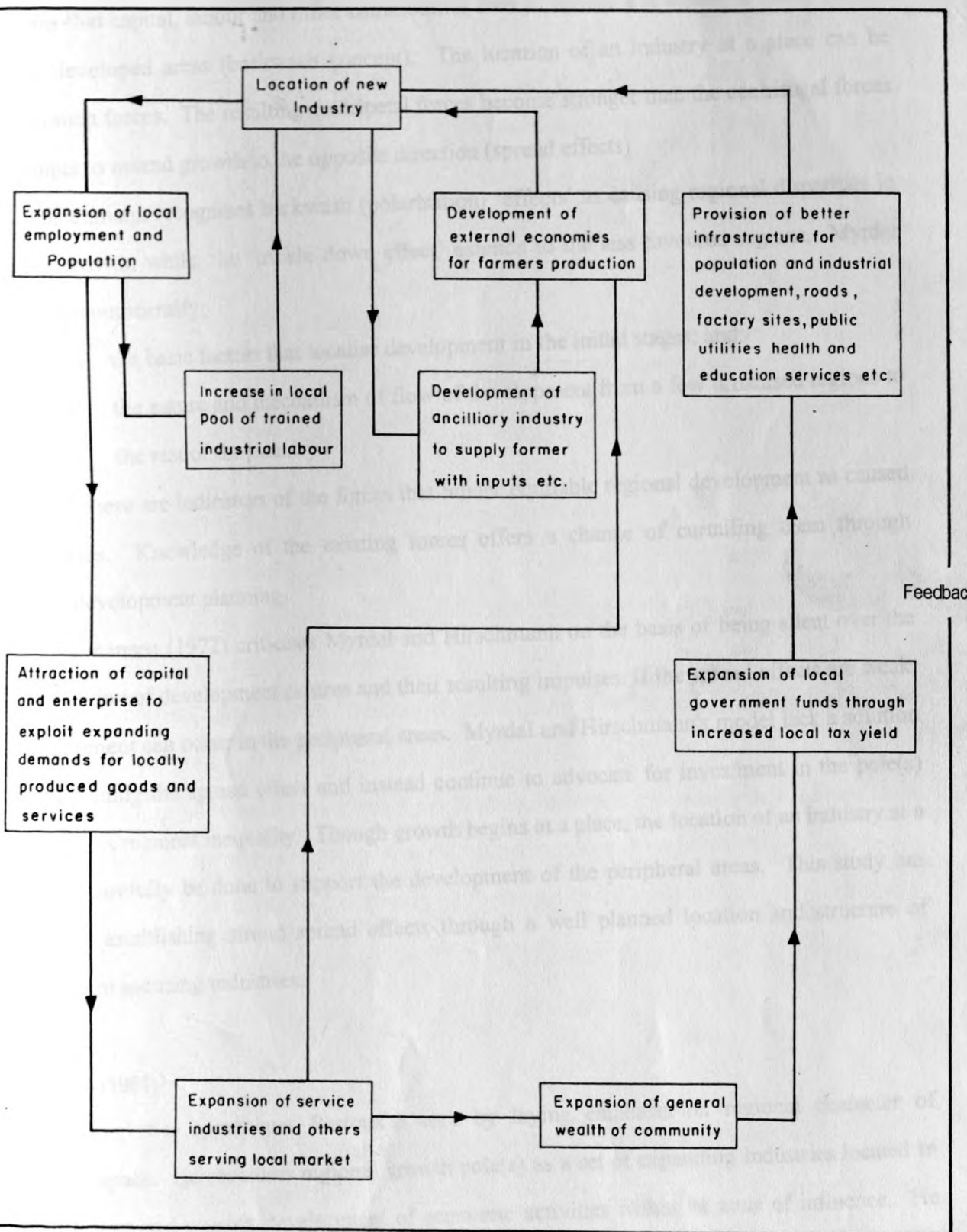


Fig: 1.6 Myrdal's Process of Cumulative Causation

Source: Adapted From Keeble, 1967.

This means that capital, labour and other commodities start to flow to this region of initial growth from less developed areas (backwash concept). The location of an industry at a place can be subject to such forces. The resulting centripetal forces become stronger than the centrifugal forces that attempts to extend growth to the opposite direction (spread effects) .

Hirschmann recognises backwash (polarisation) 'effects' as causing regional disparities in economic growth, while, the 'trickle down effect' extends to the less favoured regions. Myrdal and Hirschmann identify;

- (i) the basic factors that localise development in the initial stages; and
- (ii) the nature and mechanism of flow of development from a few urbanised regions to the rest of the country.

All these are indicators of the forces that hinder equitable regional development as caused by industries. Knowledge of the existing forces offers a chance of curtailing them through industrial development planning.

Harmensen (1972) criticises Myrdal and Hirschmann on the basis of being silent over the spatial location of development centres and their resulting impulses. If the spread effects are weak, no development can occur in the peripheral areas. Myrdal and Hirschmann's model lack a solution of strengthening the spread effect and instead continue to advocate for investment in the pole(s) that increases regional inequality. Though growth begins at a place, the location of an industry at a place can carefully be done to support the development of the peripheral areas. This study has centred on establishing strong spread effects through a well planned location and structure of development inducing industries.

Boudeville (1961)

Boudeville (1961) appreciates Perroux's work by laying emphasis on regional character of economic space. He considers regional growth pole(s) as a set of expanding industries located in an urban area and causing development of economic activities within its zone of influence. He conceives a polarised space in terms of inter-dependency between various elements and the hierarchical character of clusters of human activities. Polarised centres are those in which connections and flows of goods and services are in one direction thus a central dominant area — a nodal point.

Boudeville's model fails in that it treats pole(s) as a geographical agglomeration of activities rather than as a complex system of sectors different from the national grid matrix. The model also fails to eliminate the spatial implications of the growth pole(s) (Misra *et al.* 1974). However, the model offers substantial gravity on industrial development planning in any given region. Normative preference for action is gained. These are;

- (i) the advantages of localising industrial investment in specific centres than scattering in any centre without considering their growth potentials;
- (ii) the fact that growth centres are better centres for industrial development than other smaller ones, since they possess the ability to generate development and;
- (iii) on the number of sub-optimum structures for generating and transmitting growth in all phases in the development of a region. This is suitable for the study area which requires industries to make use of the available raw materials and;
- (iv) the importance of a development programme that promotes the periphery through a single (entropic — not the earlier negentropic) interdependent (not parasitic and purely centripetal) system of urban centres.

The model gets away from the reliance of growth pole(s) on the dominant firms as a basis of growth. This allows the coexistence of firms spatially. In the study area emphasis is not placed on a few leading industries, but preferably on a good industrial pattern capable of equitable regional development providing tertiary and specialised services. Boudeville's work is a better theoretical framework for assessing the extent of polarisation in the study area and the use of well planned development inducing and supporting industries as a remedy.

Friedmann (1966)

In studying the Venezuelan regional development, Friedmann (1966) notes that;

- (i) development originates in a small number of urban centres called core(s);
- (ii) economic growth takes place in a matrix of urban regions whose peripheries lag behind in development;
- (iii) the process of development involves economic and social integration of the periphery and the core and lastly;
- (iv) the periphery is dependent on the core and its development is largely determined by institutions at the core.

Friedmann's model encourages spatial integration between the core and the periphery at the intra-regional scale while correcting the evident imbalance between the core and the rest of the nation at the international level. This is because development occurs in a discontinuous but cumulative process of innovations. Innovations diffuse from the core to the periphery — modernising the peripheral areas. The rate of the diffusion process is a function of the potential of interaction between the core and the periphery. The centre - periphery model explains that growth at the core causes development at the periphery. Despite wide application of the model it has not been able to bear fruit. In Kenya and other places the model results in both local and international processes of deprivation, under-development and over-concentration in some places of development resources. The periphery suffers underdevelopment more due to its relatively weak and inefficient economic activities that cannot stand severe competition of the core which intensifies selective migration of labour and capital.

The development imbalances created by the model have persisted such that rural areas in Western Province lag behind other areas in the nation. Nevertheless, Friedmann's model is credited as it demonstrates the deficiency of both the "growth pole" and "growth centre" models. The model is much richer and satisfying in terms of spatial incidence of regional economic development. A fresh theory of polarised development emerges and covers both the narrow range of economic variables and aspects such as socio-cultural and political development in geographic space. Regional problems require a national policy with spatial dimensions. The model emphasises the development of infrastructure in the study area as a way of attracting industries.

In general, the centripetal development models which have been in use in Kenya have created three negative characteristics associated to development;

- (i) biased development of the Kenya highlands and other alienated urban centres;
- (ii) a polarised space economy and unequal regional development and;
- (iii) a concentrated national or regional development noted especially for its many kinds of inequalities from the national down to the individual level.

The use of the models soon after independence is founded on the notion that they can achieve;

- (i) an improved regional potential for adopting innovations;
- (ii) a fast and successfully growing regional economy;
- (iii) savings on public investment that can promote infrastructure;
- (iv) efficient tertiary patterns of especially industries;

- (v) a well spread economic growth to all the problem regions and;
- (vi) eliminate rural - urban migration through rural development.

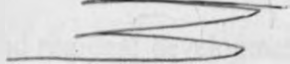
The Kenya Government's DFRD

The Kenya government has continued to realise that the persistent growth of regional inequalities lies in the regional development models it uses for planning purposes. Consequently programmes such as the Special Rural Development Programme (SRDP), the Integrated Rural Development Programme (IRDP), the back to "land policy" and the District Focus for Rural Development (DFRD) have been initiated.

The District Focus for Rural Development (DFRD) which has been echoed in a number of development plans since the 1983-88 national development plan aims at;

- (i) integrating local and national level planning;
- (ii) broadening rural development bases and encouraging local participation in problem identification, resource mobilisation and project implementation and lastly;
- (iii) promotion of rapid economic growth in the rural areas in order to achieve rural-urban development balance.

The DFRD aims at development from below. The model emphasises motivation of the rural population as a way of winning support for rural development and also induce, support and sustain rural development. However its drawbacks have hindered the achievement of its goals.



1.2.2 Empirical Bases

This section reviews the empirical evidence of both industrial location and regional development. It is centred on spatial location of industries and its effects on regional development.

Ogendo (1972)

Ogendo (1972) points out that a complex set of favourable factors and personal considerations govern location of any one industry. He gives the factors as;

- (i) historical, "topo-geolo-geographical" and ecological influences;
- (ii) combined influence of transfer and processing costs with emphasis on the availability and cost of capital, managerial and other skills and transport;

- (iii) the effect of personal considerations with emphasis on personal cost-reducing and revenue-increasing factors and their interaction with government location directives, and;
- (iv) the predominance of economies of agglomeration and / or linkages.

Ogendo (1972) gives the following industries as rural located; sugar, coffee, dairy products processing, saw milling; meat product processing; tobacco manufacturing; cotton ginning; pulp, paper and paper products manufacture etc. These industries are influenced by good transport facilities, ample power supplies, plenty of cheap clean water, assured sources of capital and easily procurable labour. He showed that, coffee processing is carried out in relatively small establishments each employing between 5-49 operatives. Apart from Kenya Planters Co-operative Union in Nairobi, other important coffee processing concentrations are Trans-Nzoia (5.9%) and Bungoma (5.1%) among others. Busia and Kakamega produces a small percentage. Pulp and paper have been little developed for a long time accounting for 1.0% of the agricultural manufacturing industries. Nevertheless the location of Pan-paper industry in Webuye has transformed the pattern of development in the Province. Other industries like Nzoia, Mumias and East African Heavy Chemical form a new industrial pattern. Ogendo's classification of industries into categories is important for planning purposes. It offers a quick identification of industries in terms of location and structure.

The above factors are many and traverse a wide spatial area. In particular, the interaction of these factors and the government policy is of concern in this study. The contributions are useful both in industrial location and regional development. These contributions indicate the important role of the government in regional industrial location. If left to the free market forces, Western Province may not succeed in achieving balanced industrial distribution likely to create equitable regional development by acting as an industrial magnet. This is because capital movement which so far is polarised to some degree is intricate to depolarise from the urban core(s) to rural areas which dominate most parts of the Province. Savings in the rural areas tend to lag behind investments, while lack of new expansionary momentum may result in weak demand for investment capital leading to a slow pace of industrial and commercial growth. This study is centred on a smaller macro-econo-geographic region of Western Province whose findings differ from Ogendo's nation-wide study. Moreover it is several years since Ogendo's study was undertaken and revisiting some of the issues by this study now in the wake of technological and economic changes is crucial.

Nixson (1973)

Nixson (1973) observes that there is variation in location requirements at the industry level and from one country to another. He notes that transport costs, processing costs, market, and personal considerations are the common factors that influence industrial location in East Africa. He confirms that processing costs are vital in Uganda. His findings are crucial as they affect public policy in industrial location in the study area and how it in turn influences such factors. Though processing costs are crucial in industrial location, there are emerging other factors that influence industrial location especially in underdeveloped or problem areas. The cost variable is therefore overrode by the desire to achieve regional development. Such differences necessitates a study of this kind.

Awuor (1979)

Awuor (1979) verifies that most industries in Kisumu have a parasitic effect on their hinterlands. She observes this in terms of;

- (i) Kisumu draining many of the hinterland's able-bodied workers and in turn giving them inadequate remuneration which they could not spend both at home and in town and;
- (ii) the hinterland offering market for Kisumu's industrial products in as much as it did not supply any of the raw materials to industries prevailing there.

Industries identified by Awuor are strongly parasitic and do little to help regional development apart from adversely exploiting them. These points out the weaknesses of the structure of some industries and their failure to initiate regional development. But since her work is on Kisumu Cotton Mills (Kicomi) alone the findings cannot be conclusively adapted as representing a whole macro-economic region. Some urban located industries which are either *dii* or *dsi* such as coffee repatriate funds back to the rural areas from where they draw their raw materials. This study evaluates both urban and rural based development inducing and development supporting industries in the Province.

Obiero (1980)

Considering the Western Kenya economy, Obiero (1980) investigates factors of location of the sugar industry and the role of the sugar industry in inducing development. Her findings demonstrates that after independence the sugar factories have received substantial help from the

government. The foreign investors in Mumias and Nzoia sugar factories have had tax concessions and land. Mumias Sugar Factory occupies 3,000-5,000 ha of land leased to it by the government. Infrastructural development had also been undertaken by the government as a way of attracting industry. There are various growth points in the study area which are good for location of development inducing and development supporting industries. This study examines the extent of government influence about ten years after Obiero's work.

Obiero (1980) shows how farmers are exploited rather than helped. Transportation of farm inputs and outputs disadvantages farmers by reducing their profits. This relationship is not ideal for regional development. This study establishes a better planned structure that symbiotically benefit both farmers and industrialists. The sugar industry increases regional economic development through job creation and reduction of labour migration out of the sugar belt to other regions such as Kisumu, Nakuru and Nairobi. The industry assists in the expansion of market for farmers' cane. However, income from industrial operatives does not benefit the region so much as it is low and mainly spent on imports.

For purposes of regional development, Obiero (1980) uses sugar belts as development planning units and sugar factories as development triggering points and shows that the sugar industries have a low regional multiplier. This means that the industry induces very little growth and offers minimal benefit to the region. The region has leakage due to paucity of other industries supplying domestic products. Mumias alone spent 35.4% of the money injected in the project within the sugar area, this is the only money beneficial to the area. Otherwise, 27.2% is saved by cane farmers and 37.4% is spent outside the region. Obiero concedes that increasing the regional multiplier takes along time.

In contrast to Obiero's study, this study analyses various industries as development points and illustrates their benefits to a region. It evaluates how industries mobilise local development resources.

Wegulo (1984)

Wegulo (1984) shows that small private establishments appreciate government support in terms of local infrastructure provision than larger ones. The larger industries are concerned mainly with access to market and industrial linkages. Urban based industries value developed infrastructure — while the rural based industries are inclined to raw material supply. According to Wegulo,

Nyanza's agro-based manufacturing is influenced by physical factors more, while non-agro-based manufacturing and supporting service industries depends on market availability. The entrepreneurs are found to differ, a variation which McDermont and Taylor (1976) refer to as "the problem of identifying the relative economy".

On structure, Wegulo establishes that consumer luxuries and intermediate producer goods account for 17.6% of the total operatives. The export sector accounts for 54.4% which was the highest single sector percentage. This meant that more foreign exchange was earned into the region. Consumer necessities (mass consumer goods) records 20.8%. A further sub-division of consumer goods reveals that 75% of the operatives concentrates on consumer goods, while, a paltry 25% focus on the very important industry — intermediate producer goods. This structure is weak and cannot adequately contribute to regional growth. Most of the operatives are found to be involved in processing whose final product has a small value added unimportant to both regional and national growth. A major remodelling of industrial structure is relevant if the Western Province industries are to achieve regional development. This study considers similar sectoral production and further assesses their effect on regional industrial development.

In Nyanza Province, Wegulo ascertains that two industries are parasitic in nature both in terms of labour exploitation and transport cost minimisation. These are Miwani and Muhoroni. This study assesses the issue further and in addition demonstrates how a better planned structure can reduce industrial parasitism on their resource hinterlands.

There have been empirical studies based in other countries outside Kenya. The experience derived from them is useful in this study. Regional development policies, though varying from one country to another, have common elements related to manufacturing. Incentives to manufacturers are necessary for assisting marginal producers to pass on their risks to the government. Bryce (1960) distinguishes that incentives encourage new products, research, management and rationalisation. Buck (1980) illustrates that the government needs to provide serviced industrial land, buildings, transport connectors and infrastructure geared towards manufacturing. Any region lacking such incentives lags behind in industrial development despite having necessary industrial raw material.

Hayter (1982) contends that the encouragement of indigenous industries brings greater advantages to regions in form of increased employment, (i.e. both technical and managerial). In contrast, the opening of a branch plant may have tendencies of retaining technical and managerial

employment in their headquarters resulting in a "truncated structure". Therefore, the development of local entrepreneurs and indigenous industries is significant in the study area for mobilisation of local raw materials and decentralisation of industries.

Fantus Company (1962)

Fantus Company (1962) observes that less developed regions also occur in developed countries. In the USA problems of regional development are well documented (Perloff *et al* (1960), Cameroon (1968)). Economic activities in the coal mining regions in particular the Appalachians are seriously affected by the extinction of reserves, falling demand and indiscriminate exploitation without regard to environmental and social consequences. In 1965 The Appalachian Regional Development Act was set up in response to the severity of problems of this particular region which had become a national cause célèbre with the discovery of massive poverty and hunger. Its functions are stated as:

“The purpose of the Act is to assist the region in meeting its special problems, to promote its economic development and to establish a framework for joint Federal and State efforts towards providing the basic facilities essential to its growth and attacking its common problems, meeting its common needs on a co-ordinated and concerted regional basis. The public investments made in the region under the Act shall be concentrated in areas where there is significant potential for future growth, and where the expected returns on public dollars invested will be greatest”

Regions of geographical entities eligible for assistance are recognised as redevelopment areas, economic development districts and multi-state economic development regions. These areas are eligible for the full range of benefits including; industrial and commercial loans, grants and loans for public works and development facilities, the working capital loans guarantees and technical assistance. As a result of the programme, Ohio-Appalachian had over 30 industries either constructed or expanded employing over 20 industrial operatives each (Stafford (1969). New roads were built to encourage regional development, living standards improved, labour availability increased and a rise in Fifteen Acre Plant Sites (House, 1983).

Despite the success of the Appalachian Act it has shortcomings such as the choice of areas that needs special attention. The states involved had over 125 acres, with significant growth potential. This was not selective enough but rather a single even spread of investment. The centres chosen were also too small to be effective investments of regional economic regeneration. The Act overspend on physical infrastructure such as highways and industrial sites at the expense

of human infrastructure development. Insight gained on how the central government through industrial development policies influence regional growth and reduce problems of inequalities. Unlike the Appalachians Act the current study examines the various infrastructure (development) relevant to industrial development and regional growth.

Fantus' (1962) evaluation of industries with notable growth potential in the Appalachian reveals the importance of developing specific areas. The Appalachians, is a far removed mountainous region and less industrialised in comparison to the California's industrialised regions, the East Coast and Great Lakes. Industrial development there gives an intuition on planning for critical growth inducing industries in the study area.

Galbraith (1967)

Galbraith (1967) expresses a growing awareness of the influence of large industrial corporations on the spatial distribution of manufacturing. He observes that multinational corporations (MNCs) have significant influence on manufacturing at every geographical scale. Such power accentuates the divergence between reality and basic premise of normative location theory — the subservience of the individual entrepreneur to the dictates of the surrounding economic environment. Though it is argued that the principal objectives of MNCs is the minimisation of uncertainties associated with 'their' environment, most large industrial enterprises manipulate their environmental context leading to conditions that may 'hurt' the host region. The current study shows how MNC's in the study area modify their socio-economic environment for external gain than for local development.

Friedmann and Weaver (1979) suggests an "agro-politan" development in most of the world's peripheries. They reason that people in rural areas should radically reduce their reliance on outside help by focusing on producing for their own basic needs and more towards communal than individual wealth. The relationship of such areas with the outside regions should be on the basis of co-operation for the benefit of all as opposed to dominance by MNCs, other towns or states. Each person should have a say in their economic affairs and boost regional diversification and development (Ogendo 1989). These is crucial for building Western's industrial and economic strength. Consequently, there should be no expectation of transfusion of strength from "donor" regions or miraculous transformation of the economy without effort.

Chapman and Walker (1987), records that the process of economic growth especially manufacturing, results in polarised development of both prosperous and less prosperous regions.

They recognise the importance of manufacturing in regional development and suggests that heavy industries having both forward and backward linkages are capable of transmitting growth impulses widely throughout the economy — presenting an intuition on the role of manufacturing in regional development. Though they accent that manufacturing causes inequitable regional development, they fail to show the extent of the effects and the practical ways of abating the problem. In contrast this study shows the strength of the impulses and how they can be controlled to equitably distribute regional development.

Huzinect (1976)

Huzinect (1976) observes that policies of regional development that involve grouping of activities that make up a production chain from raw materials through to finished products are related to spatial planning in centrally organised governments. The case in question is Kolosorsky in the former USSR. In the 1940s it had complex industrial linkages and personnel, housing and provision of all services. Given the Kenyan context, such grouped production chains cannot be applied despite their merits because of the semi capitalistic nature of the economy. Growth centres found in the Western countries, essentially provide an efficient organisation of public infrastructure. Decisions to build roads, schools, hospitals and houses are made and implemented by the government. Austria and the Federal Republic of Germany through their rural planning at provincial level (Lander) have frequently built on the central place concepts to encourage population to remain in rural areas yet being able to reach critical services in nearby towns by public transport (Blackwell 1975, Krumme 1974). The service centres are the recipients of special support for job creation especially manufacturing employment. Growth centres should benefit a whole region by allowing the greatest income creation based on the region's location. Nevertheless, the most obvious benefits tend to be concentrated within the chosen town and the commuter zone around it. The multiplier effect operates in the centre itself and tends to draw capital and human resources from other parts of the region. This is a persistent problem in the study area that requires selective use of other region's experiences.

Barker *et al* (1977)

Barker *et al* (1977: 83) makes an attempt to analyse the Tanzanian industrial production as reflected in the national data and data from large industrial enterprises. This aims at yielding results that establish the dominant relationship in “capitalism” between the production of capital goods and mass consumer goods at the core and the production of goods for export and luxury at the periphery. In essence the study gears towards the assessment of; ‘for whom the goods and services are produced’. Barker *et al* (1977) assume that the purpose of production is to meet the consumption needs of a particular class in the community. For instance, if peasants control the means of production then it is expected that production is geared towards the production of goods that meet their consumption needs and its subsequent improvement. If a smaller class are in control, then production meets the needs of the minority. Barker *et al* notes that:

“...if they are not in control (peasants) then we would expect this sort of sectoral breakdown of production but an emphasis in production of goods to fulfil the needs of a small class in control of the state. This would mean production of not just basic mass consumer goods but of luxury consumer goods too” (Barker *et al* 1977:82)

As a framework for analysis, they (Barker *et al* 1977) subdivide industries into four sectors namely; mass consumer goods, luxury consumer goods, export manufactured goods and intermediate / capital goods. For each sub-sector a number of major industries are listed and their respective gross output and value added are used as indices of factory performance.

In their findings the export sector accounts for more than two thirds of the output value of mass consumer goods. Intermediate goods feeding industries producing mass consumer goods had TShs 17 million of gross value; luxury, TShs 30 million; and export, TShs 30 million. Mass goods input amounts to only about one fifth (1/5) of the total value. The industrial structure is established to be weak in moving towards self-centredness and production for the masses. The intermediate sector is seen to be good as production is adapted towards self-sufficiency. Though the intermediate sector has grown fast it has reinforced exports and luxury consumer sectors rather than mass consumer or capital goods.

The present study utilises Barker *et al*’s method in analysing the industrial structure of Western Province. The type(s) of goods produced are analysed in an attempt to show how industries have perpetuated resource transfer from the rural hinterland(s) to the urban core(s). This is a deviation from Barker *et al*’s study which seeks to find out for whom the goods are produced. While, in the Tanzanian case gross output and value added are used as indices of industrial

performance, industrial operatives in each sector are used in the current study. Besides, the present study differs from Barker *et al*'s in that it is regionally based and not nationally based.

Despite the advantages of the Tanzanian study, caution is exercised as Barker *et al*'s study has a number of shortcomings. For instance, it is very difficult to draw a boundary between luxury and mass consumer goods. Tobacco production may be classified as a luxury to some people, but to others it is a necessary product especially if it serves to attain psychological satisfaction (Karl Marx 1953). Milk and sugar are classified as mass goods when we know very well that they may differ between economic classes. In the ensuing study, tobacco, cotton, tea and sugar are treated as export products in relation to the region. With modification for attaining clarity, this method has been utilised.

Rodgers (1985)

Rodgers (1985) explains that in a mixed economy where the state is a partial owner in industrial undertaking, its industrial objectives can be broadened for purposes of regional development. For instance, the Italian government's attempts to develop its Southern part which was considered as depressed was met with failures and successes. This area, the Mezzogiorno, covered 41% of the national area and had 38% of the national population. A public body, Cassa Per Il Mezzogiorno was set up to administer use of state resources for the development of southern Italy. At the time income per capita was below 50% in relation to the developed north. There was agricultural predominance, low industrial and agricultural productivity, few educational facilities and shortage of occupational skills. High birth rates, high unemployment levels and persistently high levels of emigration. The main causes of relatively slow progress were: a) the unfavourable natural conditions of poor soils, adverse climate, water shortage, scarcity of mineral resources and geographic remoteness from the rich north. b) proximity of the northern region to the countries of earlier industrial revolution which attracted attention and therefore enjoyed a favourable stimulus to industrialisation where many cumulative effects resulted than the south, and c) there was an inadequate link between northern and southern Italy. The link that existed only benefited the north at the expense of the south through the extraction of human, agricultural and mineral resources without ploughing back the proceeds.

Despite the government's efforts, the *Cassa* project did not achieve much. For, per capita income in 1951 of 59.5% increased less than 2 points to 61.2% in 1965. The economic structure

was only slightly modified. Industry changed from 28.35% to 33.1%. Agriculture improved persistently and vigorously from 33.6% of national production to 36.9% in 1965. The inability to support agriculture led to severe development problems. Agricultural improvement aimed at increasing productivity rather than retaining the existing population on the land — hence it sought to alleviate over-dependence on the northern industries whose surplus was to meet costs of food imports. It also aimed at freeing personnel for the non-agricultural sectors. In terms of employment, the region showed improvements between 1952 and 1965. In 1952 unemployment was 820,000 declining to 279,000 by 1965.(Istituto Centrale di Statistica, Indagini Campionarie sulle Forze di Lavoro. 1965).

In the short run the Cassa project failed in the following ways: a) there was lack of rationality in the geographical distribution of investment made and approved. There was an increased pre-occupation with the absorption of the unemployed as wide as possible leading to excessive dispersal of investment that led to achievement of only uncertain results. b) the distribution of investment rarely took account of the economic principles governing the location of industries. In the study area, effort should concentrate on areas possessing the essential requirements of a rational location of production. c) the response of private enterprises to the stimuli of favourable fiscal and credit conditions had not been as great as expected because of insufficient volume of infrastructure. d) it was noted that an inadequate number of individuals and entrepreneurs with necessary ability to plan satisfactory industrial investment projects existed. For instance, of the 6,717 applicants who wanted to invest in the Mezzogiorno, only 4,669 were accepted worthy 1,697 million Lire out of 2,493 million Lire, and: e) funds inflow from the rest of the country promoted by the state financed investments were of abnormal character.

In a buoyant economy, expansion provides the opportunity for painless growth in new regions such as that pursued in the Mezzogiorno region of Italy. When the manufacturing companies were required to make 40% of all their investments in the Mezzogiorno region and 60% of all new industries, positive changes occurred in both investment and employment. By 1970 the percentage investment had risen to 70% from 20% in 1959, while employment had risen from 20,000 in 1953 to 136,000 in 1978 (Rodgers 1985).

Though the Mezzogiorno project failed in the short-run, it did bear fruit in the long-run. This depicts a good regional development programme that can be adopted in any underdeveloped region but with relevant changes to suit each locality. With meaningful modification and

government influence a) investments are geographically distributed as to achieve equitable development; b) such investments are guided by principles of industrial location and location of economic activities; c) improvement of infrastructure as a means of stimulating positive response from private entrepreneurs, and; d) planned training of entrepreneurs who effectively and efficiently combine the production resources in the study area for regional development. In well developed regions diseconomies are instituted to redirect development to less prosperous regions. If development is localised in a few places such as the Italian iron and steel plant at Taranto, much growth is expected. In order to achieve good results this is done in development points, development centres, potential development points and (or) service centres or, be an expansion of the existing firm — whose goods if sold at a lower price in other regions of the same country or abroad does not result in polarisation of the space economy. Through proper planning, public and technical action, procedures appropriate to specific projects are injected into the provincial economy as shown by Ogendo's Centrifugal model. The investment needed is geared towards improving general environmental conditions, increase income and agricultural productivity in a manner that transforms the whole production system. But, in the exercise of such a policy care is taken, because, growth may simply not occur anywhere as it happened in Britain in the 1940s (Manners, 1980).

1.3 JUSTIFICATION OF THE STUDY

Bryce (1965) noted that the government must play a key role if the country has to achieve comprehensive industrial development to any meaningful extent. In Kenya for instance, industrial entrepreneurship is done both by the government and the private sector. While, in most capitalist nations management is left to private businesspersons.

Considering the study area, there are several industries involved in manufacturing but have not been able to induce or support development. This is therefore a unique study dwelling on *dii* and *dsi* type of industries — those that have the great potential of inducing regional development with less spatial bias. Though there have been previous attempts at studying industries such as these, the focus has been mainly on one or two of them. Obiero (1980) examines the effect of the sugar industry on regional growth but only concentrates on Mumias sugar company and a few other sugar factories in Nyanza Province. She leaves out an inquiry into the effect of other

industries that are non agro-based. This study evaluates a cross-section of industries centring on all the industries; agro-based food processing, agro-based non food processing, non agro-based manufacturing and service industries. Emphasis is given to the ensuing temporal and spatial inequalities in development and resource transfer. Concerning industrial location factors, Ogendo (1972), Nixon (1973) and Obiero (1980), study them as they affect site and situation, but not regional industrial planning and equitable development. Moreover, their studies are based on large geographical regions. These differences have necessitated this study which focuses on a single macro-economic region

Wegulo (1984) cites Muhoroni and Chemelil sugar factories as exhibiting exploitative tendencies towards their labour force and resource frontiers. This study considers similar industrial behaviour based on the fact that ten years is a good enough time for industrial changes to have occurred. The spatial limit of the study is Western Province where a range of industries are examined as opposed to Wegulo's (1984) Nyanza based study. Awuor (1979) notes the parasitic rather than symbiotic relationship of Kicomi on its resource hinterland in terms of market dominance and resource extraction. The industry depicts a relationship with its surrounding that fails to induce the required development. Awuor's study is only based on a single industry in a two region economy and the findings cannot be conclusively taken to hold for all industries. Consequently, this study which looks at various industries in a whole Province is prompted. Other researchers in areas related to this study include; Kabagambe (1975) who studies the informal sector and its development inducing role on peri-urban section of Kisumu; Obara (1976), studies the ecological factors affecting sugar growing in the sugar belt, and Odada (1979), the economic appraisal of sugar growing industry in the lake Victoria basin. All these studies do not touch on planning for development inducing and supporting industries. Such points of departure necessitates a distinct study that examines aspects of industrial planning.

In the USA, Fantus (1972) examines the significance of industries in the growth of the Appalachians. While the Appalachians may have similar physical characteristics as those of Western Province, its socio-cultural, economic and political settings are different. Such differences are translated in differing approaches to regional industrial development. This implies that a separate regional study is relevant hence this one.

Finally, this study is crucial for the resource endowed Western Province as a means of acquiring the desired industrial and regional development. As a single administrative unit and

macro-economic development region, the study area is a suitable development planning unit and thus a logical area for investigations of industrial development and regional growth.

It is for this unique and distinct inferences that the study is justified.

1.4 OBJECTIVE(S), THEIR SCOPE(S) AND LIMIT(S)

1.4.1 Objective(s) and their Scope(s)

For a study of this kind and magnitude an objective is crucial to ensure that the study is properly guided and its goals remain focused. The main objective of the study is to evaluate the influence of the central government, regional industrial structure and industrial resource transfer on regional industrial development planning. The study is confined within the boundary of the main objective varying only as far as the specific objectives allow.

The specific objectives for the study are;

- 1).To investigate the role of government influence on regional industrial location in Western Province

In order to achieve this objective, a number of factors affecting industrial location along with government influence are assessed. The aim is to show the extent to which the government has influenced regional industrial location. The main variables affecting industrial location are categorised as; economic variable, physical and socio-political variables. The level of government influence is identified and analysed using the statistical method — Factor Analysis.

- 2).To examine and evaluate the industrial structure of the development inducing industries (*dii*) and development supporting industries (*dsi*) in Western Province. This objective has two ends to realise;

- i) It assesses the nature of products mainly manufactured in the Province and their corresponding raw material sources. Aspects of structure such as nature of raw material utilised and their sources are analysed.
- ii) Investigates the benefits that are gained by a region from the location of *dii* and *dsi* at a given point. Injections into the region are considered and the emanating exchange of goods and services between owners of resources and buyers is evaluated. Gains by suppliers of

raw material to the industries is appraised with an aim of establishing the effect of the industry on its hinterland.

1.4.2 Internal Limits

These are relevant aspects of the objectives which cannot be covered by this study due to various hindrances. They are;

- a) Some otherwise important factors affecting industrial location have not been explained in detail for they are not part of the main objective of this study. For instance, political affiliation and physical factors. Quantification of some of them is likely to deviate the intended aims of the study.
- b) Though choice and implementation of industrial projects is related to government influence, it has been ignored since it keeps shifting with the government in power. This may not give a clear position of the power of the government in implementing industrial projects.
- c) There are many aspects of industrial structure that are bound to affect *dii* and *dsi* planning. One of such is inter-industrial linkages which is only mentioned but not analysed.
- d) As an index of measurement, value added has been excluded due to the insufficient data availed by industrialists.

1.4.3 External Limits

The external limits include aspects closely related to the study, but, irrelevant to the study objectives. These are:

- a) The investigation into government laws on minimum wages, hours of work, effect of insurance, safety and health requirements as they affect industrial development planning, though closely linked to government policies, have been left out.
- b) The study disregards the search into the effects of bureaucracy, provision of research information and corruption on industrial development.
- c) Labour — capital ratios, processing costs, administrative costs, interests on capital, rent, royalties, taxes and costs of service, are all related to industrial structure and hence industrial development. However, they have not been considered.

d) There are many factors that affect regional industrial development. Such factors as; mineral endowment, prevalence of skilled labour, people's culture and the drive towards improvement of the quality of life. Nonetheless, this study overlooked them for purposes of refinement.

1.5 HYPOTHESES

To achieve the said objectives of the study, a number of related hypotheses have been formulated as below:

Given that Kenya is a mixed economy, industrial location decisions are expected to be borne by both public and private investors, government influence is expected to be minimal. As such, it is hypothesised that;

H_0 : The Kenyan government has had insignificant influence on regional location and patterning of industries in Western Province.

H_1 : The government has significantly influenced regional location and patterning of industries in Western Province.

It is noted that, the underlying structure of industries, gives a clear picture of the type of raw materials utilised, nature of goods produced and the kind of market(s) served. The origin of raw materials is important for regional development as its exchange earns income to the supply region. To this effect it is hypothesised that:

H_0 : The structure of development inducing and development supporting industries has not been responsible for inequitable regional development in the Province.

H_1 : Inequitable development in Western Province is due to the prevailing structure of development inducing and development supporting industries.

Finally, the scale of production of goods is directly proportional to the extraction of resources that go into its production. The nature of goods manufactured and their end users has a reference on whether continued production is ideal for the growth of a region or not. In Western Province the kind of production that may be relevant is one that creates employment opportunities and encourages production of export and intermediate producer goods for crucial development.

H_0 : The imbalances in regional production of goods and services has not led to biased resource extraction by development inducing industries and development supporting industries.

H₁: The biased nature of resource extraction and transfer by development inducing industries and development supporting industries is as a result of imbalanced sectoral production by industries in Western Province.

The assertion of the truth or falsity of the above three hypotheses is done by the use of various statistical techniques discussed in chapter three. While, the explanation of how the tested hypotheses affect regional development and hence necessitated industrial development planning of this kind is discussed in chapters four, five and six.

1.6 OPERATIONAL DEFINITIONS, CONCEPTS AND THE CONCEPTUAL MODEL

Introduction:

This section shows the various definitions and concepts of industrial location and regional development that are used in the study. It focuses on operational definitions and concepts.

1.6.1 Operational Definitions

In this study, some terms are defined for purposes of avoiding confusion in their usage which may differ from their daily application.

"**Manufacturing**" is taken to mean the process of converting raw materials into more useful forms. While, the process of transforming the raw materials into more readily usable product(s) is termed as "**manufacturing process**". The initial stage in the manufacturing process is called "primary processing", while, the latter stage is referred to as "secondary processing" or "**fabrication**".

A "**factory**" is defined as the establishment in which the process of manufacturing takes place. This is distinct from a "**plant**" which refers to the actual machines specialising in the manufacture of a specific product. In a factory there could be several plants. A factory may also be located in a uniform geographical "**region**". This study considers a region as "a large geographical area in which conditions of relief, temperature, rainfall, natural and cultivated vegetation and consequently human activities are uniform (Hodgkinson and Preece 1963) such as Western Province.

"Decentralisation" is seen as the process of dispersing economic activities especially industries, from urban centres to rural areas for purposes of achieving a rural-urban development balance.

1.6.2 Operational Concepts

Defined here are operational concepts used in the field of industrial studies, regional development and in the current study.

"Industrial operative" is the functional labour directly employed in manufacturing operations. Industrial operatives can be; skilled; in which case they possess sufficient knowledge about their specific jobs, Semi-skilled; if they are not fully qualified but have some knowledge about specific operations, and unskilled; if they lack any knowledge in operation of the machines. Industrial operative, is an important index in industrial geographical research and gives insight on the location, structure and industrial development planning.

"Development inducing industries" (Dii), which is the subject of this study, refers to both urban and rural located industries possessing the ability to plough back their proceeds into rural areas. Coffee is one of such industries. While, **"development supporting industries" (Dsi)** are those that assist in raw material acquisition and transportation of industrial products. Such industries earn income to their entrepreneurs and also sustain regional development. Ogendo (1989), further subdivides development inducing industries in terms of the degree of their development inducement and (or) support especially as they favourably affect the rural areas in their economic pursuits. Table 1.1 shows industrial structure of Kenya's industries (see appendix 1.2 for key to sequential symbols).

When *dii* and *dsi* located at a place, say a **"growth centre"** (i.e. a nucleus of sustained growth), their growth impulses are transmitted to other surrounding regions. Mirza (1965), Semple *et al.* (1972), Fox (1966) and Friedmann (1966) have noted this effect. Western Province has a series of growth centres that are expected to induce development. It is the growth impulses that initiate development.

"Development" is regarded as the process of improving the quality of human lives. It involves the raising of living levels of a people through increased incomes and consumption levels, growth of a people's self-esteem and increased freedom of choice. The required form of

DEVELOPMENT POTENTIAL LEVEL	4 DIGIT LS.I.C	INDUSTRIAL DEVELOPMENT SECTOR	SEQUENTIAL SYMBOLS(structure) (location, activity, potential)
HIGH POTENTIAL	AGRICULTURAL PROCESSING		
H	3112	Dairy Products Processing	esmo, lsumo, dii, hp, sr
H	3116 (A)	Coffee Processing	esmo, lsumo, dii, hp, lr
H	3118	Sugar Processing	rmo, dii, hp, sr
H	3121	Tea Processing	rmo, dii, hp, sr
H	3211	Textile Processing	umo, dii, hp, lr
NON AGRICULTURAL MANUFACTURING			
H	3511	Basic Non Vegetable Industrial Chemical Processing including Fertilisers & Pesticides	rmo/umo, urcent, dsi
H	5314	Miscellaneous Non Vegetable Chemical Products Processing	rmo/umo, urcent, dsi
H	3551	Rubber Products Manufacture	umo, urcent, dsi, dc
H	3691	Clay & Concrete Products Manufacture	esmo, esumo, dii, hp, lr
H	3843	Motor Vehicle Assembly	umo, ucent/dsi, dc
H	4101 (B)	Electric Generation & Supply	rmo/umo, urcent / dsi, sr, dc
H	4101 (C)	Water Processing & Supply	rmo, rcent/dsi, sr, dc
SERVICES			
H	3844 (B)	Railway Services & Motor Vehicle Repair	umo, urcent/dsi, dc
MEDIUM POTENTIAL	AGRICULTURAL MANUFACTURING		
M	3111	Meat Products Processing	esrmo, esumo, dii, hp, lr
M	3113, 3134	Fruit & Vegetable Canning & Soft drink Processing	esrmo, esumo, dii, mp, sr
M	3116 (B)	Grain Milling	umo, dii, mp, lr
M	3140	Tobacco Manufacture	esrmo, esumo, dii, mp, lr
M	3523	Miscellaneous Vegetable Chemical Products Processing Mainly Pyrethrum	esrmo, esumo, dii, lr
M	3213	Fibre Processing	esrmo, esumo, dii, lr
M	3411	Pulp, Paper, Paper Products Manufacture	esrmo, esumo, dii, mp, lr
SERVICES			
M	3420	Printing & Publishing	umo, ucent, dc, mp
M	3811	Electrical Machinery Manufacturing & Repair	umo, urcent / dsi, mp, dc
M	3812	Non-Electrical Machinery Manufacture & Repair (Mainly Maintenance)	umo, urcent / dsi, mp, dc
M	3814	*Board, Steamer & Ship Manufacturing & Repair	umo, urcent / dsi, mp, dc
M	3819	Metal Product Manufacture	ucent, dsi, mp, dc
LOW POTENTIAL	AGRICULTURAL MANUFACTURING		
L	3118	Miscellaneous Food Processing	umo, dii, lp, dc
L	3117	Bakery Products Processing	umo, dii, lp, dc
L	3119	Chocolates & Sugar Confectionery Processing	umo, dii, lp, dc
L	3131	Brewing & Blending of Alcoholic Beverages	umo, dii, lp, lr
L	3220	Clothing Manufacture	umo, dii, lp, dc
L	3231	Tanning Extract, Leather Tanning & Manufacture of Non-Footwear Leather Goods	umo, dii, lp, sr
L	3240	Footwear Manufacture & Repair	umo, dii, lp, dc
L	3311	Saw Milling	esrmo, lsumo, dii, lp, sr
L	3319	Miscellaneous Wood Products	esrmo, lsumo, dii, lp, lr
L	3320	Furniture & Fixture Manufacture	umo, dii, lp, dc
L	3523	Soap, Vegetable, Animal Oils & Fats and Cosmetic Manufacture	esrmo, lsumo, dii, lr

Table 1.1 Industrial Structure of Selected Industries in Kenya

Source: Ogendo, R. B (1989)

development advocated here is called "**Eco-development**", which, is one that perpetuates and sustains itself. It is based on the conserved utilisation of all the resources over which the nation has full control.

"**Economic growth**" and "**Economic development**" are regarded as different concepts in the present study. "Growth" and "Development" are also two different things though so related but it is difficult to imagine development without growth. Growth of an industry is taken to imply the acquisition of larger measurable variables such as output, employment and capital investment. An industry that is developing is one which perfects new and more advanced forms of organisation and technical efficiency in relation to the changing economic environment of new markets, sophisticated tastes and new supply sources. Ogendo (1980) notes that in industry, 'development' means progressive change in methods of production culminating in many new better or more superior products. 'Growth' is the quantitative rather than the qualitative increase in the output of industrial products resulting in higher financial returns leading to greater capital 'plough back' and rapid industrial expansion.

"**Industrial Development Planning**" is a political symbol of the governments commitment to economic and social progress through industrial production and general strategy for modelling the industrial sector and its related institutions — a basis for industrial investment decisions and a standard against which results are measured. The process seeks to mobilise resources with the intention of achieving production based on the prevailing economic factors and initiation of spread effects to a substantial part of the economy.

"**Industrial Development Policy**" is an industrial programme of action set up by the people or their elected or appointed representatives in pursuit of industrial development that achieves both economic and social objectives. Programmes vary in their spatial scale, measures taken and strategy adopted. Industrial development policy transgresses interdisciplinary boundaries and is more than an industrial location programme. It involves transformation of the regional industrial structure. Sometimes, a policy of this kind can be both a cause and a consequence. As an independent variable, industrial development policy and a real planning strategy may greatly affect the spatial arrangement of industrial activity by modifying the economic conditions under which choice of industries is located. But in return, locational characteristics affect industrial development policy, imposing constraints. Most public policies are

an intervention in response to the consequences of a particular course of industrial development and leads to measures designed to influence the future structure and location of industrial activities.

"**Polarisation**" is defined as a process of localising economic activities and especially industries at one place or region. The concentration of industries at a single place indiscriminately exploits resources and destroys the environment. Polarisation is therefore detrimental and hinders equitable development (i.e. the development of a region based on its own resources). The study area has abundant resources for equitable development.

In analysing resource development, it is recognised that regions are not isolated entities but are interrelated. Transmission of economic fluctuations in adjacent regions are bound to be felt in the region of interest. In the assessment of such cyclical regional behaviour, a method of analysis called the "**regional multiplier**" is used. The method stresses the interrelation of sectors within a regional economy in terms of the spread of impulses originating in any one sector to all other sectors directly or indirectly. Such spreading has a multiplier effect — which is an index showing the actual impact of an industry or sector on its region or other sectors. The multiplier effect could have positive, negative, expansionary and (or) even deflationary impulses. A low multiplier means the industry is not playing an important role of inducing development in a region, while, a higher multiplier means increased regional income through the industry.

As a concept, "**Resource**" presupposes that a planning agent is appraising the usefulness of his environment for purposes of obtaining certain end(s). For an element to be a resource two preconditions must be made. First, there must exist knowledge and technical skills to allow its extraction and utilisation. Secondly, there must be a demand for the material or services produced. If either of these conditions are not satisfied, then the physical substance remain 'neutral stuff' (Zimmerman 1951). Human ability and need create resource value, not mere physical presence. Resources are dynamic with known and fixed limits. Regional industrial resources are those known physical and non-physical elements used in the production of goods and services. These are affected by the structure of industries. Regions in which resources are found and extracted are termed as 'resource hinterlands'. Most raw material orientated industries are located within their resource hinterlands'. Rees (1990) classifies resources as shown in fig 1.7.

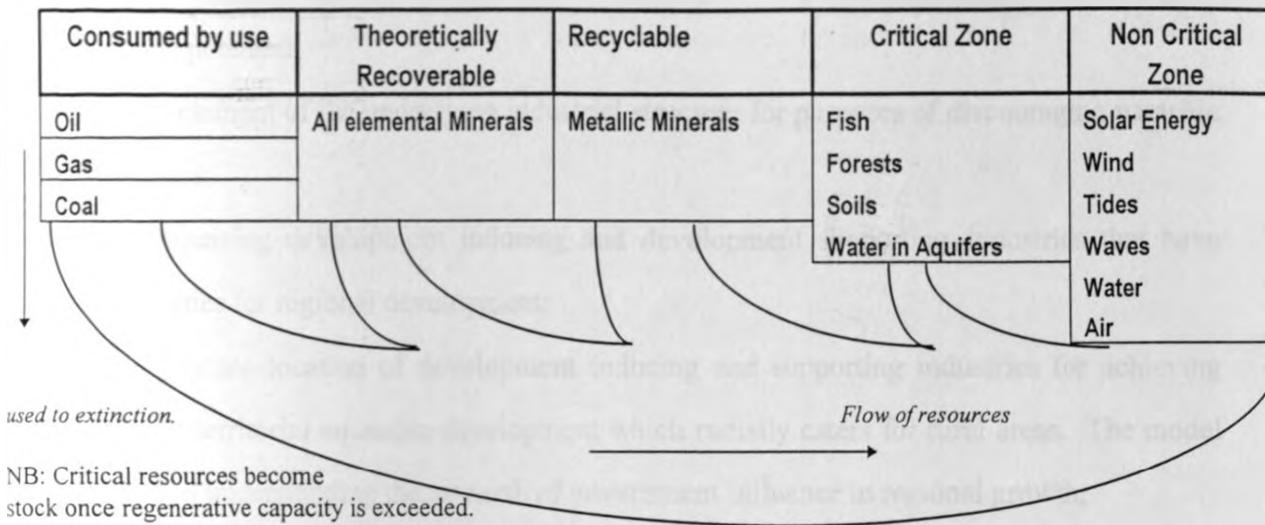


Figure 1.7 Resource Classification

Source: Rees, J (1990)

1.6.2 Conceptual Model (The Centrifugal Model (1989))

The normative “centrifugal” development model was formulated in an attempting to solve the problems of regional development, Ogendo (1989). The aim of the model is to facilitate rural development through repatriation of funds to rural areas considered as resource hinterlands. It seeks to prevent regional leakage of funds through a semi-closed and temporary selective system in the early stages of regional development. The purpose is to prevent the infant firms from cut-throat external competition. The model emphasises rural development as a necessary condition for achieving national development. It therefore aims at equitable distribution of national property, grass-root development planning, participation, implementation and achieving an economic system that is self-generating and based on indigenous knowledge. The approach stresses agricultural production as opposed to accented urban industrial development.

According to Ogendo (1989), in order to achieve rural development and industrialisation, the following goals have to be pursued;

- (i) the use of all known resource bases in each Kenyan district while eliminating identified negative variables to development. Ogendo (1989) quantifies all the known variables for each Kenyan district. For instance the Kakamega macro-econo-geographic region consisting of Kakamega (Vihiga, Kakamega, Malava-Lugari), Bungoma (Bungoma and Mt.

- Elgon) and Busia (Busia and Teso) microregions has a score of 317,194 (10.37%) of the total Kenyan potential;
- (ii) the assessment of the underlying industrial structure for purposes of discouraging parasitic industries;
 - (iii) de-polarising development inducing and development supporting industries that have capabilities for regional development;
 - (iv) a deliberate location of development inducing and supporting industries for achieving national territorial equitable development which radially caters for rural areas. The model assists in understanding the strength of government influence in regional growth;
 - (v) the transformation of urban centres into development points (DP), potential development points (PDPs) and service centres (SCs). Such centres are capable of improving their hinterlands by exerting centrifugal development influence through diversified industries; Parasitic industries are reconverted to centrifugal metropolization entropic tendencies that redirect development to rural areas.
 - (vi) full development of infrastructure;
 - (vii) discouraging of leakage of development funds from any district or macro-economic development planning region;
 - (viii) appraising zoned geographical regions as the best criteria for equitable development;
 - (ix) identification of all the development aspects which have affinity and can share certain development benefits. Kakamega (Kakamega, Vihiga and Malava-Lugari) is the trigger district (thus a district which is expected to play a leading role in initiating regional industrial and economic development) for Bungoma (Bungoma, Mt. Elgon) and Busia (Busia, Teso).
 - (x) short term investment of idle capital in profitable large economic enterprises in neighbouring macro-economic regions;
 - (xi) use of benefits from economies of large scale industry, external economies and urbanisation economies;
 - (xii) establishment of "controlled" "cumulative causation" type of development inducing and development supporting industries with strong forward and backward linkages especially in agro-based industry;
 - (xiii) initiate a new industrial strategy;

- (xiv) examination of the polarised space economy and offer rehabilitation measures and,
- (xv) using the existing urban centres for the development of rural areas.

In this study the centrifugal model is important in the development of the industries in question through changing the industrial structure and hence the parasitic nature of the industries. The study of categorised industries renders the model crucial for planning. The model considers industrial development as an effective tool of regional development and suggests the deliberate location of development inducing and development supporting industries as a mechanism of acquiring equitable radial development. Government involvement in rural industrialisation and regional development is very significant for procuring a rural-urban balance and regional development. This process secures a uniform and diversified activity radii of development inducing and supporting industries. With modifications and flowcharting, the model is employed in this study as a basis for effective regional industrial development.

Ogendo's (1989) model however fails to give a clear picture of how the development points and centres can transform their hinterlands. Besides, such forces that transcend their boundaries may not necessarily contribute to regional development. The model is unclear on how funds can be ploughed back as the modalities are rather vague. In quantifying each district's known development resources, the criterion is rather unfamiliar. It is uncertain whether population, rainfall, agricultural production or levels of education are used as measuring indices. Moreover it is unknown whether the indices used are reliable or even relevant. For example, Kakamega has a higher score than Bungoma, but on what basis? The numerical attachment to regional potentialities and the subtraction of negative variables that hinder development renders the method suspect. Nevertheless these scores indicate where development should begin in the absence of any other meaningful variable(s). The centrifugal model is summarised in figure 1.8.

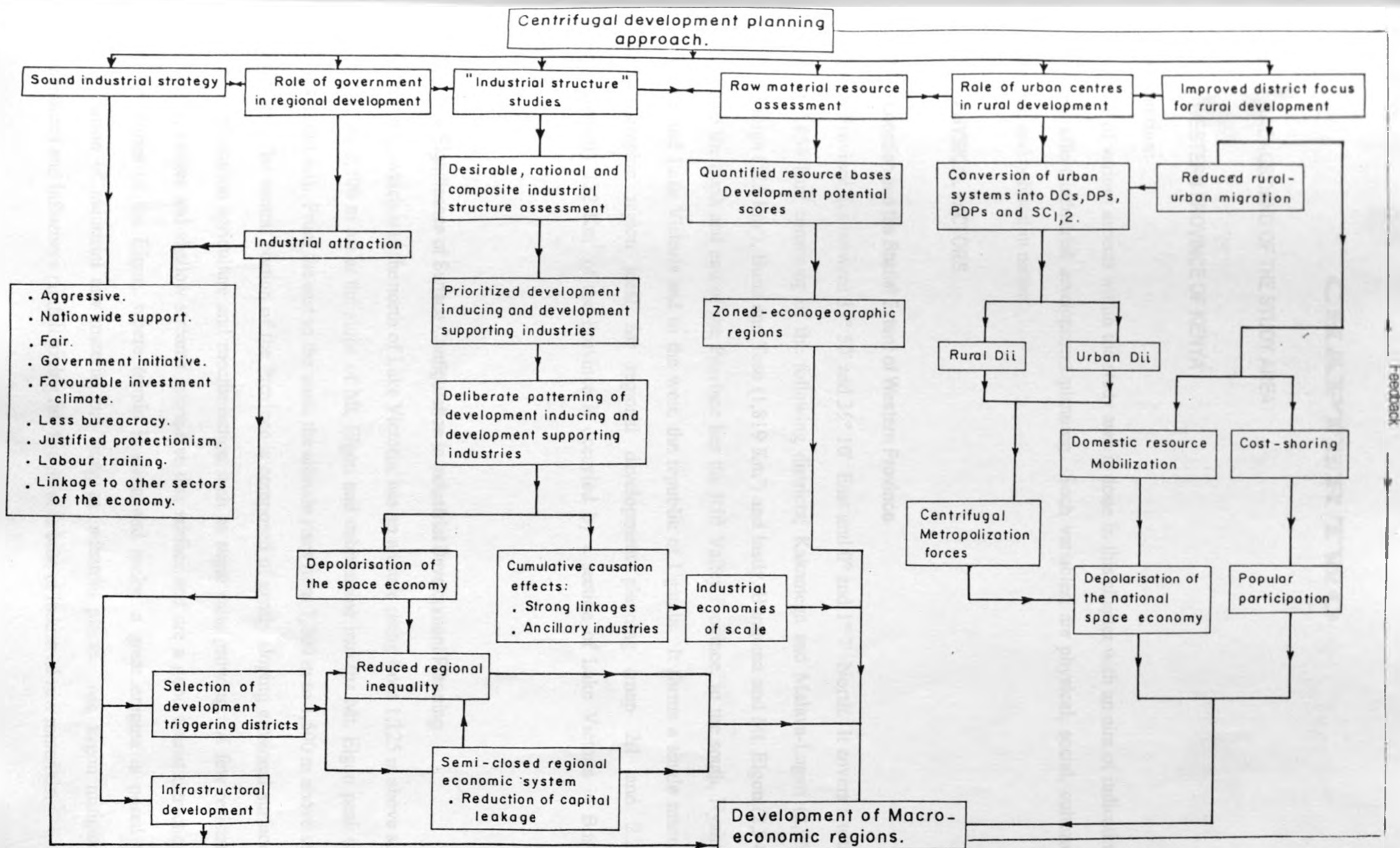


Fig. 1.8: The Use of the Centrifugal Model in Regional Industrial Development Planning.

Source: Modified From Ogendo (1989).

CHAPTER TWO

2.0 BACKGROUND OF THE STUDY AREA

2.1 WESTERN PROVINCE OF KENYA

Introduction:

A review of various aspects within the study area is done in this chapter with an aim of indicating how they affect industrial development planning. Such variables, are physical, social, cultural, economic and political in nature.

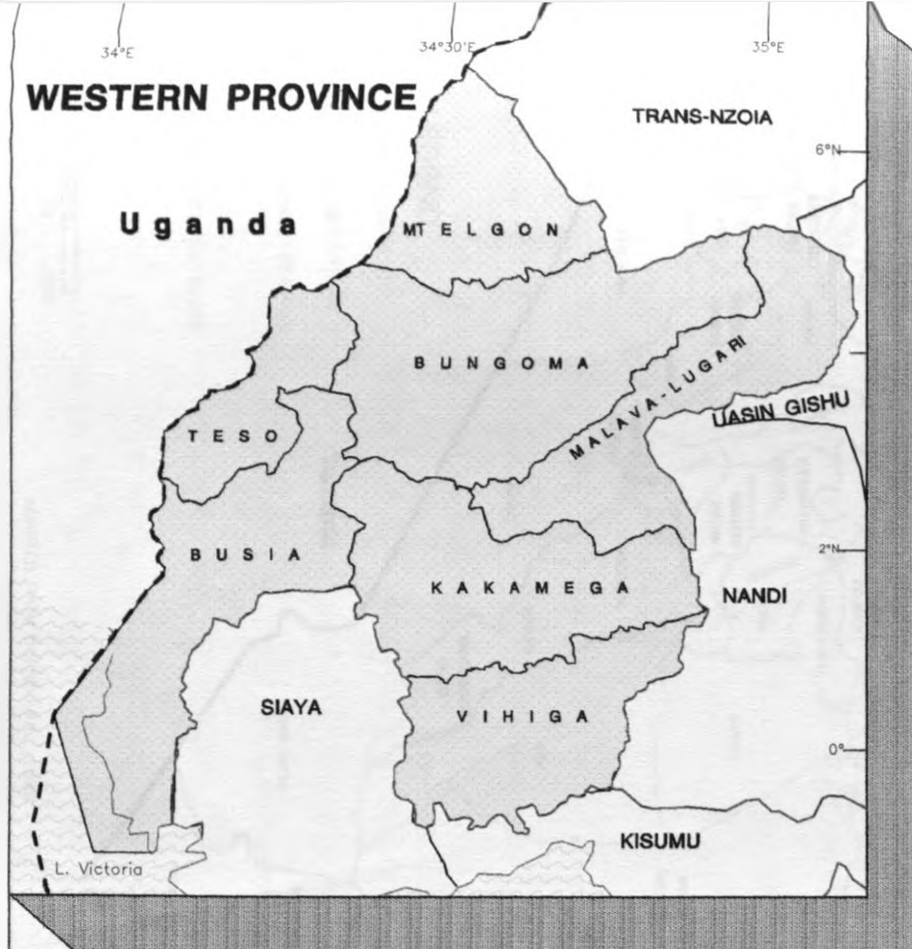
2.2 PHYSICAL FACTORS

2.2.1 Location and the Spatial Extent of Western Province

Western Province lies between 33° 50' and 35° 10' East and 0° and 1° 7' North. It covers a total area of 7,854 Km² consisting of the following districts; Kakamega and Malava-Lugari (2,963 Km²), Vihiga (523 Km²), Busia and Teso (1,819 Km²) and lastly, Bungoma and Mt. Elgon (2,549 Km²). To the north and east of the Province lies the Rift Valley Province, to the south, Nyanza Province and Lake Victoria and to the west, the republic of Uganda. It forms a single macro-econogeographic region ideal for regional development planning (map 2.1 and 2.2). Approximately 132 Km² of the Province is occupied by a section of Lake Victoria in Busia district.

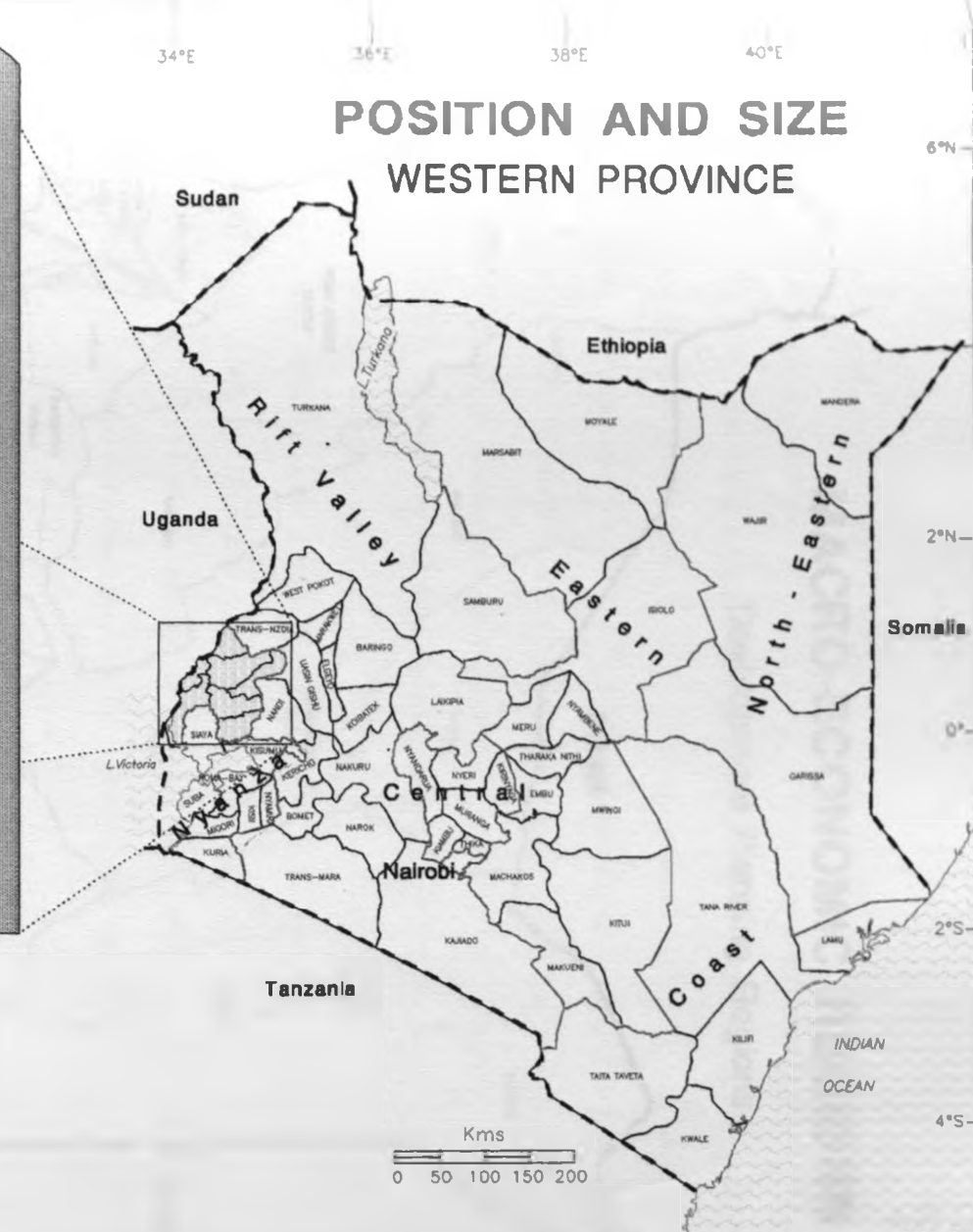
2.2.2 The Significance of Surface Configuration in Industrial Development Planning

The Province, which is to the north of Lake Victoria, has an altitude rising from 1,125 m above sea level (asl) to 2,500 m asl at the slope of Mt. Elgon and culminating into the Mt. Elgon peak (at about 4,320m asl). From the east to the west, the altitude rises from 1,200 m to 1,500 m above sea level (asl). The central portion of the Province is composed of gently sloping erosional surfaces ideal for plantation agriculture and mechanisation such as sugar cane growing. A few resistant inselbergs, ranges and shallow streams intersperse this surface and are a good tourist attraction. On the slopes of the Elgon, where terrain is steep and rocky, a great enigma is posed to transportation of industrial raw material and siting of industrial plants. Mt. Elgon mitigates temperatures and influences rainfall giving rise to a diverse base of industrial raw materials.



LEGEND

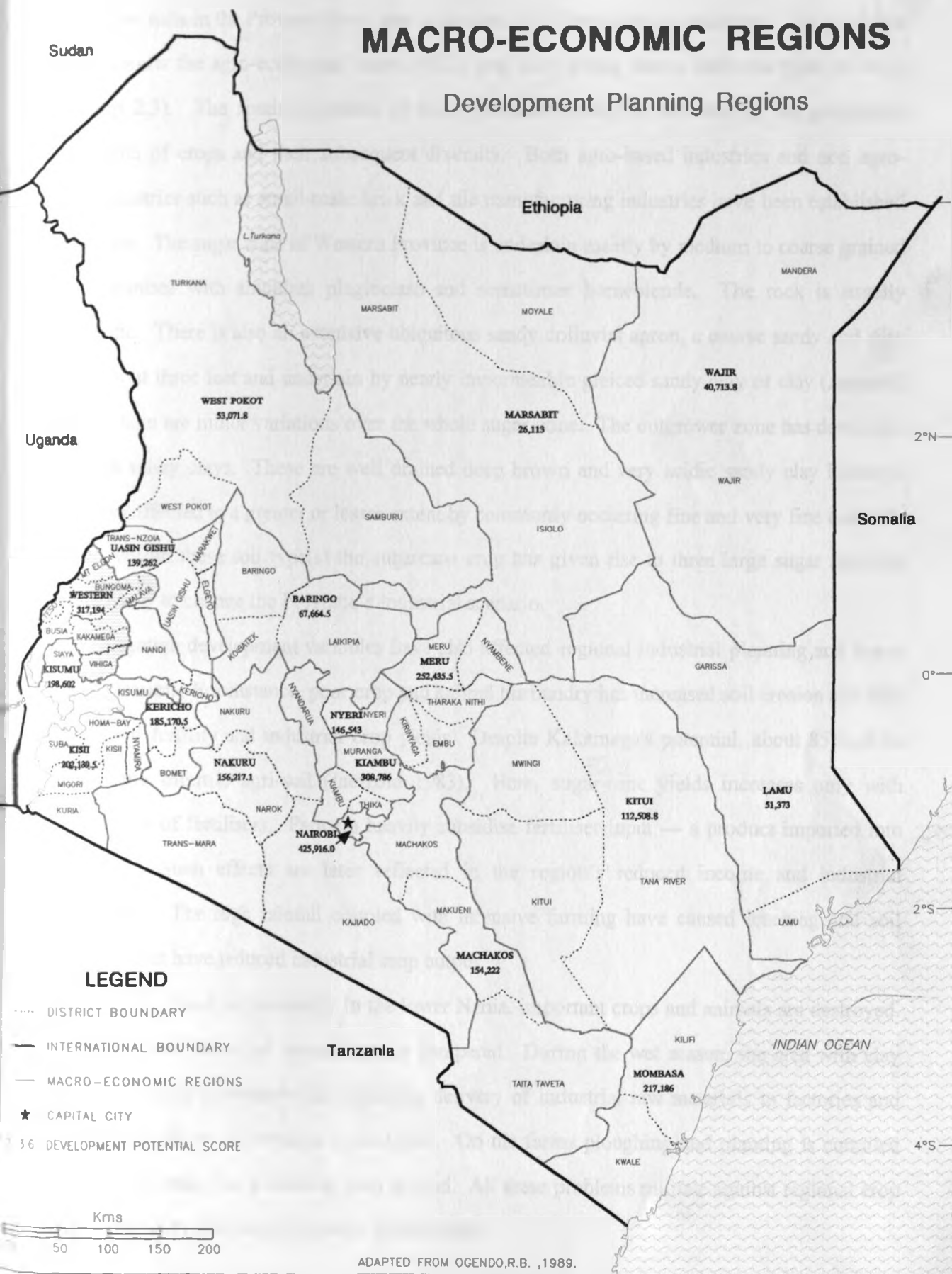
- STUDY AREA
- DISTRICT BOUNDARY
- INTERNATIONAL BOUNDARY
- PROVINCIAL BOUNDARY



ADOPTED FROM DISTRICT DEVELOPMENT PLANS, 1994-1996.

Map:2.1

Development Planning Regions



ADAPTED FROM OGENDO, R.B. , 1989.

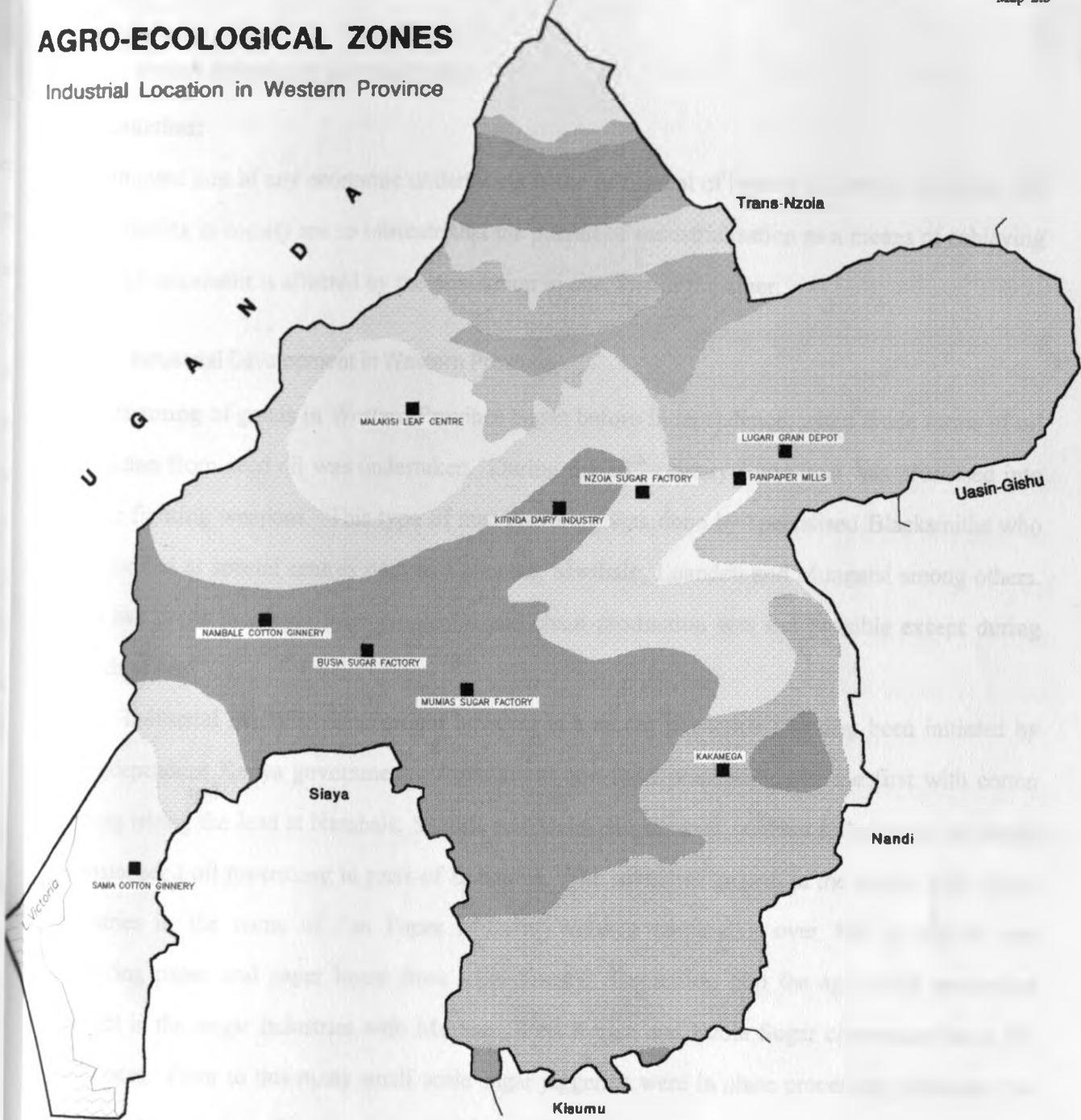
The soils in the Province have been moderated by climatological conditions. The soil types tend to follow the agro-ecological zones (AEZ), and vary giving rise to different types of crops (see map 2.3). The spatial variation of soil types and fertility is reflected in the geographic distribution of crops and their subsequent diversity. Both agro-based industries and non agro-based industries such as small-scale brick and tile manufacturing industries have been established in the zone. The sugar zone of Western Province is underlain mainly by medium to coarse grained biotite granites with abundant plagioclase and sometimes hornblende. The rock is usually porphyritic. There is also an extensive ubiquitous sandy colluvial apron, a coarse sandy and silty soil to about three feet and underlain by nearly impermeable gleiced sandy clay or clay (Jaetzold, 1983). There are minor variations over the whole sugar zone. The outgrower zone has deep light clays and sandy clays. These are well drained deep brown and very acidic sandy clay loams to light clays affected to a greater or lesser extent by commonly occurring fine and very fine quartzitic gravel. Within these soil type(s) the sugarcane crop has given rise to three large sugar factories that are likely to change the Province's industrial scenario.

Negative development variables have also affected regional industrial planning and hence industrialisation. For instance, poor crop and animal husbandry has increased soil erosion and thus affected soil fertility and industrial crop yields. Despite Kakamega's potential, about 85% of its soils are the infertile agri-soil (Jaetzold 1983). Here, sugar-cane yields increases only with increased use of fertilisers. Farmers heavily subsidise fertiliser input — a product imported into the region. Such effects are later reflected in the region's reduced income and industrial development. The high rainfall coupled with intensive farming have caused leaching and soil exhaustion that have reduced industrial crop output.

During flooding, especially in the lower Nzoia, important crops and animals are destroyed. In swampy areas industrial construction is hampered. During the wet season, the area with clay soils render roads impassable thus delaying delivery of industrial raw materials to factories and finished products to the markets respectively. On the farms ploughing and planting is curtailed during the dry season as a result of hard ground. All these problems militate against regional crop production and by extension industrial development.

AGRO-ECOLOGICAL ZONES

Industrial Location in Western Province



LEGEND

CATTLE & SHEEP ZONE	MOORLAND
COTTON ZONE	SHEEP & DAIRY ZONE
FOREST ZONE	SUGARCANE ZONE
MAIN COFFEE ZONE	SUNFLOWER & MAIZE ZONE
MARGINAL COFFEE ZONE	TEA & COFFEE ZONE
MARGINAL COTTON ZONE	TEA & DAIRY ZONE
MARGINAL SUGARCANE ZONE	WHEAT, MAIZE & PYRETHRUM ZONE

— AGRO-ECOLOGICAL ZONES

■ MAJOR INDUSTRIES



ADAPTED FROM JAETZOLD, G 1983.

2.3. SOCIO-ECONOMIC BACKGROUND

Introduction:

The ultimate aim of any economic undertaking is the fulfilment of human desire(s). However, the social fabrics in society are so intricate that the pursuit of industrialisation as a means of achieving social advancement is affected by the population in one way or the other.

2.3.1 Industrial Development in Western Province

Manufacturing of goods in Western Province began before independence, when crude forms of oil production from seed oil was undertaken. During the 18th century some iron was processed into archaic fighting weapons. This type of manufacturing was done by specialised Blacksmiths who were located at special centres such as Kabuchai, Mwibale, Luandeti and Mungatsi among others. Only two or three people were employed and chain production was not possible except during periods of war.

Industrial manufacturing proper however is a recent phenomena having been initiated by the independent Kenya government. Agricultural non food processing was the first with cotton ginning taking the lead at Nambale, Saamia and Malakisi ginneries. Others followed in the sector of castor seed oil processing in parts of Bungoma. The seventies growth in the sector with bigger industries in the name of Pan Paper Mills at Webuye employing over 500 operatives and producing paper and paper board from local forests. Expansion into the agro-food processing brought in the sugar industries with Mumias, West Kenya and Nzoia Sugar companies being the main ones. Prior to this many small scale sugar jaggeries were in place processing molasses that was mainly used for making local beer brews and feeding animals.

Currently many industries are being established in all the four sectors. There are numerous saw milling, brick making, bakery product manufacturing and fabrications of all kinds of metal products taking place in the study area. Concentration is however on the fast moving consumer goods and service industries. These are mainly found in urban centres. Few industries are located in the rural areas, a factor that complicates regional industrial development. It is hoped that at the turn of the century many manufacturing industries will have been established (Development Plan, 1994)

2.3.3 Agricultural Bases of Industrial Development Planning and Related Land-use Patterns

The agricultural sector provides the required industrial raw materials for agro-based industries among other things. Cash and food crop production are undertaken as much as subsistence is widely practised. The quality of agrico-industrial inputs has not been impressive due to lack of proper farm inputs. Despite these, most of the industrial crops have been on the increase except cotton and pyrethrum. Pyrethrum's decline emanates from collection and marketing problems. The construction of a collection plant in Mt. Elgon district may abate these problems.

Between 1989 — 1994 oil seed production increased. The development of simsim, sunflower, groundnuts and other oil seeds may lead to the construction of an edible oil factory (table 2.1). The credit facilities given to farmers has assisted in increasing output. So far there are numerous small oil-hand-pressers for producing cooking oil. The introduction of mulberry and macadamia nuts is steadily improving the horticultural sector in addition to onions, tomatoes, mangoes, citrus, pawpaws and guavas already grown extensively. The construction of a cold storage plant will tremendously reduce wastage of perishable products and increase "output". Several small-scale coffee factories exist (32 in total) through which farmers earn over KShs 18 million (D.A.O Bungoma and Kakamega 1994). Their location was however not grafted on the known service centres and little regional development has been realised from them. The increase of the Nyayo tea zones to over 400 ha producing more than 1,200 tons of tea in Mt. Elgon district has necessitated the construction of a tea factory. Vihiga and Kakamega district process their tea in Nandi hills despite the existing potential for a tea factory. The ongoing construction of Mudete tea factory in Sabatia division of Vihiga district is likely to attract the Nyanzaian tea developed under the Nyayo tea zones.

Most of the land is privately owned (table 2.2). The number of holdings were 89,392 (4.8 ha/holding) in 1988 in Bungoma. The largest land holdings are found in Tongaren where there are settlement schemes. Other such schemes are in Turbo (Malava-Lugari) and Nambale (Busia).

The traditional system of land tenure has continued to diminish agricultural productivity due to the resulting small and economically unviable plots. Moreover, in congested areas like Vihiga land for industrial expansion is limited.

Major Cash Crop	Land Under Crop (Ha)	Yields Per Year (Tons)
Tea	3,766	5,431,822
Coffee	30,216	144,797
Sugar-cane	30,623	2,280,000
Maize	193,009	451,358
Cotton	24,112	17,238
Tobacco	1,080	1,944
Pyrethrum	130	39
Wheat	397	1,540
Beans	95,281	104,225
Groundnuts	1,961	1,120
Bananas	152	28,084
Avocados	38	7,021
Pawpaws	30	4,682
Tomatoes	100	18,849
French Beans	316	5,435
Kales	430	13,899
Rice	1,086	1,352
Sunflower	2,690	3,827
Forest	400,000	?

Table 2.1: Industrial Crops Production Trends 1994

Source: District Development Plans (Kakamega, Vihiga, Bungoma, Busia) 1994-98.

Type Of Land	Area (Km2)
Forest	327
Government	5
Township	50
Alienated	35
Freehold (Small holder schemes)	451
Small Holders	2,653

Table 2.2: Selected Landuse Pattern - Kakamega and Vihiga Districts combined

Source: Statistical Abstracts CBS, 1986.

2.3.3.1 Sugarcane Production in Western Province

Sugarcane is a single successful large plantation and small scale crop in Western Province. Sugarcane production requires rainfall reliability of over 30 inches (1,500 mm - 2,000 mm mean rainfall) annually . Black cotton soils are crucial for cane production. Fertiliser is applied where soils are infertile especially around Mumias. The gently undulating topography allows for mechanisation especially during land preparation. Though this increases yields, it reduces

employment. Other forms of mechanisation in crop husbandry (mainly weeding), loading and transportation have consequently affected wage employment.

Cane production vary between regions due to climatic and agronomic differences. However, average yields range between 50-70 tonnes per hectare — giving a cane-sugar ratio (CSR) of between 8.5-9.0 tons of cane to 1 ton of sugar. This is low compared with Nyanza's CSR of 10.0-10.5. This ratio has enabled exploitation of sugar as an industrial crop.

Cane production is undertaken by both the central nucleus estates owned by the sugar companies and peripheral outgrower farmers who either operate singly as estates or in co-operatives. Cane production and hence sugar output has steadily increased (Table 2.3).

Sugarcane sustains two industries at the moment (Mumias and Nzoia) and one (Busia) which is to be operational soon. In 1993 Mumias Sugar Company alone produced 52% of the sugar produced in Kenya making it one of the largest producers of sugar in Africa (Mumias Sugar company Report 1993). The factories mill sugar for both regional and national consumption. In Kenya, local sugar production lags behind national demand. However, on a regional scale the Province is a net exporter of sugar. The sugar industry is a single major income earner in the region. Moreover, the industry offers market to sugarcane suppliers and direct and indirect employment opportunities to residents of the Province. About 20 % of the population in the Province is sustained by the sugar industry.

A great deal of advantages arise from the sugar factories. These include provision of education and health services to the employees and the surrounding population. A number of primary, secondary and tertiary institutions are run by the industries. Rural access and feeder roads have been increased and maintained as a means of quickening cane transport to the mills. Sugar end-users include households and industries. Households consume the highest volume of sugar produced locally. Major industrial consumers are beer makers, soft drinks, bakery products, chocolate and sugar confectionery. Marketing of sugar which affects regional development was previously done by the ministry of commerce. With the liberalisation of the agricultural sector, this is now done by respective factories. National sugar consumption is supplemented by imported sugar. Such imports have adversely affected the sugar industry and by extension the regional economy and industrial development. Other bi-products emanate from the sugar industry and are likely to create linked regional industries important to the development of the region. These are: molasses which is directly used as cattle feed or in alcohol and production of spirits . Acetone and

INDUSTRY	PRODUCER	YIELD IN '000' TONS:1990 — 1993			
		1990	1991	1992	1993
MUMIAS	NUCLEUS	3301	3286	3261	3144
	OUTGROWERS	32414	32733	33676	38158
	TOTAL	34715	36019	36937	41302
NZOIA	NUCLEUS	3570	3537	2702	3005
	OUTGROWERS	13470	11457	10711	12052
	TOTAL	17040	14994	13613	15057
BUSIA	?	?	?	?	?
	?	?	?	?	?
ALL	NUCLEUS	12647	12112	12629	12950
	OUTGROWERS	79606	85613	82148	87853
	TOTAL	92253	97725	94777	100803

Table 2.3: Sugarcane Production by Mumias and Nzoia Sugar Zones, 1990 — 1993

Source: Kenya Sugar Authority (1994).

butanol, citric acid, lactic acid for human nutrition, dried yeast and other chemical products can be successfully made. The fibrous waste - bagasse, is used as a major raw material component of insulating and hardboard products for the building industry, corrugated or flat-boards for shipping cartons, roofing tiles, low quality papers such as wrapping paper and newsprint, furfural and other products. However due to political contentions the region does not have any industrial complex based on sugarcane product.

Sugarcane wax recovered from filter mud may be used in making shoewax, carbon paper, floorwax and other wax products. Other fatty acids recovered in filter mud may be used in soap-making. As such sugarcane is a very important industrial crop in the regional industrial development of Western Province.

2.3.3.2 Cotton Production as an Industrial Crop

Cotton is grown as an annual crop in the study area. The plant has the main stem and leaves. Flowers appear at intervals on a fruiting branch. Bolls, which are harvested for lint develop from flowers. In the study area it takes between sixty to seventy days after germination for the first flowers to open. A limit of about 1,219 m asl is the upper altitude. Cotton requires a single rainfall season of between 500mm to 750mm of well distributed rainfall. Maximum yields occur when sowing coincides with the rainfall peak, while seedbed preparation is similar to that of maize (Brown, K. J, et al 1972).

Busia and Teso districts account for the highest cotton output in the study area. Bungoma comes second and Kakamega third. Cotton production increased from 10,000 tones in 1964 to 28,000 tones in 1979. However there has been a sharp decline in production over time necessitating large imports for local textile industries. In the 1987/88 season, cotton production was 2,004,240 Kg resulting in Kshs 9,434,292.70. The main causes of decline in cotton production include;

- i) Use of many varieties of cotton which confuse farmers and lead to low yields.
- ii) Poor seed distribution
- iii) Poor crop husbandry that has exhausted soil fertility.
- iv) Attack by pests and disease and the resulting expensive chemicals needed. Increase in input prices has propagated cotton decline (Ikiara, et al 1993).
- v) Insufficient incentives to farmers have redirected production resources into other areas. Ruigu (1988) notes that returns to labour on cotton are lower than food crops and thus leads to severe constraints on labour supply for cotton production.
- vi) Late payments by the societies and formerly the Cotton Lint and Seed Marketing Board (CLSB) served to discourage production of the crop. The government's pricing policy and especially the 'confiscatory' price policies (producer's prices being set at levels below the world prices have proved to be a major disincentive to producers. This appears in an indirect rather than a direct manner). For a long time export crop producer prices had been set at levels traditionally higher than the neighbouring countries and using world prices as reference points, levies and taxes are deducted from the producer prices or raised directly from the resulting benefits. Low cotton yields hinder the expansion of ginneries and increased employment.

2.3.3.3 Horticultural Production

Horticulture is becoming popular in Vihiga, Mt. Elgon and Bungoma districts. This is due to the high land pressure as a result of increasing population on the one hand and the increasing high returns of the products in a short period on the other. Bananas occupy the largest area and give the highest income. Others in the category are pawpaws, avocados, mangoes, passion fruits and a range of vegetables including French beans, kales, tomatoes and local vegetables. Two companies

are now involved in the sector. These are Mashambani industries and Hortequip. They deal in pawpaw and French beans respectively where they offer technical and material support. Others are the Lake Basin Development Authority (LBDA) and the British American Tobacco (BAT). Other horticultural products are exported out of the Province to consumption centres of Kisumu, Eldoret, Nakuru and Nairobi and thus earn a substantial income into the regional economy. In 1994 production of selected horticultural crops is shown in table 2.4.

Crop	Area(ha)	Yield tons/ha	Estimated Value in k(£) '000'
Bananas	41323.00	12.5	5967.32
Pawpaw	418.50	10.3	879.05
Avocado	258.10	12.4	1599.14
Passion Fruit	61.76	8.1	500.26
Mangoes	213.10	10.7	1139.39
Citrus Fruit	222.90	11.6	1300.00
French Beans	355.80	3.5	996.21
Tomatoes	605.00	16.3	7863.71

Table 2.4 :Selected Horticultural Crop yields and Earnings in Western Province 1994

Source: Compiled from District Agricultural Annual Reports (Bungoma, Busia, Vihiga and Kakamega 1994).

2.3.3.4 Tobacco Production in Western Province

Tobacco is another industrial crop in the Province. It is grown in Busia, Teso and Bungoma districts. More land is continuously being utilised for growing tobacco. Hactarege has increased from 680 ha in 1980 to 1,714 ha in 1994 yielding 274,292 tonnes valued at K£ 6,444,600. The crop employs about 2,000 farmers. Mastermind Tobacco Kenya (MTK) and B.A.T are the major companies involved in tobacco production. They offer material and technical support to farmers. In addition B.A.T employs over 55 leaf technicians and runs a leaf centre at Malakisi. The leaf is cured at the centre and then transported semi-processed to the Nairobi B.A.T plant for further transformation into consumable cigarettes. Since the construction of the Malakisi B.A.T Leaf Centre, various advantages have accrued to the area such as supply of electricity, water and tree planting projects. The Centre runs a big nursery project which had supplied over 12,000,000 tree seedlings by 1994 (B.A.T Malakisi Report 1994).

2.3.4 The influence of Forestry on Industrial Development

The livelihood of the population in the study area depends on forests as a source of energy. Forests are a major source of income with the Pan paper Mills being a major revenue earner (table 2.5). In 1988 the Province harvested 73,939.468 cubic meters of wood yielding approximately KShs 12,061,226.10 (Provincial Annual Report: Western Province- 1988). In 1994, Pan Paper Mills alone had a turnover of over KShs 76 Million (Pan African Paper Mill, Annual Report 1994).

Important forest tree varieties are; cypress (*Cyperus sp.*), gum tree (*Eucalyptus sp.*), pine (*Pinus Patula*), nandi flame (*Sparthodea Nilotica*), jacaranda (*Jacaranda Imosfolia*), cussia (*Cassia sp.*) and bischofia (*Bischofia sp.*). For commercial purposes, *Cyperus sp.*, *Eucalyptus sp.*, *Pinus Radiata* and *Pinus Patula* are important. Local trees such as *siala* are also grown. Supplying the tree seedlings are a number of nurseries scattered throughout the Province. Trees are harvested mainly for industrial and domestic use. Other forests, such as the Kakamega Forest, are maintained for reasons of aesthetic, touristic, medicinal and scientific research (Table 2.6).

Year Established	Name of Firm	Estimated. Roundwood Throughput per Year (M3)
1979	Sembi	5,000
1987	Kaimosi	900
1985	Sheywe	550
1991	Saw Bench	500
TOTAL	4	2,450

Table 2.5: Estimated Roundwood Use by Saw Mills in Western Province, 1989-1991

Source: Omollo Asiko (1991): A Review of the Local Markets in Wood and Wood Products. Inter-social Economic Report No. 5. Kakamega Forest. KIFCON.

Forest harvesting has given rise to five sizeable industries with Webuye’s Pan Paper Mills being the largest. Others are Sembi and Kaimosi Saw Mills with a sizeable roundwood throughput in 1991 (table 2.5). In a year Pan Paper alone uses approximately 350,000 to 400,000 m³ of roundwood of which 60% is pine, 30% cypress and 10% eucalyptus. The Kenya Matches Industry also uses *pinus patula* and *pinus radiata* obtained from forests in the Province.

Tobacco curing also consumes a good proportion of forest wood. Wood products are exported to other regions from where they earn regional income. Important wood products include; Pulp, paper and paper-board, timber, plywood and various kinds of logs. Such industries offer a great percentage of employment opportunities. Revenue from milled wood for selected years is shown in table 2.7.

District	Station	Size (Ha)	Blocks	Hectares
Kakamega	Kakamega	21,328	Kakamega, ,	21,328
			Alosi	
			Kisaina	
			Kibiri	
			Bunyala	805.6
			Malava	723.2
			Maragoli Hills	469.5
	Nzoia	6,921.8		
	Turbo	3,086.5		
	Lugari	2,163.0		
Sub Total				12,171.3
Bungoma	Kaberua	50,886.0		
	Cheptais			
	Kaboiywa			
Sub Total				50,886.0
Busia	Mumbaka	478.5		
	Wanga	76.1		
	Nanyungu	16.0		
	Namuluku	8.2		
Sub Total		578.8	578.8	
Total				84,944.2

Table 2.6: Forest Distribution in Western province

Source: Campbell, K (1993), Plantation Development Proposals. Kakamega, Southwest Mau, and Arabuko Sokoke Forest Reserves. KIFCON.

Western Province, has both gazetted and farmland forests. Bungoma has over 533 Km² of gazetted forests, Busia 578.8 ha, Kakamega 700 ha, and Vihiga 838.7 ha. Forest products are used as a source of fuel energy, a process that has contributed to forest destruction. Malakisi Leaf Centre uses a lot of wood fuel for curing tobacco. As a means of replenishing wood forests the firm plants over 2 million trees each years. They also run a big tree nursery producing over one million seedlings each year. Despite felling for such uses, forests still remain a major source of raw materials for saw mills, paper mills, plywood making and extraction of chemicals. The manufacture of these products in the Province increases self-sufficiency and cuts down on regional imports.

MILLER	ROYALTY RECEIVED (IN KSHS)	
	1988	1994
PAN PAPER	12,061,226	17,000,000
WEBUYE	602,356	1,264,947
ELGEYO	381,812	950,000
SEMBI	242,294	576,500
SHEYWE	199,997	290,000
MBALE	40,186	120,800
EZRA MASITSA	5,857	?
JEREMIAH MURITA	3,936	?
RAI PLYWOOD	210,874	780,700
MALKATIAT LTD (POWER POLES)	329,565	?
SMALL FORESTS	284,704	720,000
TOTAL	14,364,719	21,702,947

Table. 2.7: Wood Royalty in Western Province. 1988 and 1994

Source: Forest Department Records (1987 and 1990).

2.3.5 Role of Fisheries in Industrial Development Planning

Fishing contributes a lot in terms of income and employment opportunities in the province. Fish farming is still at its infancy. Busia district is famous for fishing, while the rest of the districts carry out marketing services. In 1987, Busia produced 2,471 tonnes of fish, an increase of 602 tonnes average annual catch. Fish harvesting requires various types of nets, manual or mechanised canoes and a host of labourers. In 1987, an average of 4,500 fishers operated approximately 1,627 canoes. It has been estimated that over 4,000 tonnes of fish were an optimum sustainable yield in the district by the end of 1994. Of the total fish catch about 62% is sold as fresh fish, while, about 38% is processed. The locally processed fish takes the form of sun dried and smoked (85%) and deep (15%) fried. Fish landed along the beaches is locally marketed and 'exported' outside the district. 30% is ferried to Kisumu and Nairobi. But due to lack of cold storage facilities great losses are encountered since fish is highly perishable.

The fishing industry is therefore an important employer as well as a major provider of income and protein food supplement. Given the magnitude of the industry, it is imperative to develop fish related industries notably development inducing and development supporting which enhance regional development.

2.4. THE SIGNIFICANCE OF STANDARD INFRASTRUCTURE IN INDUSTRIAL

DEVELOPMENT

Introduction:

Standard infrastructure is a basic avenue for realising rural industrialisation and development. It is only a developed infrastructure that has the ability to link rural areas and urban centres and vice versa. Market infrastructure, financial institutions, industrial, commercial activities, transport and communication affect regional industrial development to varying levels.

2.4.1 Transport and Communication as a Basic Requirement for Industrial Development

Western Province has well over 4,047.9 km of road (see Map 2.4). Table 2.8 shows road surface distribution. Quick delivery of industrial raw materials to the factories and industrial products is dependent on a better road network systems. Very few all-weather surface roads exist. The gravel and earth roads cannot handle the volume of industrial raw material(s) especially during the wet season. A lot of wastage occurs in Mt. Elgon district where the black cotton soils are so sticky when it rains. Perishable horticultural products and tea go to waste due to delivery delay. Dairy production is affected.

District	Bitumen	Gravel	Earth	Total
Kakamega and Malava/Lugari	157.0	399.0	618.0	1,174.0
Vihiga	75.8	278.0	239.0	592.8
Busia and Teso	65.0	281.8	58.7	379.6
Bungoma and Mt. Elgon	114.2	736.6	58.7	1,369.4
Total	412.0	1,695.4	1,434.3	3,341.7

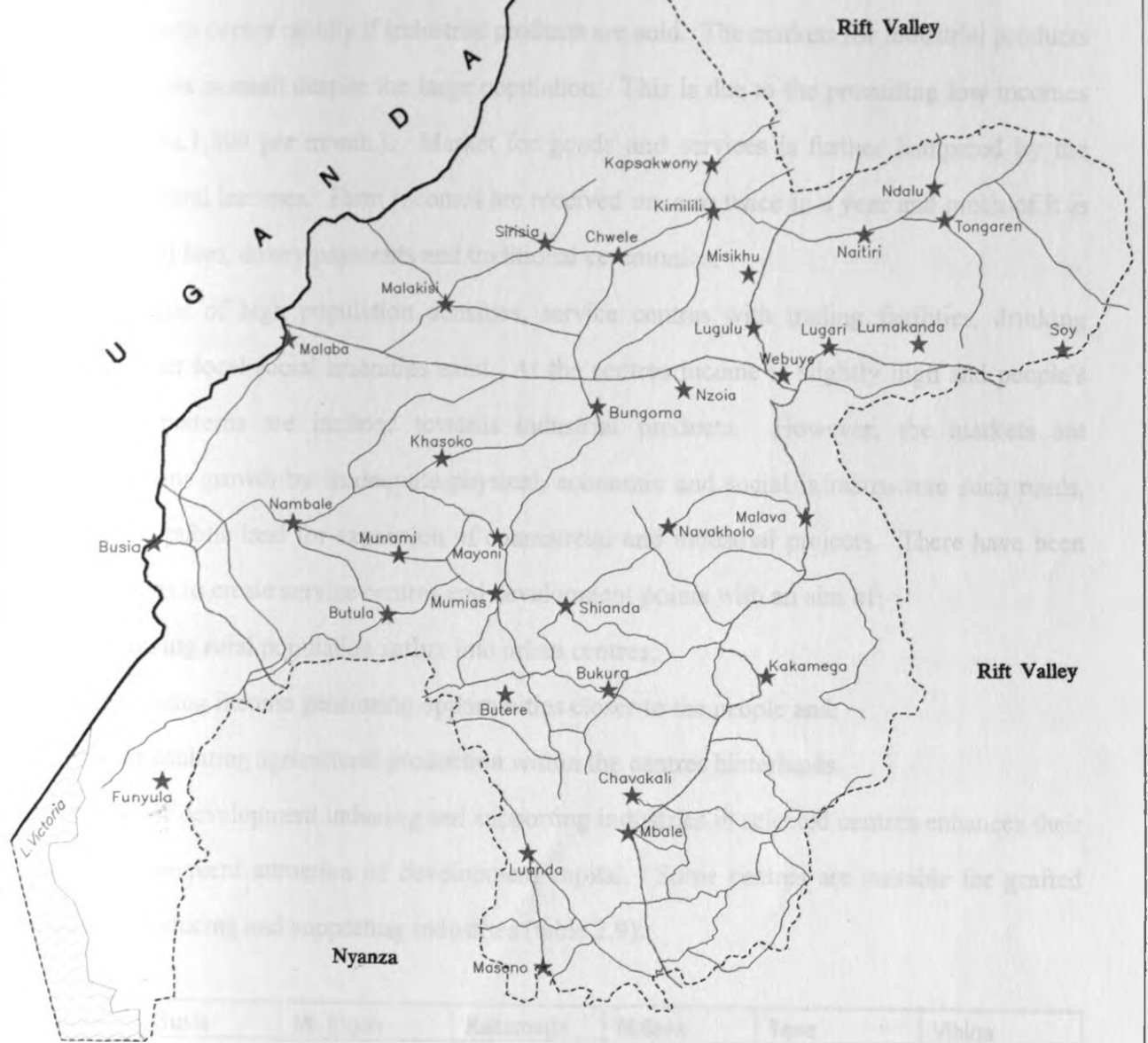
Table 2.8: Road Surface Type and Distribution

Source: District Development Plans: (Kakamega, Vihiga, Bungoma, Busia, 1994-98).

Most rural centres can now be reached by phone. Divisional headquarters have post and phone facilities. Over 60% of the Province catering for over 2 million people is now served by phone. The problem however is the frequent inoperation of the telephone lines which make communication harder. Operational postal and telecommunication facilities greatly enhance rural industrialisation.

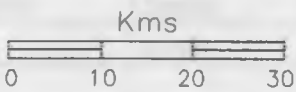
WESTERN PROVINCE

Road Density Network: 1994.



LEGEND

- International boundary
- International Trunk Road
- Primary Roads
- Provincial Boundary
- Centres With Potential for Industrial Development.



SOURCE: RESEARCH DATA (1995)

2.4.2 The Significance of Market and Town Infrastructure In Western Kenya's Industrial Development Planning

Industrial growth occurs rapidly if industrial products are sold. The markets for industrial products in the study area is small despite the large population. This is due to the prevailing low incomes (less than Kshs.1,500 per month.). Market for goods and services is further hampered by the erratic agricultural incomes. Farm incomes are received once or twice in a year and much of it is spent on school fees, dowry payments and traditional ceremonies.

In places of high population densities, service centres with trading facilities, drinking places and other local social amenities exist. At the centres income is slightly high and people's consumption patterns are inclined towards industrial products. However, the markets are constrained from growth by inadequate physical, economic and social infrastructure such roads, industries and public land for expansion of commercial and industrial projects. There have been several attempts to create service centres and development points with an aim of:

- (i) curbing rural population influx into urban centres;
- (ii) creating income generating opportunities closer to the people and;
- (iii) stimulating agricultural production within the centres hinterlands.

The presence of development inducing and supporting industries in selected centres enhances their status and subsequent attraction of development capital. Some centres are suitable for grafted development inducing and supporting industries (table 2.9).

Bungoma	Busia	Mt. Elgon	Kakamega	Malava	Teso	Vihiga
Naitiri	Funyula	Kapsakwony	Nambacha	Lugari	Amakoro	Matele
Tongaren	Nambale	Cheptais	Bushiri	Malava	Amukura	Mbale
Misikhu	Butula	Kaptama	Bukura	Kabras	Malakisi	Vihiga
Bukembe	Budalangi	Kaborua	Malaha	Lumakanda	Malaba	Samita
Nzoia	-	-	Butali	Navakholo	-	Lubao
Lugulu	-	-	Malinda	Sango	-	-
Sirisia	-	-	-	Kipkaren	-	-
Chwele	-	-	-	-	-	-
Kimilili	-	-	-	-	-	-

Table 2.9: Centres likely to be Potential Development Points in Western Province

Source: District Development Plans: (Kakamega, Vihiga, Bungoma, and Busia, 1994-98).

2.4.3 Influence of other Relevant Infrastructure on Industrial Development Planning

Knowledge about sources of finance for industrial development and the distribution of electricity is relevant for industrial development planning. Within the study area, there are various financial institutions that offer loans for industrial projects. The Kenya Commercial Bank, Barclays, Co-operative, National and Standard banks are the common ones. The Industrial and Commercial Development Corporation (ICDC), the Kenya Industrial Estates (KIE) and other financial institutions also exist. Apart from Kenya Commercial Bank, ICDC and KIE, the other banks do not offer so much capital for industrialisation. Most of the banks are urban located and offer very little services to the rural people.

Electricity supply offers a very cheap source of power than petroleum. The government and the local councils have provided electricity to a number of potential development points and service centres. However, some divisional headquarters still lack electricity. Development of electricity supply network to most parts can serve as a catalyst to local rural based development including industries. Pan Paper Mills, Nzoia Sugar and Mumias Sugar companies supplement their power requirements needs from in-house generation. This reduces consumption of power from the main grid lines hence making it available for other smaller industries. Various water falls exist in the Province and offer great potential for H.E.P. development. Webuye Falls is set for future development (District Development Plan, Bungoma 1994-98).

2.4.4 The Status of Industrial and Commercial Activities in Western Province's Industrial Development Planning

Commerce and industry play a vital role in expanding and diversifying the export base, accelerating productivity, attracting and revitalising the entrepreneurial and managerial skills, promotion and expansion of the agricultural sector and job creation. Industrial growth has not been significant in terms of new ventures. The manufacturing sector still lags behind in relation to the available industrial resources. Recently, Mashambani industry which processes papaya juice to papaya jam and wine was set up. A collection centre for French beans which are transported to a Njoro factory has been built by the Hortequip company. These can however be processed successfully in the study area without having them processed outside the Province. The more than 5 million kilograms of tea harvested warrant a separate factory apart from the Nandi Hills one.

This will reduce transport costs, weight loss of tea leaves, unemployment and improve local road and other infrastructural facilities.

There are high maize grain yields in Malava-Lugari, Mt. Elgon, Bungoma and Kakamega, while, Busia and Teso produces research crops such as millet, sorghum, potatoes and cassava. Apart from the local small scale grain millers, there are no maize sifters.

Generally, industrial and commercial activities in the Province tend to grow slowly, stagnate or altogether diminish due to various reasons including;

- (i) business failure especially those initiated by local entrepreneurs;
- (ii) lack of knowledge regarding the existence of such businesses and industrial operation;
- (iii) inadequate infrastructural facilities;
- (iv) external factors such as poor commodity prices and;
- (v) partial commitment to business by entrepreneurs.

Nonetheless, potential for industrial expansion and diversification exists in several centres. The viable industrial projects in the study area are shown in table 2.10.

If these industries are developed based on principles of development inducing and development supporting industries, then equitable regional development can possibly be attained. Indeed, the 1989-1993 development plan notes that Mumias and Kakamega manifest a slow growth rate of development. The towns do not serve well as development triggering points in as much as they have several development inducing and supporting industries.

I.S.I.C	TYPE OF INDUSTRIAL PLANT	REGION OF LOCATION (DISTRICT)
AGRO-BASED FOOD PROCESSING INDUSTRIES		
3111	Meat product processing	Kakamega
3112	Dairy product processing	Kakamega, Bungoma
3113 & 3134	Fruit and vegetable canning	Elgon, Vihiga
3115	Manufacture of vegetable, animal oils and fats	Vihiga, Elgon, Kakamega
3116 B	Grain milling	Bungoma, Kakamega
3117	Bakery products processing	Kakamega
3118	Sugar processing	Kakamega
3121 A	Tea processing	Vihiga, Elgon,
3122	Manufacture of prepared animal feeds	Bungoma, Kakamega
AGRO-BASED NON-FOOD MANUFACTURING INDUSTRIES		
3140	Tobacco manufacturing	Bungoma
3220	Manufacture of wearing apparel except footwear	Kakamega
3231	Tanning extract processing and leather tanning	Kakamega, Bungoma
3311	Saw milling	Elgon, Kakamega
3523	Manufacture of soaps, cosmetics and miscellaneous agro-based chemical products	Kakamega, Bungoma
NON-AGRO-BASED MANUFACTURING INDUSTRIES		
3511	Basic non-vegetable chemical processing except fertilisers	Kakamega
3691	Structural clay products manufacturing	Kakamega, Busia, Vihiga
SERVICES INDUSTRIES		
3420	Printing and publishing	Kakamega, Bungoma
3811	Metal furniture and fixtures fabrication	Kakamega, Vihiga

Table 2.10: Proposed Industrial Projects in Western Province

Source: District Development Plan - Bungoma, Kakamega and Busia (1994).

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter seeks to explain the various scientific methods used in arriving at the desired research goals of the study. A number of aspects are dealt with which include experimental design, data sources and procedures in data collection and the analysis of research data. This chapter also serves as a shield against "self deception" (Prewitt, 1974).

3.2 EXPERIMENTAL DESIGN

This experimental design aims at attaining maximum information efficiently and at a comparatively low cost. It is instrumental in achieving unbiased estimates.

3.2.1 The Universe

Gregory (1978) defines a universe as an aggregate of all undivided objects related to a given problem. In this study, a universe of industries include all existing and functional manufacturing and tertiary industries in Western Province.

3.2.2 Population

A research 'population' is a complete set of counts derived from all objects possessing one or more common characteristics (Leach and Dixon, 1978)). In this study, the working population includes all industries in Western Province designated as development inducing and development supporting. These are 129 industries (appendix 1.0). It is from this population that inferences are drawn.

3.2.3 The Research Sample

A research sample which is a selected representative portion of the working population is derived from the "industrial population" at the level of 42 industries (this is approximately 33% of the population, see appendix 1.1).

3.2.4 Sampling Procedures

The research sample represents the variability in the population as closely as possible. It is noted that use of samples reduces costs and increases accuracy of findings (Harper, 1971)). From the population stratified random sampling is used to select the four categories of;

- i) Agro-based food processing industries;
- ii) Agro-based non food processing industries;
- iii) Non agro-based manufacturing industries, and;
- iv) Tertiary industries,

which are identified to give a sample of 33% industries. This is considered representative enough given the size of the Province and the prevailing financial strains. The proportion is about the same as in the population. This size of the sample is based on the fact that the true population is not amenable given the research period and the work-load at hand. Using the directory of industries, only industries employing five operatives and above are considered (appendix 1.1). Respondents are derived from;

- i) Industries — especially its various categories
- ii) Suppliers of industrial raw materials in relation to the selected industries,
- iii) Various heads of financial institutions.

Given every stratum and the desired percentage, industries forming the sample size are randomly selected. A number is allocated against each industry in each category and a random numbers table is used to pick the required industries from each category of agro-based food processing, agro-based non food processing, non agro-based manufacturing, and tertiary (service) industries respectively. This is done to arrive at 23, 10, 6 and 3 industries from each strata of Agricultural Food Processing (AFP), Agricultural Non Food Processing (ANFP), Non Agricultural Manufacturing (NAM) and Service Industries (SI) respectively. This represents a selection of 37%, 31%, 29% and 21% of industries from each strata of AFP, ANFP, NAM and SI respectively. A total of 42 industries are selected.

From the industrial raw material suppliers, the various agro-based industries are chosen from the sample already existing. Only agro-based industries are considered since most of the industries are based in this sector and because raw material suppliers play a greater role in resource production and in being recipients of industrial funds.

MUMIAS SUGAR ZONE

Sample Cane Suppliers

LEGEND



Mumias Sugar Zone



Sample Research Locations

10Km, 16Km, 24Km Cane production Radii

Cane Growing Zone Under Discussion for Expansion

Current Mumias Cane Growing Zone.

District Boundary

Sub-Location Boundary

Centre of Cane Production Radii

Service Centres

Sugar Factory



Three industries are selected as Mumias Sugar company, Nambale Ginnery and Malakisi Leaf Centre which receive sugarcane, cotton and tobacco respectively. In order to get the number of raw material suppliers, stratification and subsequent random selection are done. This is necessary since data sub-divisions are found to increase research efficiency and lessen chances of bias (Hagood, 1969). The crop production zones are divided into two zones for each industrial crop. From each zone, two sub-locations are randomly chosen. The required total of 32 farmers (industrial raw material suppliers) producing selected industrial crops are derived by randomly selecting eight farmers from each sub-location by the help of the producer's computer lists offered by the industries concerned. In total 96 farmers are chosen for interview on aspects concerning their earnings and expenditures from the crop in the following sub-locations.

Sugar-cane	1) Kholera, 2) Indengalasa (North Naoia zone), 3) Isongo, 4) Bungasi (South Naoia zone)
Tobacco	1) Namburya, 2) Malakisi (Bungoma District), 3) Aboloi, 4) Tamlega, (Teso district)
Cotton	1) Nambale, 2) Kisoko, (Luhya), 3) Matayun, 4) Anguru (Teso).

1.3 SOURCES OF DATA AND PROCEDURES IN DATA COLLECTION

For the success of this study, two types of data are required. Viz.:

- i) Primary data (raw data), which is the raw information gathered from the field by the researcher, and ;
- ii) Secondary data, which is the information collected either from published or unpublished sources.

Data Sources for this Study include:

- a. i) Public offices, mainly government and associated parastatal offices, and;
- ii) Private companies.
- b. Primary data has been obtained from the field hitherto delineated as Western Province.

In the process of gathering information, various kinds of data have been acquired. These include, data on variables determining location of development inducing and development supporting industries; level of government involvement in industrial location and development

especially industrial attraction; industrial resource use and regions of raw material extraction, and regional industrial earnings vis a vis spending outside the area under study.

Some useful information has also been collected from;

- i). "Industrial Census", which is an annual publication providing information related to *inter-alia*, the number of operatives employed in manufacturing establishments of five or more operatives.
- ii). "Directory of Industries", that indicates names of firms, year of establishment, physical contacts, nature of products produced and employment data.
- iii). "Development Plans", these include national development plans, and district development plans. They contain valuable data on the Province's geographical, social and economic background. They also have policy statements on the governments plans concerning industrialisation, resource use and mode of enterprise expansion, and;
- iv). District Socio-economic Profiles, Industrial Annual Reports, and Provincial Agricultural Reports among others.

In the use of such secondary data caution has been exercised due to the existence of special features associated with the earlier statistics and population. While, in case of obsolete secondary data, new information has been used to update special interest areas.

3.4 METHODS OF DATA COLLECTION

In collection of research data, various methods are used such as the recording schedule in collecting critical information on industrial location variables, structure and growth of industries. Questions are designed to suit the required information in conformity to the stated objectives and testable hypotheses (appendix 8).

Preference is given to the recording schedule since it affords personal contact with the interviewer — a factor that establishes better communication and elaboration of aspects otherwise not well understood (Moser, 1968). When an interviewer seem to overwhelm the interviewee, caution is exercised to prevent biased and incorrect answers. This reduces the problems of low response common with using the postal questionnaires.

Official interviews are also carried out with the aim of assessing details arising from the recording schedule. Through them elaboration and expansion of issues that the recording schedule

fails to address is done. Interviews are restricted to persons thought of having relevant information on the subject matter. Such persons include; Planning Officers, Labour Officers, District Development Officers and Managers of various industries and financial institutions. Summary notes are taken and later transferred into more readily usable information.

3.5 DATA ANALYSIS, INTERPRETATION, PRESENTATION AND APPLICATION

Data collected in the field is summarised into tables. This eliminates the problems associated with analysis of raw unsorted data which gives discordant results (Moser, 1968; Harper, 1971). Tables are important since;

- i) they enable quick location of the required figures,
- ii) facilitate comparison between different items,
- iii) they easily reveal patterns within figures that could not otherwise be seen, and;
- iv) they occupy less space and thus reduce the cost of report writing.

In data analysis, descriptive and inferential statistical methods are used in;

- i) facilitating presentation of summarised data,
- ii) enabling assimilation of data and;
- iii) providing a quick comparison between different sets of raw data.

The Common Factor Analysis(CFA) method, Inter-Regional Trade Multiplier, Index of Industrial Concentration, the Industrial Goods Analysis, the Chi-square statistics and the Geographical Information System (G.I.S) are used to make inferences from the data. They provide a means for measuring uncertainty associated with sampling and measure the level of confidence that is placed on the results.

3.5.1 The Inter-Regional Trade Multiplier

This tool is used in this study to show the importance of an industry to the regional economy. It analyses the orientation of industrial structure in relation to regional growth. The technique hinges on the fact that capital injected into a region through an industry is spent within the same region, while the savings emanating there off are re-invested within the same region. The model assumes that regional growth cannot easily take place unless its own development resources are utilised in enterprising activities.

The method reveals that an injection into a regional Development Inducing and Development Supporting Industry [*dii* and *dsi*] increases regional income by some multiple of it. Growth impulses from *dii* and *dsi* are transmitted to the hinterland and other regions through changes in imports, exports, consumption of products thereof, income and other investments. The Inter-Regional Trade Multiplier for the selected *dii* and *dsi* is computed using the formula shown below.

$$R = \frac{M}{S + I + T}$$

Where;

R = Regional Multiplier

M = Money initially injected into the economy,

S = Proportion of income saved,

I = Income spent on imports,

T = Income spent on taxes.

Interpretation:

When the Inter-Regional Trade Multiplier is low (less than 1.5) then the said *dii* and *dsi* is not playing a crucial role in regional development. While, when it is high (2+), then the industry is important to the regional economy. The method attempts to qualify the hypothesis that;

"Inequitable development in Western Province is due to the prevailing structure of development inducing and development supporting industries."

Despite its use, the Inter-Regional Trade Multiplier has a number of shortcomings. The technique fails to put into account other non-industrial sources of income within any given region under consideration. In real life, commercial ventures other than manufacturing are also important to regional development especially on institutions with significant long term effects. The model ignores these facts. In using farmers income from crops for computation of the Inter-Regional Trade Multiplier, earnings from other sources other than farming are left out. Crop income is earned once or twice a year yet the method does not account for such complexities. If used without caution the results can be misleading. Income emanating within the region apart from industry or industry related raw material supply is not accounted for. Moreover there is no proof from the technique that savings from regional industries form the investment base. Initial capital injections in major industrial concern is known to come from external sources.

3.5.2 The Industrial Goods Analysis

It is a qualitative technique used in assessing regional resource extraction and exchange within and outside an area. The technique is therefore dependent on industrial structure and hence its usefulness in regional development planning. The method which has been used elsewhere successfully (Wegulo, 1984; Barker, 1977), presupposes that industries are a focal point of resource(s) convergence and the sale of their finished product(s) is a means of exchange and transfer of the said resources. This procedure seeks an explanation to the hypothesis that

"The biased nature of resource extraction and transfer by development inducing industries and development supporting industries is as a result of imbalanced sectoral production by industries in Western Province"

It is here argued that the more a product is purchased the more it is produced. This adjusts subsequent demand for specific resources that go into its production. The manufacture of any product is geared towards satisfaction of a type of market among the following:

- i) Luxury Goods,
- ii) Consumer Goods,
- iii) Export Goods,
- iv) Intermediate and / or Producer goods.

The index of assessment is taken as the number of operatives employed in every identified industrial sector. The number of operatives are derived from the industries contained in the sample (appendix 1.1) and recorded in table 3.1. This technique has shortcomings such the difficult in drawing a boundary between luxury and mass consumer goods. Tobacco production may be classified as a luxury to some people, but to others it is a necessary product especially if it serves to attain psychological satisfaction (Karl Marx 1953). Milk and sugar are classified as mass goods when we know very well that they may differ between economic classes. In the ensuing study, tobacco, cotton, tea and sugar are treated as export products in relation to the region.

Industrial Sector	No. of Operatives.	% of Total	No. Of Firms	% of Total
Export Goods	1952	48.8	3	7.1
Consumer Goods	1629	40.7	16	38.1
Intermediate / Producer Goods	235	5.9	10	23.8
Luxuries Goods	183	4.6	13	31
TOTAL	3999	100	42	100

Table. 3.1: Operatives for Selected Sample Industrial Sectors and Proportionate Number of Firms

Source: Research Data, 1995.

3.5.3 Chi Square Method (χ^2)

The technique qualifies the extent of deviation from a set of theoretical assumptions. It is used to justify that the sample of operatives in the various industrial categories of luxury goods, mass consumer products, export goods and intermediate producer goods is taken from a population in which the operatives are equal. The method aims at significantly qualifying the extent in which the sample chosen differ from the actual population. The null hypothesis that; “There existed equal industrial operatives in each industrial production class” and the alternative hypothesis that; “There existed differing numbers of industrial operatives in each of the industrial production class” is formulated. The data is then calculated using the mathematical relationship below;

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

Where;

f_o = Observed Frequencies,

f_e = Expected Frequencies,

χ^2 = *chi-square*.

Interpretation

If the calculated *Chi-square* value is higher than the tabulated *Chi-square*, then the null hypothesis is incorrect and it is therefore rejected at a 0.05 significant level and at 3 degree(s) of freedom. However if it is lower then the null hypothesis is correct and the hypothesis is accepted at the same significant level. In the analysis predominant goods sector is found based on the scale of production and resources used.

3.5.4 The Analysis of the Influence of the Government in Patterning Development Inducing Industries

Industrial location is rarely a function of one variable. It is affected by a multiplicity of factors such as the presence of raw material(s), cost of labour and transport, availability of capital and sufficient infrastructural facilities and the effects of the local and central government among others.

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iv) in achievement of parsimony in data description.

The use of Factor Analysis enables data reduction, i.e., the selection of fewer variables than those contained in the original data set. This saves time and allows concentration on the causal factors alone. The technique is employed to determine the principal variables that affect location of *dii* and *dsi* in the study area. The identification and isolation of these factors enables further assessment of their respective influence. The use of the eigen value identifies the crucial location factors and isolates the trace factors for discard. The method is advantageous in that the use of correlations allow the study of factors which would otherwise have been neglected as being highly correlated. In this manner less information is lost or left hidden under the guise of high correlations since an explanation is sought for the high correlations. Factor Analysis is versatile as a number of methods within it can be used to determine new sets of factors from the original set of variables. This can be done by the use of; a) a predetermined eigen value, b) percentage limit of variations (variance) and c) cumulative percentage. Comparison between this methods may show the accuracy of the cut-off point for the factors considered as influential. Moreover it assists in hypothesis testing. The technique is useful in determining a relatively small number of variables, hence existence of parsimony. It also allows examination of validity of theories that involve relationships among constructs.

Despite the advantages of the method, it has a number of shortcomings such as the fact that it is long, cumbersome and is subject to errors especially at the stage of data entry if large volumes of data are to be analysed. Data manipulation using Factor Analysis requires skilled persons or an intensive training which more often is expensive. While the identification of factors is easy since a mathematical cut-off point is given, the labelling of factors is somewhat difficult and if not done carefully some important factors may be omitted leading to loss of information.

3.5.6 The Geographic Information System (G.I.S)

Francis Hanigan (1988) defines a Geographic Information System as “any information management which can;

- i) Collect, store and retrieve information based on its spatial location.
- ii) Identify locations within a targeted environment which meet specific criteria.
- iii) explore relationships among data sets within that environment

In order to identify the level of the influence of the government in regional location of development inducing and development supporting industries, fifteen variables (Location Variable LV01 to LV15) considered to affect industrial location are listed as;

- | | | | |
|-------|--|-------|----------------------------------|
| LV 01 | Direct Government influence, | LV 02 | Influence of Local politics, |
| LV 03 | Presence of raw material, | LV 04 | Availability of cheap labour, |
| LV 05 | Availability of power (fuel/wood), | LV 06 | Low transport costs, |
| LV 07 | Proximity to other industries, | LV 08 | Capital availability, |
| LV 09 | Presence of market, | LV 10 | Nearness to entrepreneurs home |
| LV 11 | Advantages of urban economies, | LV 12 | Personal considerations, |
| LV 13 | Availability of land for expansion, | LV 14 | Adequate siting facilities, and; |
| LV 15 | Availability of Abundant Water Supply. | | |

These variables are incorporated into a questionnaire that administered to industrialists of the 42 sample industries. Respondents are asked to rank the fifteen variables in-order of preference that influenced their location (Appendix 2.0). The rank orders are shown in table 3.2.

Class	Ranks Score	Explanation
A	1 - 3	Very Strong Influence
B	4 - 6	Strong influence
C	7 - 10	Less Strong influence
D	11 - 15	Weak influence

Table 3.2: Industrial Location Ranking Score Scale

Source : Research Data,1995.

Factor Analysis

In studying industrial location, many studies involve asking decision makers within a firm to indicate the importance (often by ranking) of individual location factors listed by the investigator [McMillan, ,1965; Fottman, 1976; Moriarty, 1983]. In this study Factor Analysis technique has been used to evaluate and validate data related to reasons for industrial location of *dii* and *dsi*. Emphasis is placed on government influence in location of *dii* and *dsi* in the study area. The method is used;

- i) to evaluate and test hypothesis,
- ii) in the transformation of a set of variables into a new set of orthogonal factors for use within a regression model,
- iii) to examine matrix data structures and;

iv) in achievement of parsimony in data description.

The use of Factor Analysis enables data reduction, i.e., the selection of fewer variables than those contained in the original data set. This saves time and allows concentration on the causal factors alone. The technique is employed to determine the principal variables that affect location of *dii* and *dsi* in the study area. The identification and isolation of these factors enables further assessment of their respective influence. The use of the eigen value identifies the crucial location factors and isolates the trace factors for discard. The method is advantageous in that the use of correlations allow the study of factors which would otherwise have been neglected as being highly correlated. In this manner less information is lost or left hidden under the guise of high correlations since an explanation is sought for the high correlations. Factor Analysis is versatile as a number of methods within it can be used to determine new sets of factors from the original set of variables. This can be done by the use of; a) a predetermined eigen value, b) percentage limit of variations (variance) and c) cumulative percentage. Comparison between this methods may show the accuracy of the cut-off point for the factors considered as influential. Moreover it assists in hypothesis testing. The technique is useful in determining a relatively small number of variables, hence existence of parsimony. It also allows examination of validity of theories that involve relationships among constructs.

Despite the advantages of the method, it has a number of shortcomings such as the fact that it is long, cumbersome and is subject to errors especially at the stage of data entry if large volumes of data are to be analysed. Data manipulation using Factor Analysis requires skilled persons or an intensive training which more often is expensive. While the identification of factors is easy since a mathematical cut-off point is given, the labelling of factors is somewhat difficult and if not done carefully some important factors may be omitted leading to loss of information.

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- i) Collect, store and retrieve information based on its spatial location.
- ii) Identify locations within a targeted environment which meet specific criteria.
- iii) explore relationships among data sets within that environment

- iv) Spatially analyse the related data as an aid to decision making about the environment.
- v) Facilitate selecting and passing of data to application-specific analytical models capable of assessing the impact of alternatives on the chosen environment.
- vi) Display the selected environment both graphically and numerically either before or after analysis.

The Geographic Information System (G.I.S) is therefore a system for capturing, storing, checking, integrating, manipulating, analysing and displaying data which are spatially referenced (Chorley, 1987, 132). The GIS used in this study is the ATLAS version developed by Strategic Mapping (USA) (now owned by the Environmental Systems and Research Institute, ESRI) and run by the Summer Institute of Linguistics in the department of Survey and Mapping. The programme uses a database with indexed geographical X-Y grid-reference numbers attached to the global latitude and longitude grids.

In this study the programme is used to input data on Kenyan industrial operatives and especially those in the study area. Other data input include development points, development centres, potential development centres and service centres. Macro-economic regions and the accompanying data, the Kenyan administrative boundaries and development potential scores for all the Kenyan districts. Using a desktop computer, the software has been used to draw maps.

In performing regional industrial geographic analysis the operatives and the number of existing firms are used in showing the spatial distribution of development impulses. This assists in spatial auto-correlation and mapping of the resulting phenomena. The programme is useful in the estimation of spatial patterns of industries through the observation of a few firms and interpolation for others. The technique is a good predictive tool for planning of location of regional industries and a display unit for spatial organisation of economic phenomena.

The method is however wanting in a number of ways. First the process of digitising information is expensive and slow. Secondly, often there exists poor quality of hard-copy graphical or tabular source data resulting in several errors in interpretation. If not used carefully the method can be misleading. Thirdly, the method assumes that the geographic surface is smooth and that there are hindering barriers such as mountains, valleys, cultural or even political boundaries.

3.6 METHODS OF DATA PRESENTATION

A number of approaches are employed in the current study for presenting data. These are: several kinds of statistical maps, diagrams and tables. The reason for doing this is for easier presentation of data.

3.6.1 Maps

Statistical maps indicating spatial influence (impact) of industries, resource base and resource utilisation have been fully utilised. Industrial location maps have been used *vis a vis* distribution of infrastructural facilities. Some of the maps used are; Location and Extent of Western Province, Macro-Economic Development Regions, Agro-ecological Zones of Western Province and Distribution of Road Network in Western Province. Others are statistical maps such as those showing the Existing Varying Long-range Development Inducing Industries, Existing Varying Intermediate Range development Inducing Industries and the Existing Varying Short Range Development Inducing Industries,

3.6.2 Diagrams

A number of diagrams in terms of flow charts, graphs (both proportional and bars, three dimensional pie charts, and line graphs have been adopted for statistical clarity. Bar graphs are important as they present data where no continuity exists. Flow charts such as the Use of the Centrifugal Model in Regional Development Planning, Resource Classification, A Basic Model of the Factors Influencing Industrial Location Decisions and Some Pressure to Select a New Location and the Search for a New Site are used. Other diagrams are used to explain An Interpretation of the effect of Personal Factor in Industrial Location, The Behavioural Matrix and The Effects of Areal Selective Subsidy. Bar graphs and pie charts for showing Sector Financing By K.I.E in Bungoma and Mt. Elgon District 1989-1994, Sectoral Loaning by ICDC in Western Province: 1980-1993 and Sectoral Proportion of Industrial Operatives are also shown.

3.6.3 Tables

Tables are crucial in presenting summarised data. Using tables assessment of trend and quantitative characteristic of phenomenon are easily spotted. Statistical tables, and industrial structure tables are employed in the current study. Some of these are the table showing the Industrial Structure of Selected Industries in Kenya, Potential Growth Centres of Western Province, the Existing Industrial Attraction Facilities in Selected Urban Centres, the Distribution of Financial Institutions in Western Province, Suggested Areas and Incentives for Western Province and the Employment Structure of Industrial Sectors in Western Province.

3.7 RESEARCH LIMITATIONS (CONSTRAINTS)

During the research various problems were faced. Nevertheless, workable alternatives were adopted necessitating the completion of this study. These are;

1) The size of the study

Among the major constraints, is the great expanse of the Province. Industries are found scattered all over the Province and thus make travelling difficult and expensive. This process consumes time and money. To avoid extra expenses, appointments were made in advance. In a number of cases appointments were not honoured leading to increased spending and fieldwork time and costs. Nevertheless with patience and persistence important data was collected.

2) Time spent

In collecting information on industrial raw material suppliers, a long period was needed due to the detailed questionnaire that required to extract sufficient information for analysis. Walking from one homestead to another is very tiring and time consuming. Absence of household heads meant spending more time in the field trying to make up for the required sample. Use of hired bicycles in some places eased the work though it increased costs.

3) Unco-operative attitude

Some farmers did not want to be interviewed claiming that many interviews had been conducted in the area with no accompanying benefits. With the help of some learned residents who explained the importance of the research, the problem was overcome.

4) Lack of relevant data

Another major constraint in the field was lack of appropriate and recent data on various aspects of industry. The District Industrial Development Officers did not have any updated list of industries in their districts and the corresponding operatives employed. In such cases estimates were used. Only K.I.E. had a clear understanding of the state of firms they supported. This misadventure necessitated a pilot survey to establish the existence of sample industries. Non-existing industries were replaced thus allowing continuation of the research.

5) Fear of tax assessment

Lastly a few industries were noted to have exaggerated the cost of their inputs on suspicion that we were government tax assessors. However, with further visits to organisations such as Kenya Power and Lighting Company (K.P.L.C), Ministries of Commerce and Industry, Agriculture and Livestock Development, Environment and Natural Resources, Fisheries Department, K.I.E. and various financial institutions some truth was established.

EAST AFRICANA COLLECTION

CHAPTER FOUR

4.0 THE INFLUENCE OF THE GOVERNMENT IN LOCATION AND PATTERNING OF INDUSTRIES

4.1 INTRODUCTION

In this chapter an attempt is made to explain the extent of government influence in industrial location of development inducing and development supporting industries in Western Province. It is not uncommon to identify the following sections in a polarised space economy part of which the study is based;

- i) economically favoured regions that are much more advanced,
- ii) upward struggling economic regions that seek to lessen their dependence on the more favoured and powerful regions,
- iii) regions endowed with raw material(s) to be exported to more advanced and core economic regions,
- iv) economic regions facing a series of varying development problems such as stagnation, depression, or special problem economic regions, and lastly;
- v) various development axes, development centres, development points and service centres.

A space economy that depicts such characteristics is considered as unplanned. The study area is endowed with many industrial resource materials that are mainly extracted to benefit the more economically favoured and advanced core zones. This is due to many reasons, among them;

- i) The use of growth centres and growth pole(s) planning models that have organised the space economy as a function of foreign interests. The selective forces of modernisation result in discontinuous and unstable economic regions.
- ii) the existing natural ecosystem complexes that have created varying economic uses that generate differences in economic development.

Infrastructural development in urban centres and entrepreneurs own choices of points of location combine to attract industries to urban locations where overall production costs are minimal and where returns to investment are high. As a cluster of factors the influence of the government direct industries into a few developed places. Nevertheless, on its own through regulations and incentives, government influence is a trace factor in location of development inducing and development supporting industries. A null hypothesis set earlier that “The Kenyan

government has had insignificant influence on regional location and patterning of industries in Western Province” is tested in the ensuing discussion.

4.2 ANALYSIS OF GOVERNMENT INFLUENCE IN LOCATION OF DEVELOPMENT INDUCING INDUSTRIES.

The results of the ranking done on the recording schedule are tabulated (appendix 2.0 and 2.1) and fed into a computer programme, Statistical Package for Social Science (SPSS) for analysis. The response for all the 42 industries are aggregated to get their mean ranks as shown in table 4.1.

VARIABLE NAME	VARIABLE LABEL	VARIABLE CODE	VARIABLE MEAN	STANDARD DEVIATION
GOVERNMENT INFLUENCE	GVTIN	LV01	8.85714	3.24279
LOCAL POLITICS INFLUENCE	LOCPO	LV02	7.47619	3.41616
RAW MATERIAL AVAILABILITY	RAWMA	LV03	3.28571	2.54985
LABOUR	LABOR	LV04	5.40476	2.13061
POWER (ANIATE.& INANIMATE)	POWER	LV05	3.59524	2.42003
LOW TRANSPORT COSTS	TRANS	LV06	6.57143	2.47073
PROXIMITY TO OTHER INDUSTRIES	PROXI	LV07	4.80952	2.51084
CAPITAL AVAILABILITY	CAPIT	LV08	2.85714	1.47452
PRESENCE OF MARKET	MARKE	LV09	2.42857	1.90177
NEARNESS TO ENTREPRENEURS HOME	ENTRE	LV10	3.88095	2.98943
ADVANTAGES OF URBAN ECONOMIES	URBAN	LV11	4.69048	2.99990
PERSONAL CONSIDERATIONS	PERSC	LV12	4.21429	3.42541
AVAILABILITY OF LAND FOR EXPANSION	LANDEX	LV13	6.07143	2.11144
ADEQUATE SITING FACILITIES	SITING	LV14	7.95238	2.74041
AVAILABILITY OF ABUNDANT WATER SUPPLY	WATER	LV15	4.88095	2.69781

Table 4.1: Variable Rank Means

Source: Research Data, 1995.

A preliminary explanation of variables based on the descriptive statistics and non-parametric correlation for selected factors is discussed below.

Concerning the variable influencing industrial location of dii and dsi, the variable with the lowest mean is established to be ‘presence of market’. It has a mean of 2.43. Of the industries visited 59.5% indicate the variable as having a very strong influence on location of dii and dsi. 33.3% think it is a strong influence and only 7.1% say it is a less strong influence in industrial location. Most industries are found to be located in urban centres where there is market from the urban population and the surrounding hinterland.

Capital is noted by 38.1% of the industrialists as having a very strong influence on choice of their location. While 61.9% acknowledge that it is a strong factor. Non say it had a weak influence. Its mean score is 2.9. Raw material supply with a mean of 3.3 is perceived by 73.8% of the industrialists as having a very strong influence and strong influence respectively. This explains the location of some of the big industries within the agricultural hinterland.

23.8% , 45.2%, 16.7% and 14.3% of the industrialists consider the availability of power (wood fuel, oil and or electricity) as a very strong, strong, fairly strong and weak industrial location variable respectively. It has a mean of 3.6. Nearness to entrepreneurs home with a mean of 3.9 is found to be an important location variable. 35.7% of the interviewee show the variable as having a very strong influence, 45.2% as a strong influence, 9.5% and 5.6% as having a fairly strong and weak influence respectively. Most entrepreneurs of small firms locate their industries in areas they are familiar with culturally and economically. They take advantage of resources they are familiar with.

Personal consideration is recorded as a strong location variable as 38.15% of the industrialists show that it has a very strong influence to industrial location. 35.7% note it has a strong influence, while, 11.9% and 14.3% think it has a fairly strong and weak influence to industrial location respectively. Its mean is 4.2. Personal considerations are complex as they touch on values, family, culture and the effects of the surrounding environment. For smaller firms this is an important factor.

21.4% of the firms acknowledge that influence of urban economies is a very crucial location factor. 50.0% believe it has a strong influence. This group benefits from communication, banking, security, skilled labour and transport facilities prevalent in urban areas. Firms that are mainly located in the rural areas never consider it as significant. 11.9% consider it as a weak location variable. It has a mean of 4.7.

Proximity to other industries is a moderately important location variable. 9.5% of the respondents note it is a very strong influence to their location choice. However, 66.7% consider it a strong influence. 23.8% state that it is either weak or less influential in location. This is due to the fact that most industries have not taken advantage of the linked industries in the region. Only two producer-goods industries are linked (i.e. Pan Paper Mills and the East African Heavy Chemicals in Webuye). This variable has a mean of 4.8.

Availability of water scores a mean of 4.9 and is considered an influential variable by only a few large manufacturing firms such as Mumias Sugar Factory and Pan Paper Mills. Labour is perceived to be plenty except for a few specialised functions. It has a mean of 5.4. Effect of low transport costs is an important variable to a few industries that rely on bulk raw material. Such industries are located near their material source. The variable has a mean score of 4.6.

Land for expansion and adequate siting facilities are less important location variables. Land supply is abundant for any intended expansion of firms. Lastly local politics with a mean of 7.5 and the government with a mean of 8.9 have the minimal influence on industrial location. Only 7.1% of the respondents note that the government has a very strong influence to their location. Another 9.5% think it has a strong influence while the remaining 83.45% acknowledge that the government has not influenced their industrial location. Industries having government shares indicate that they have benefited from the government. Others that have benefited are those that have guaranteed government purchases.

Rank correlation for the variables are derived in order to explain the extent of the relationship between the two sets of ordinal data without making assumptions about the variables being correlated. The correlations vary between -1 for the negatively but highly correlated variables to '0' for those without any correlation and +1 for those with a perfect positive correlation. The result of the correlation are shown in matrix form (table 4.2). The lowest significant measure of variables assessed at 0.01 significant level is set at +/-5. Variables exhibiting significant association at the said level are underlined. In order to achieve more detailed information on the extent of government influence, the correlation matrix is subjected to further computation using Factor Analysis Method .

	LR01	LR02	LR03	LR04	LR05	LR06	LR07	LR08	LR09	LR10	LR11	LR12	LR13	LR14	LR15
LR01	1.00000														
LR02	<u>.76148</u>	1.00000													
LR03	.35018	.19960	1.00000												
LR04	.41454	.44536	.41816	1.00000											
LR05	.21001	-.01152	.11801	-.15666	1.00000										
LR06	<u>.53099</u>	<u>.52469</u>	.43803	.48318	.17832	1.00000									
LR07	-.24307	-.04604	-.46750	-.21776	-.19764	-.17861	1.00000								
LR08	-.09619	-.10722	-.22241	-.36156	-.13280	-.35865	.31528	1.00000							
LR09	<u>-.54748</u>	-.41136	<u>-.55399</u>	-.45318	-.09388	-.47384	<u>.56406</u>	.36158	1.00000						
LR10	-.61067	-.34539	-.09782	-.11096	-.24956	-.38353	.07814	-.01502	.37814	1.00000					
LR11	-.40581	-.24706	-.61311	-.37297	-.25285	-.25526	<u>.74322</u>	.23237	<u>.51546</u>	.08010	1.00000				
LR12	<u>-.68665</u>	-.38828	-.39254	-.12914	-.28939	-.42117	.29128	-.08071	.64826	<u>.71234</u>	.32467	1.00000			
LR13	.14758	.17777	-.07184	.08559	.26833	.45017	.00723	-.25517	.04686	-.33093	.16145	-.02915	1.00000		
LR14	<u>.53716</u>	.43757	-.13064	.18301	-.08389	.41117	.07309	.13107	-.14107	-.60211	.15837	-.41201	.35468	1.00000	
LR15	<u>.50542</u>	.42709	.18944	.22499	.06716	<u>.54835</u>	-.17266	-.45810	-.42242	-.21350	-.04083	-.29805	.48965	.41819	1.00000

Table 4.2: Correlation Matrix:

Source: Research Data, 1995.

Factor Matrix Rotation (Varimax)

Factor rotation is undertaken for purposes of clearing the seeming contradiction between correlation among the variables and the number of resulting factors. Though the number of factors needed to convey all of the information is the same as the number of the variables, in practice some small number of variables which convey most of the information are usually used. Consequently the factors are rotated using varimax rotation to define a set of factors that have high correlations with some of the original variables. Varimax rotation is used since the rotated factors are orthogonal (that is they are uncorrelated and the angles between them are larger than a right angle). Variable rotation is done on the original factor matrix. The resulting factors clearly represent differing sub-groups of the original set of variables. After rotation variables are classified in a cluster other than a compromise position between factors (table 4.3).

VARIABLE NAME	VARIABLE CODE	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
GOVERNMENT INFLUENCE	LV01	.80810	-.35126	.19619	.11794
LOCAL POLITICS INFLUENCE	LV02	.63129	-.17053	.27028	.40426
RAW MATERIAL AVAILABILITY	LV03	.11263	-.77621	.09292	.10165
LABOUR	LV04	.17522	-.42555	.34609	.59643
POWER (ANIMATE & INANIMATE)	LV05	.12727	-.23600	.18936	-.79467
LOW TRANSPORT COSTS	LV06	.46410	-.28000	.62301	.11952
PROXIMITY TO OTHER INDUSTRIES	LV07	.00808	.79123	-.10629	.17739
CAPITAL AVAILABILITY	LV08	.24984	.36305	-.73180	-.04824
PRESENCE OF MARKET	LV09	-.41072	.71487	-.18601	-.11947
NEARNESS TO ENTREPRENEURS HOME	LV10	-.82515	.03688	-.09035	.26664
ADVANTAGES OF URBAN ECONOMIES	LV11	-.07056	.88606	.02592	.03391
PERSONAL CONSIDERATIONS	LV12	-.80109	.39697	.07892	.21289
AVAILABILITY OF LAND FOR EXPANSION	LV13	.20328	.26230	.76213	-.29084
ADEQUATE SITING FACILITIES	LV14	.77701	.29074	.22116	.13781
AVAILABILITY OF ABUNDANT WATER SUPPLY	LV15	.34392	-.08824	.73892	.08424

Table 4.3: Rotated Factor Matrix

Source: Research Data, 1995.

Factor Solution

Factor solution aims at reducing the number of variables so that only a few clustered variables are used to explain the underlying factors affecting the location of development inducing and development supporting industries. A cut-off point using a predetermined eigen value of 1.4λ and 9.5% variance are chosen as signifying independence of the factors (appendix 4.0). The eigen value indicates how much of the variation in the entire set of original variables is accounted for by each factor. Factors with a smaller eigen value of less than 1.0λ are considered as trivial and are therefore left out since they only convey a trivial proportion of the information in the original variables (table 4.4; appendix 4.0). Although the fifth factor has a 5.2% variance it is not considered as sufficient enough to signify independence from the rest as its eigen value fall far much below 1.0λ than that of the fourth factor. The cut-off is crucial such that any factors chosen accounts for its individual variance out of the total of fifteen.

Variable	Communality	Factor	Eigen Value	%Variance	Cumulative %
LV01	1.00000	1	5.34047	35.6	35.6
LV02	1.00000	2	2.51828	16.8	52.4
LV03	1.00000	3	1.70768	11.4	63.8
LV04	1.00000	4	1.42813	9.5	73.3
LV05	1.00000	5	.78236	5.2	78.5
LV06	1.00000	6	.66136	4.4	82.9
LV07	1.00000	7	.64230	4.3	87.2
LV08	1.00000	8	.57023	3.8	91.0
LV09	1.00000	9	.32136	2.1	93.1
LV10	1.00000	10	.29881	2.0	95.1
LV11	1.00000	11	.28802	1.9	97.1
LV12	1.00000	12	.16306	1.1	98.1
LV13	1.00000	13	.11297	0.8	98.9
LV14	1.00000	14	.10290	0.7	99.6
LV15	1.00000	15	.06208	0.4	100.0

Table 4.4: Factor Identification: initial Factor Solution and Communality

Source: Research Data, 1995.

Factor Identification and Interpretation

Loadings on each of the significant factors are then found. Factor loadings are correlations between the variables and the factors. They show the strength of the relationship between the variable and the factor. The higher the correlation between the variable and the factor the higher the loading. Variables with a loading of ± 0.5 are considered as significant. Many variables thus load on the first factor (table 4.5). A comparison with the factor solution and communality gives the extent of communality deviations. Communality of variables is the proportion of its total variance that is shared with the original variable. The factors used are all those with a communality of ± 0.5 — meaning that each variable constitutes atleast half of its expected variation to the common pool of variances of the fifteen variables — hence its legitimacy.

VARIABLES	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
LV01	.85004	.19794	-.22787	-.22787
LV02	.67798	.25630	.00926	.37236
LV03	.57256	-.54892	-.03688	.06047
LV04	.56019	-.18880	.30785	.49303
LV05	.25053	-.06423	-.12561	-.81030
LV06	.76253	.15573	.30080	-.00604
LV07	-.48486	.61849	.03966	.22291
LV08	-.36524	.27923	-.70270	.16407
LV09	-.78345	.31657	.08864	-.08205
LV10	-.60656	-.44792	.38515	.21121
LV11	-.54498	.68273	.16252	.04854
LV12	-.72659	-.10690	.54243	.13152
LV13	.30416	.48919	.49925	-.44099
LV14	.47127	.70502	-.11558	.15385
LV15	.61858	.26983	.46741	-.07237

Table 4.5:Factor Matrix: (using Principal Components, no iterations)

Source : Research Data, 1995.

The final factor identification is shown in table 4.6. Note the factors that convey trivial proportions of the original variables and therefore have small eigen values have been omitted.

Variable Code	Communality	Factor	Eigen Value	% Variance	Cumulative %
LV01	.82881	1	5.34047	35.6	35.6
LV02	.82881	2	2.51828	16.8	52.4
LV03	.63415	3	1.70768	11.4	63.8
LV04	.68731	4	1.42813	9.5	73.3
LV05	.73925				
LV06	.69621				
LV07	.66888				
LV08	.73208				
LV09	.72860				
LV10	.76150				
LV11	.79190				
LV12	.85089				
LV13	.77555				
LV14	.75618				
LV15	.67916				

Table 4.6: Final Factor Statistics

Source: Research Data

More often, industrial development is considered as a means of correcting regional imbalances. However, if the location of industries is not properly grafted to the existing physical and socio-economic landscape, it only reinforces the problems of inequitable regional development. One of the ways of correcting the polarised space economy through industrial development is by the involvement of the central or local government in the location decisions of industrialists. This can be done through structural support, incentives and regulations.

Note that since most industrialists are driven by the profit motive, most of the decisions are mainly economic-based, though not exclusively as the government can manipulate the environment in which the industrialists operate. In identifying the extent of government influence in location of *dii* and *dsi*, the fifteen variables thought to influence location of industries are subjected to Factor Analysis in order to cluster them into fewer factors which explain the location and subsequent patterning of industries. Four clusters of factors emerge as classified below;

<u>Factor One</u>	<u>Factor Two</u>	<u>Factor Three</u>	<u>Factor Four</u>
Government influence	Presence of raw material(s)	Capital availability	Cheap labour
Influence of politics	Proximity to other industries	Land for expansion	Power
Nearness to entrepreneurs home	Presence of market		
Personal considerations	Advantages of urban economies		
Availability of water			

Factor one is considered as government influence-cum-entrepreneur perception. Factor two is determined as production and marketing costs. Factor three is labelled as availability of capital and land, while the fourth factor is presence of power (both animate and inanimate).

Though the effects of government legislation and control cannot be easily determined, it is thought that some form of influence is exerted by the government. Whether directly or not, the influence of the government is interpreted as consent to locate first in the urban areas as dictated by the expected returns to investments or in proximity to bulk raw material(s) in a bid to reduce production costs. Industries therefore concentrate in urban centres. The entrepreneur's own choice(s) which is prominent in location decisions of small industries in the study area has contributed to the prevailing pattern of industries. Such personal considerations are exhibited by choice of location near the entrepreneurs home which reinforces the fact of the need for a familiar clientele within the context of both socio-economic and political environment. Industrial development itself needs goodwill from the government and the local people.

It is, therefore, noted that the influence of the government exists but this influence is weak as it does not disperse industries to the rural peripheries so as to achieve balanced regional development. Instead, it puts in place through its various structural institutions, aspects that propagate urban concentration of manufacturing.

The presence of raw material(s) and markets though important, are found to be geared towards urban production for the satisfaction of fewer but monetary urban population than for the raw material resource-producing hinterlands. Centres where market forces are strong attract industries that seek to meet their consumers needs and also serve as central distribution points for the resource periphery. Most non agro-based industries show that market for their goods and services is an important decision in their choice of location. Nixon (1973) relays a similar situation in Uganda and Kenya from his comment that;

“The analysis of the respondents as were ranking importance of various location factors clearly illustrated the importance of market access and in the case of Kenya, the anticipation of future market growth” (Nixon, 1973; 157).

Other important factors are availability of capital and costs of labour and power. Capital hinders and deters would-be entrepreneurs to venture into manufacturing. Industrial construction and operation requires heavy capital outlay. This is not easily available unless some funding from financial institutions or the government is undertaken. However such external funding have strings attached which does not help regional industrial patterning. Most of the donors require location at places where returns to investment are high. This condition favours urban location at the expense of regional development. Due to high labour supply in the study area industrial location (especially those that do not require highly skilled labour) is not dictated by the pattern of population settlement except in places where dense population is found. Industries that require skilled labour locate in the urban areas where they benefit from economies of agglomeration. Power supply no doubt attracts many industries, and since power is mainly supplied in the urban areas than in the rural areas more industries locate in the urban areas as opposed to the rural areas. The government which can positively manipulate some of the location variables is found to have compromised regional industrial development.

4.3 EFFECT OF FINANCIAL INSTITUTIONS ON INDUSTRIAL LOCATION

The government, through its various institutions, or institutions that it could have some control over, has the power to influence industrial location through resource allocation. In an open market system a conflict arises between the private investor's desire to maximise profit and the public's need to achieve a balanced regional development through an even industrial location pattern. As noted earlier, industrial production in regions otherwise termed 'uneconomical' can be enhanced through expansion of marginal profitability boundaries (Smith, 1960). Direct or indirect incentives to investors achieves this need as they reduce investor's production costs and increase profit.

Extension of profitability margins can be done through the existing financial institutions. The 1994-1996 Development Plan notes that financial institutions are to increase their geographical extend in lending. It notes;

“Development finance institutions with lending schemes will be encouraged to increase the informal sector and will be assisted to increase the geographical and numerical coverage of their schemes... Kenya Industrial Estates.(K.I.E) will spearhead industrial entrepreneurship development through its activities” (National Development Plan 1994-1996: 1994).

There are a number of established financial institutions in Western Province. These are Industrial and Commercial Development Corporation (ICDC), Development Finance Company of Kenya (DFCK), Kenya Commercial Bank (K.C.B), National Bank of Kenya (NBK), Kenya Industrial Estates (K.I.E), Co-operative Bank of Kenya, Standard Chartered Bank, Barclays Bank and a number of N.G.O's such as the Danish Development Agency (DANIDA) and the Kenya Finland Co-operation (KEFINCO). These institutions have funded nearly 80% of the rural based small, medium and large scale industries in the study area since 1984 (District Development Plans-Kakamega, Vihiga, Busia and Bungoma, 1994). Their role in regional industrial development and especially location influencing is tremendous.

In assessing some of the institutions, it is noted that between 1989 and 1993 industrial financing in the study area focused on assisting 'ailing' firms and did not contribute much to the establishment of new development inducing industries (*dii*). Between 1989-1993 K.I.E sponsored 94 projects at the cost of 52 million in Bungoma and Mt. Elgon districts (K.I.E, 1994).

REGION	COST (KShs)	REGION
Dimo Tailoring Unit	222,210	Webuye
Mals Tailoring Unit	194,114	Kanduyi
Wesonga Tailoring Unit	136,642	Bungoma
Small Scale Saw Mill	127,600	Kanduyi
Webuye S.S.S Mill	195,470	Webuye
Atieta Tailoring Unit	230,000	Bungoma
Simiyu Metal fabrication	101,250	Netima
Bukhayi Posho Mill	268,500	Matisi
Kanduyi welding & Battery Charging	231,645	Kanduyi
Nyachuru Enterprises	526,688	Kimilili
Bungoma Sec Bureau	343,912	Bungoma
Joo Enterprise	1,854,200	Kanduyi
Mukundi Printing Press	2,279,040	Bungoma
Tuti Posho Mill	316,250	Kibabii
Wenani Posho Mill	155,407	Kamusinde
Buffi Industry	453,607	Bungoma
TOTAL	7,636,535	BUNGOMA

Table 4.7: K.I.E Sponsored Industries in Bungoma and Mt. Elgon Districts -1992-1994.

Source: K.I.E, Bungoma (1995).

Most of the projects financed are small scale agro-based processing industries located in rural service centres. Little is realised from the projects in terms of value added. Most firms concentrate on simple processing of consumer goods whose value added is small. Though employment increased, it is negligible since most of the processing is in the grain milling sector which employs mainly one or two people. Furniture, electrical work, leather and textile firms with greater employment opportunities received insignificant funding. Though grain milling industries are well distributed they have a small impact on regional development. It is noted that though the public institutions desire to exploit industrial resources through assisting regional industrial development, they lack; i) an industrial locational policy that aims at deliberate patterning of regional industries, and; ii) clearly defined structure of the nature of industries to support.

Of the institutions surveyed, only K.I.E has an elaborate industrial location policy. It requires that;

- a) Projects be rural based,
- b) Industrial projects should aim at decentralisation,
- c) Production of goods and services should include a greater proportion of regional (local), resource element (raw materials) and ;

d) There should be no duplication of projects.

Despite these, K.I.E frequently finances the commercial and service sector more than real processing (Fig 4.1). Book-shops, pharmacies, and cafeteria are given preference even though they only add little to the regions income(s) through value added (appendix 7). These commercial entities help in extracting income and transferring it through the same financial institutions to the core metropolises.

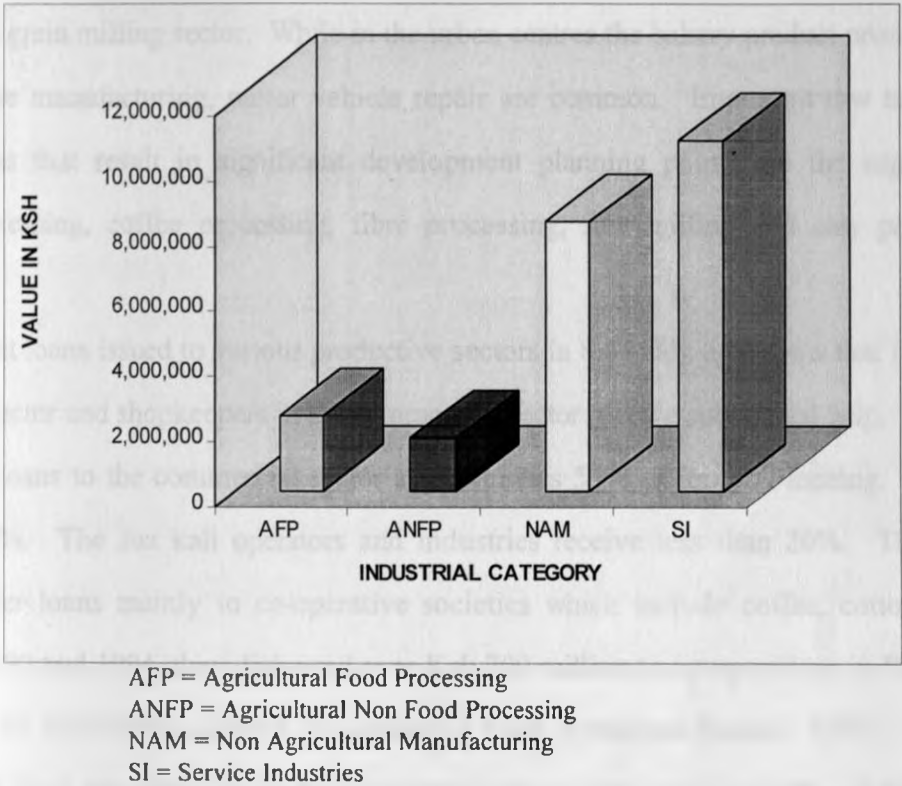


Fig 4.1 : Sector Financing By K.I.E in Bungoma and Mt. Elgon District 1989-1994.

Source: K.I.E, Bungoma, 1995.

The Banking institutions such as KCB, NBK, Standard Bank of Kenya, Barclays Bank and Co-operative Bank do not have any “regional industrial loaning policy”. They loan to anybody from anywhere so long as one is credit worthy. Most entrepreneurs from the study area lack capital or any other assets worth of money and are therefore not eligible for credit. The low average income of about KShs 11,200 per year is insufficient to offer security required by the banks for the industrial loans. These retard industrial investments and result in skewed industrial development favouring urban centres where returns to investments are higher.

Some financial institutions set aside capital specifically for small enterprises. However, there are very few indigenous investors interested in credit facilities of this kind. The research establishes that the bureaucratic loaning system discourages many would-be investors.

Furthermore, most residents of the study area are not business-minded or aggressive towards self-employment. They do not seriously consider the few credit facilities offered by financial institutions. A Bank Manager notes that:

"These people are not aggressive in business. Only very few of them apply for financial assistance. Those who do so, abandon the process on the premise that their property will be auctioned in the event of defaulting payment".

Due to lack of a location policy by the financial institutions and by extension the central and local government, industrial patterning favours urban centres. In the rural areas predominant production is in the grain milling sector. While in the urban centres the bakery product processing, furniture and fixture manufacturing, motor vehicle repair are common. Important raw material orientated industries that result in significant development planning points are the sugarcane industries, tea processing, coffee processing, fibre processing, saw milling and clay products manufacturing.

Development loans issued to various productive sectors in the study area show that farmers in the agricultural sector and shopkeepers in the commercial sector receive substantial help. Kenya Commercial Bank loans to the commercial sector approximates 50% of its total loaning. While farmers receive 30%. The Jua kali operators and industries receive less than 20%. The Co-operative Bank offer loans mainly to co-operative societies which include coffee, cotton, and maize. Between 1990 and 1994, they disbursed over Ksh.200 million to co-operatives in Western Province and parts of Trans-Nzoia district (Co-operative Bank -Bungoma Branch, 1995). K.I.E. concentrates on Jua Kali operators (in all the industrial sectors) who got over 60% of the total loans disbursed in the province between 1991 and 1994.

Industrial and Commercial Development Corporation (ICDC) which is also a major lender to the industrial sector, commits only 13.1% of its funds to small scale industrial development in the Province despite the existing development potential. Furthermore this is only 28% of all the funds apportioned to the study area by ICDC. The commercial sector which has little value added receives 54% of the funds. The above structure of the loaning system propagates regional inequality as rural located industries are stifled while urban based commercial enterprises and investments are promoted. On average between 1984 and 1994, ICDCs funding of industrial development in Western Province amounts to 9% (appendix 3.0). This is considered extremely low to a macro-economic development region with the second highest potential in the republic.

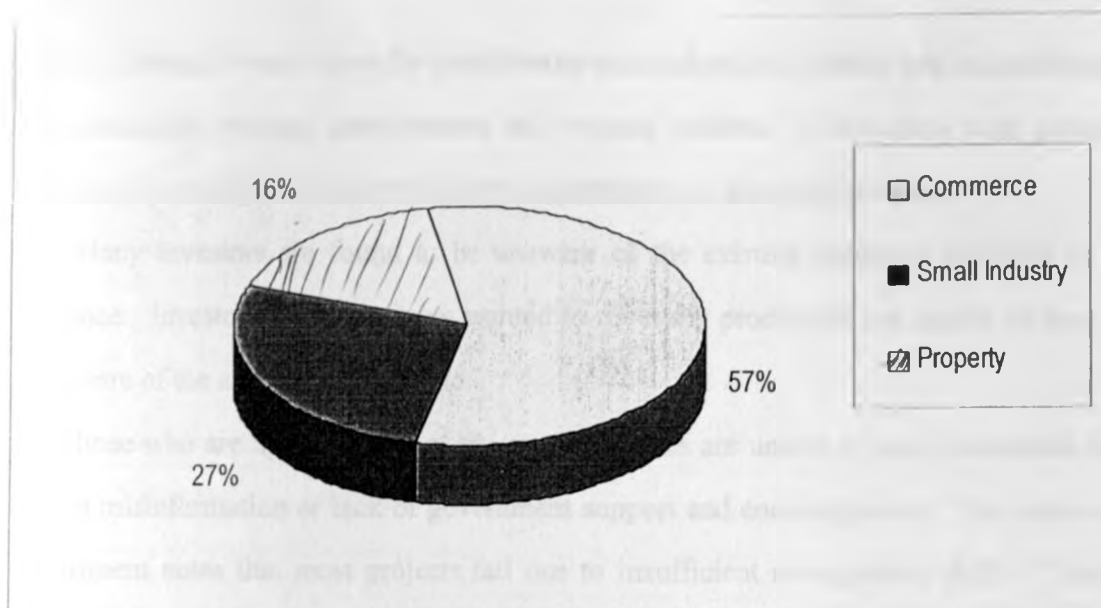


Fig 4.2 Sector Loaning By ICDC in Western Province, 1980—1993

Source: ICDC Reports, 1980-1994.

The above assessment reveal that regional industrial development in the study area has not received sufficient attention from the financial institutions which are the government's extended arm for directing industrial development. Various reasons are attributed to this scenario;

- i) The prevailing financial institutions have a loaning structure that deliberately or otherwise neglect rural industrialisation and development, but rather, reinforces capital flight from the resource hinterland(s) to urban centres typical of the core-periphery structures. Biased funding of agro-based processing industries that do not involve complex operations and transformation of the final products is an indicator of the need to exploit local raw material resources for urban benefit and eventually the international core centres. The emerging industrial location pattern is urban skewed.
- ii) Inability by the financial institutions to devise a method of confining local savings within the resource region for reasons of providing a sufficient local capital base for investment compounds the problems of raising local capital. Investment capital finds its way out of the regional economy and thus benefiting other regions more than the source region.
- iii) The bank's system of assessing industrial profit levels of stocks and changes in the income level of the entrepreneur as indicators of growth is not a good regional measure (it is sufficient only when assessing a single investor). Increased levels of employment, improvement in average regional disposable income and increased self reliance are superior

indices. Beside, it takes time for industries to attain changes in stocks and income since it is embedded in product improvement and workers welfare. Overlooking such pertinent issues and pursuing the former misdirects exploitation of industrial resource.

(iv) Many investors are found to be unaware of the existing industrial potential in the province. Investors who may have wanted to diversify production are unable as they are not aware of the areas to venture into.

(v) Those who are apprehensive of the resource bases are unable to take investment risks due to misinformation or lack of government support and encouragement. The commerce department notes that most projects fail due to insufficient management skills. There is increased project duplication and location similarity resulting in business 'choking'.

(vi) The increased bureaucracy in approving and disbursement of loans for industrial development leads to low level of industrial development. At K.I.E., the process consists of firstly; assessment of proposed industrial projects, secondly; acceptance by the district office, thirdly; vetting by the provincial office, and finally vetting by the Nairobi head office. Disbursement of funds takes the same process downwards. The overall time taken for acquisition of the loan is between one and half years to three years. This long process of loan procurement discourage entrepreneurs with most of them giving up. Moreover, by the time funds are approved, the economic conditions are found to have changed and the projects no longer as viable as they were before. Such projects collapse within a short time.

(vii) The financial institutions do not have an elaborate follow-up system that assists in monitoring industrial projects. Apart from K.I.E, the rest of the financial institutions do not frequently assess their clients progress. Institutions concentrate on stock and income assessment as a basis for loan repayment and neglect the entrepreneurs problems. Entrepreneurs slowly ground to a halt — failing firms that could otherwise have changed the regional industrial scenario (table 4.8 shows firms that have collapsed in Bungoma and Mt. Elgon Districts after being financed by K.I.E).

(vii) Lack of industrial investment incentives increases the prevailing state of few industries. Only industrial concerns such as Mumias, Nzoia and Pan Paper Mills have had location and marketing incentives. The rest do not receive any assistance. Nzoia, Mumias,

and Pan Paper received land and tax holiday. Premier printers receives government purchases.

SECTOR	PROJECT	COST (KShs)	REGION
AGRICULTURAL FOOD PROCESSING INDUSTRIES	Mabanga Posho Mill	233,000	Mabanga
	Namawanga Posho Mill	345,000	Namawanga
	Kerre Posho Mill	330,000	Ndivisi
	Bumwali Posho Mill	285,000	Sirisia
	Mulondambele Rice Sheller	434,148	Bumula
AGRIC.NON FOOD PROCESSING	Bungoma Fashions	433,964	Bungoma
NON AGRIC. MANUFACTURING	?	?	?
	?	?	?
SERVICE INDUSTRIES	Colorite Foto Lab	4,510,325	Bungoma
	Colorite Foto Lab	510,325	Bungoma
	Nzoia Enterprises	1,503,816	Bungoma
Total		8,585,578	

Table:4.8 Collapsed and Repossessed K.I.E. Projects in Bungoma and Mt. Elgon Districts: 1989-1994

Source: K.I E Bungoma, 1995.

Failure by the government to influence such institutions which can in turn influence their investors location decisions has helped polarise the space economy. The promotion of rural industrialisation through the initiation of development inducing and development supporting industries in rural Service Centres (SC), Potential Development Points (PDP) and Development Points (DP) has therefore not succeeded much.

4.4 REGIONAL INDUSTRIAL LOCATION PATTERNING IN THE CONTEXT OF THE CENTRIFUGAL APPROACH.

An attempt is made in this section to integrate Ogendo's (1989) Centrifugal Planning Approach into regional industrial development planning especially for *dii*. This aims at achieving a spatially even industrial pattern in response to the (geographical) resource distribution in the Province. The arising pattern is deemed fit for acquiring equitable regional development.

The Centrifugal model is not an industrial location model, rather, it is here considered as a model for regional industrial planning. Nevertheless, industrial location can be incorporated into the Centrifugal framework, which considers all aspects of development including profit maximisation and loss minimisation for private entrepreneurs. A major assumption in this

explanation is that the government has some strong role to play in policy and decision making on all matters affecting its economy and citizens. Though the model recognises the on-going programmes of structural adjustment (SAPs) and a move towards a liberalised economy, it does not negate the fact that such programmes (SAPs) occur within the wider framework of national development. Moreover, any government (Kenya included) is not under any obligation to embrace the SAPs wholesale, but rather, it has the mandate to modify them in order to suit the prevailing socio-cultural, political and econo-geographic set-up.

Government intervention in regional and national economic development is not uncommon even in the very strong capitalistic nations of the west and in the Asian Newly Industrialised Nations (NICs). It is important to note that though a liberal market system is good to some extent, its introduction should be piecemeal and in stages to allow for local adjustment. Any indiscriminate introduction is likely to hurt the local industry than improve it. For instance, though the USA has been the greatest proponent of free trade in the post war era just as United Kingdom (UK) was during much of the nineteenth century, it nevertheless has not hesitated to apply quota or use various forms of economic coercion to encourage investment in the USA itself when threatened by cheap imports or even better products from other countries (Chapman and Walker, 1991: 210). As a single world power the USA has attempted to prevent Japanese dominance of the USA's automobile industry. There is absolutely no reason why Kenya should not do this (protect and encourage local industries). However such protectionism should only be in the short-run so that it is not counter productive. A weak government influence cannot help improve regional economic growth and especially industrial development. Mill (1966), writing on a 'Representative Government' notes that;

“...a liberal government must give room for state intervention in the economy if the interest(s) of its people are threatened either by external powers or internal private individuals. The state should organise welfare for the public conducive for growth and personal esteem”

Government intervention in regional development is not only a Kenyan doing but an international applicable regional development principle. The strength of the people is derived from their economic health and the level of development as input by the government.

It has been shown above that various weaknesses from within the government or its institutions slow down or even stall industrial development through assisting inappropriate

industrial location and patterning. The Centrifugal model is in turn here used to address some of the problems arising above.

First, in order to correct the problem of biased loaning system that favours a few industries and the commercial sector that lead to tilted resource extraction and urban skewed industrial location, the model suggests an increased role of the government in offering various industrial attraction facilities that are mainly infrastructural. These facilities should include industrial sites, water supply system, electricity supply and well structured transport and communication network system. Industrialists are encouraged to use the existing industrial facilities than to seek new location. The loaning system need to be orientated towards development of industrial location attractions well in advance. The existing financial institutions should seek to own such facilities and lease them out to intending users. The research shows that very few such facilities exist in the study area (table 4.9). Once facilities are constructed, it is possible to influence (to some level) the kind of local resources to be exploited.

Financial institutions need to spread into many of the centres as a means of increasing local savings to enable investments and development of local industries but not as a way of extracting local resources for the benefit of other regions. The study notes that few financial institutions exist in the study area (table 4.10).

LOCATION	FACILITY		
	TEMPORARY	PERMANENT	OTHERS
KIMILILI	Jua Kali Sheds		Industrial Site
WEBUYE	Jua Kali Sheds		Industrial Site
BUSIA	Jua Kali Sheds	K.I.E Sheds	Industrial Site
BUNGOMA	Jua Kali Sheds	K.I.E Sheds	Industrial Site
KAKAMEGA	Jua Kali Sheds	K.I.E Sheds	Industrial Site
LUANDA	Jua Kali Sheds		
MBALE	Jua Kali Sheds		Industrial Site
KABRAS	Jua Kali Sheds		
MALAVA	Jua Kali Sheds		Industrial Site
LUGARI	Jua Kali Sheds		Industrial Site
TONGAREN	Jua Kali Sheds		Milk Cooler

Table 4.9 Existing Industrial Attraction Facilities in Selected Urban Centres

Source: Research Data, 1995.

Second, in order to have a comprehensive industrial pattern, the model requires that all the prevailing industrial raw material resources are known. It is noted that there is no single region that is virtually without resources. Nevertheless, resource endowment varies on the basis of the prevailing technology and the econo-geographic state of a region. A careful study of the existing

resources and subsequent quantification with the use of potential development scores is relevant for industrial patterning.

INSTITUTION	MT ELGON	KAKAMEGA	BUNGOMA	MALAVA/LUGARI	TESO	BUSIA	VIHIGA
KCB	2	5	6	2	2	4	2
NBK	0	1	0	0	0	1	0
CO-OP BANK	0	1	1	0	0	0	0
STANDARD	0	1	2	0	0	1	0
BBK	0	1	3	1	1	1	1
K.IE	0	1	1	0	0	1	0
ICDC	0	0	1	0	0	0	0
Total	2	11	14	3	3	8	3

Table:4.10 Distribution of Financial Institutions in Western Province

Source: Research Data, 1995.

Third, to avoid duplication and concentration of industries in some places, a detailed assessment of the existing rural and urban *dii* and *dsi* need to be known. This assists in the distribution of industries in accordance to the existing resources and the location requirements of the entrepreneur. Such a harmonious relationship effectively decimates development impulses to most parts of the region. Areas that are hitherto industrially anaemic have the opportunity to be considered for industrial development.

Areas considered as marginal are covered by the model alongside Smith's expanded margins to profitability. The model suggests full involvement of the government through the provision of incentives at selected centres. This should be accompanied by selective short-term industrial protection. Short term protection is to assist industries emerge from excessive capital input to a point of profit realisation while at the same time ensuring that product quality is maintained as protection is only short term. Subsidiaries of large multinational corporations may not need similar treatment since their losses can be covered by profits elsewhere within the country or in another country where they have interests. Many aspects of regional policy are aimed directly at corporate balance sheet. Notably;

- i) Reducing costs of capital and labour i.e. resting on the belief that the corresponding reduction in investments and operating costs will influence comparative advantage between regions and induce a shift in future patterns of industrial development.
- ii) Incentives subsidises investment that could have been made elsewhere anyway (Hudson 1983). Though the problem is funding capital, priority is employment and raw material resource utilisation. (Woodward, 1974)

- iii) Tax allowance for instance affects returns rather than initial investment by allowing firms to reduce or even eliminate their tax obligation for specified periods after start up. Rent free periods can be allowed.
- iv) Subsidies should depend on the number and type of people employed, resource(s) (local) utilised and the actual location point or region.
- v) For regions this should be mainly infrastructural development. It should include a) Serviced industrial sites, b) Adequate transport facilities, c) Efficient utilities such as gas, electricity and water supply, d) Education that produces an adaptable, skilled and enterprising labour force.

CENTRE	I.S.I.C	TYPE OF INDUSTRIAL PLANT	INCENTIVE
AGRO-BASED FOOD PROCESSING INDUSTRIES			
Malava	3111	Meat product processing	Industrial sites, expertise,
Tongaren	3112	Dairy product processing	Power supply, roads, loans
Cheptais	3113 & 3134	Fruit and vegetable canning	Industrial sites, loans, roads
Mbale	3115	Manufacture of vegetable, animal oils and fats	Machinery, expertise, market
Lugari	3116 B	Grain milling	Machinery
Luanda	3117	Bakery products processing	Loans
Malaha	3118	Sugar processing	Machinery, sites, farm inputs
Kaborua	3121 A	Tea processing	Industrial sites, roads, power
Kimilili	3122	Manufacture of prepared animal feeds	Loans, Loan Guarantees
AGRO-BASED NON-FOOD MANUFACTURING INDUSTRIES			
Angurai	3140	Tobacco manufacturing	Agricultural inputs, Road, fuel
Nambale	3220	Manufacture of wearing apparel except footwear	farm Inputs, market assurance
Chwele	3231	Tanning extract processing and leather tanning	Industrial sites, markets
Kaborua, Turbo	3311	Saw milling	Machinery loans, roads
Kimilili	3523	Manufacture of soaps, cosmetics and miscellaneous agro-based chemical products	Machine pressers, loans, loan Guarantees
NON-AGRO-BASED MANUFACTURING INDUSTRIES			
Kakamega	3511	Basic non-vegetable chemical processing except fertilisers	Loans, Industrial sites, tax exemptions
Bukura, Budalangi	3691	Structural clay products manufacturing	Loans, Market assurance
SERVICES INDUSTRIES			
Kakamega,	3420	Printing and publishing	Capital, Loans, Guarantees
Bungoma	3811	Metal furniture and fixtures fabrication	Loans, Loan Guarantees
Mbale, Kakamega			

Table. 4.11: Suggested Areas and Incentives for Western Province

Source: Research Data, 1995.

e) An environment that provides a desirable quality of life and health such as the 'New Deal' of the 1930's for the development of the flood Tennessee Areas and the rocky mountainous Appalachians (House 1983).

Though it is expected that the private sector may not expressly accept this, the uncertainties surrounding their response (sticks and carrots of regional policy) may be avoided by direct government investment in industry. If the state can control a few of the production means, it can achieve its designed objectives of reducing regional inequality in development. In India, the poorest Indian states consistently attracted a disproportionate share of investments by these enterprises since independence, a policy that contributed to balancing of the distribution of industries (Udhay-Sekhar, 1983). If however, one would think alongside the SAPs for emphasising attracting external investments, then, it should be done simultaneously with the promotion of indigenous development and by implication from large enterprises to small firms and may be also a shift in the responsibility for regional policy from the central government to the local government. This is a desirable decentralising trend if supported by sufficient resources.

Fourth, policies should focus on the leading industry as a realistic target with comparative advantage. The dominant agro-based food and non-food processing industries should be made to 'jump-start' regional development in hitherto less developed centres. The industrial centres should not however be points of accumulation of capital and development resources *per se* but rather points of decentralisation of input and lessen dependence on a few primate centres. Such leading industries in the study area are Pan Paper Mills in Webuye and Mumias Sugar Factory.

It is argued that technical linkages arising from the leading industries in a development point do not necessarily induce adjacent investment in related manufacturing. But, efficient transportation is crucial for maintaining linkages. Differences in downstream and upstream operations in a processing chain may also be crucial. Considering cane production, basic sugar production is drawn from raw material sources (sugarcane), but alcohol production is associated with the market location. While, this may make it difficult for efficient development of points within a region, advantages arise if firms using the products are located within the same planning or macro-economic development region. (Chemical firms have more problems here due to pollution related aspects). Similarly, government intervention at regional level is necessary, for sometime, (until some development is achieved) to ensure that the multiplier effect is retained in the region. Holland (1971) notes a situation like this in the Mezzogiorno. This implies that

ownership of firms should not be so much fragmented and lead to problems of co-ordination of investment required for an integrated operation.

Industrial development and by implication regional development presents a whole problem of spatial planning in free market economies. Naturally, there is a strong resistance to one area being favoured than the other, and any democratic system is bound to give political focus and consequently development resources to a discontent of this kind. Any planner attempting such development should not be insensitive to regional aspirations as well. Sometimes attempts to bring about regional (development) equality through planned industrial location, has to say the least, proved difficult. Public policies here are generally characterised by pragmatism inspired by short term political expediency rather than the kind of long-term view required to bring about significant changes in spatial structure of regional economies. Those criticising state intervention focus on the cost effectiveness of various policy instruments such as investment grants, labour subsidies and tax incentives. While these are important, any planning based on them should rest upon clear understanding of the operation of economic systems and the long term value of the results they generate.

Summary

From the above analysis it is found that the main factor that has influenced industrial location in the study area is the influence of the government and the perception of entrepreneurs. Secondly; is the factor of cost of production and marketing, thirdly, is the availability of capital and land and lastly presence of power (both animate and inanimate).

Further analysis of these factors show that the government and its intermediaries have played a minimal role in an attempt to eradicate regional development imbalances through equitable patterning of development inducing and supporting industries. The government is instead systematically promoting the development of a polarised space by continuously concentrating development resources in the urban areas at the expense of the rural resource hinterland (s). There has been no effort to quantify the existing industrial resources in the study area except scattered works by a few scholars and firms. It is established here that financial institutions do not have a regional industrial development policy and their loaning system has reinforced regional development inequality.

Consequently the hypothesis that

"The Kenya government has had insignificant influence on location and patterning of industries in Western Province"

is rejected and its alternative that

"The Kenya government has had significant influence on location and patterning of industries in Western Province"

is accepted.

There is therefore a need for the government to positively participate through a deliberate policy of patterning industries with as express aim of first benefiting the entrepreneurs and also the resource hinterland through the suggested tenets of the Centrifugal approach.

CHAPTER FIVE

5.0 THE SIGNIFICANCE OF PLANNED INDUSTRIAL STRUCTURE IN REGIONAL DEVELOPMENT

5.1 INTRODUCTION

The discussion in this chapter is centred on the argument that well planned development inducing industries (*dii*) and development supporting industries (*dsi*) are means of introducing equitable regional development.

Dii and *dsi* centres are considered as points in which emanate development impulses whose complex movement introduces growth effects in the immediate resource hinterland. The study takes a selected number of *dii* and *dsi* that derive their industrial raw material input(s) from the region in which they are located. The industries considered are cotton, sugar and tobacco. The spatial relationship existing between these industries and their resource hinterland(s), may be lethal, if regional development inequalities result. However, they are beneficial if they offer balanced regional development.

Industrial development of any kind and magnitude has the characteristics of attracting various development resources from its hinterland and to a lesser extent distant regions. This process improves or impoverishes the raw material supplying zones depending on the structure of the recipient industries and its relationship with the hinterland. Studies in industrial structure show that some industries have a tendency to extract more resources from their hinterlands than they benefit such regions (Awour, 1977). Parasitism of this kind concentrates development in a single central point — (the core), or, a few such points (cores). All industries, however, have the capability of emitting development impulses into their respective peripheries if they are well structured. In this manner they overcome the problems of inequitable regional development. In East Africa, especially Kenya, Ogendo (1989) argues that *dii* and *dsi* have positive development effects on the areas in which they are located.

It is worthwhile to note that points in which industries are located develop faster than their resource hinterlands. Mosely (1974) observes that hinterlands lack the ability to attract industrial establishments leave alone other economic activities. Myrdal (1956) explains that this gives rise to auxiliary economic activities which sets in motion an expansionary process of demand for goods and services. Accordingly, savings and investments increase resulting in favourable external economies necessary for sustaining the growth process. However, if unchecked, the said growth

process creates ill effects on the resource hinterland especially through continued importation of products that could otherwise be produced within the resource hinterland. Obiero (1980) illustrates that such a process is a conduit of regional development funds from rural areas to urban industrial cores — further impoverishing the resource hinterland.

In view of this, the *dii* and *dsi* are analysed in an attempt to show their effect on regional development. Expenditure by the suppliers of industrial raw material and income from their supplies to the industries is considered for analysis. Raw material suppliers to Mumias Sugar factory are mainly farmers drawn from the Mumias sugar zone. Apart from supplying raw material for sugar production they also supply raw material to posho mills and labour to the industry. Material suppliers to the Malakisi Leaf Centre are drawn from the Bungoma and Teso tobacco growing zone. They also supply cotton to the Malakisi Cotton Ginnery. Nambale Ginnery is supplied with cotton by farmers from its own cotton zone. The formulated hypothesis is that;

“Development inducing industries and development supporting industries existing in Western Province have systematically caused regional inequality in development”

5.2 ANALYSIS OF THE EFFECTS OF INDUSTRIAL STRUCTURE IN REGIONAL DEVELOPMENT.

The Inter-Regional Trade Multiplier

The Inter-Regional Trade Multiplier is used to analyse the monetary industrial benefits that are gained by a region. The various *dii* and *dsi* are considered as having the ability to induce growth. Consequently, the benefits arising from the industries into their resource hinterlands is viewed as income to the raw material suppliers (hitherto cane, cotton and tobacco producers), wages and salaries to the firm's employees especially those resident in the Province, and other general benefits to the region especially in enabling further exploitation of the industrial resources. The entrepreneur's profit is considered as the motivation to engage in industrial operations. Regional losses are evaluated in terms of leakage that mainly occur through savings, imports and taxes.

The model assumes that the monetary injections into the regional economy through purchases of raw material increases regional income. In turn, this results in increased consumer (raw material suppliers) spending. The sample raw material suppliers earned a total of Kshs

5,040,780. as follows: Mumias cane suppliers Kshs 2,831,680, Malakisi tobacco suppliers Kshs 1,907,500 and Nambale's cotton suppliers Kshs 301,600 in 1994 (appendix 6.1). There is also income obtained from wood royalty.

The total income obtained by sample farmers from the Mumias sugar zone is Kshs 2,831,680. Kshs 1,915,485 (51.9%) is spent outside Kakamega district (regions external to the area where the industry is located) hence outside the raw material hinterland. Out of the total income, Kshs 1,517,845 (41.2%) was spent on household items imported into the study area from other regions. The remaining Kshs 397,640 (10.8%) paid school fees in schools outside the study area (appendix 6.2). In the analysis, Kshs 1,517,845 is equivalent to the income spent on imported goods (Imports (I)). The amount of income spent on locally produced goods and services amounts to Kshs 919,031 (24.9%) (appendix 6.3). This is the income locally activated and therefore crucial to the development of the area. Kshs 519,634 (14%) of the total income of the sample cane farmers was saved (S) during the year. Taxes (T) amounted to Kshs 331,681.

Within the raw material source area leakage include savings, imports and taxes to the central government and local authorities. In comparison to Obiero (1980) savings have declined considerably while taxes have tremendously increased. Total leakage amounts to Kshs 2,369,160 (83.7%). The resulting regional multiplier for Mumias sugar in 1994 is found to be 1.6.

The tobacco raw material suppliers (to the Malakisi Leaf Centre) earned into their region a total of Kshs 1,907,500 (from tobacco leaf sales). This is payment of tobacco leaf supplied to the Malakisi Leaf Centre for processing. Of the total payment, Kshs 1,044,500 (54.8%) was spent outside the (district) raw material zone. Kshs 844,500 (44.3%) was spent outside the Malakisi tobacco growing area through purchase of household goods imported from other economic regions. Kshs 172,600 (9.1%) paid fees in schools outside the study area. Income spent within the raw material source area is approximated to be Kshs 438,700 (23%) and Kshs 292,500 (15.3%) saved. Taxes amount to Kshs 159,200 (8.3%) during the year of study. Total leakage from the tobacco raw material zone amounted to Kshs 1,296,200. Injections amounted to Kshs 1,907,500. The Leaf Centre had a regional multiplier of 1.5.

The Nambale Cotton Ginnery injected into its resource hinterland a total of Kshs 301,600. Kshs 320,000 was spent outside the hinterland on 'imported' household goods. Kshs 60,000 paid school fees outside the district. 12% was saved and taxes took 8%. Income beneficial to the resource hinterland is Kshs 264,500 being expenditure on products produced within the resource

hinterland. Total leakage therefore is Kshs 380,320 being cost of taxes, imports and savings. The Nambale Ginnery had a multiplier of 0.8.

The three industries analysed are incapable of generating twice as much the income (put in them) injected into their resource hinterland. They have a combined multiplier effect of 1.27. Much as some inducing effects originate from these industries their benefits are quite inadequate. Such weak benefits cannot secure the desired 'balanced' regional development. Various reasons are attributed to this situation. These are discussed below.

The effects of the relatively high leakage (imports, savings and taxes) permits flight of regional development funds (earnings) to other regions outside the resource hinterlands. Savings, taxes and imports benefit other regions and not the resource hinterland. Nearly all products imported into the region are household goods such as fats, matches, bread, salt and beer. Consumption of these products is high — implying that more is spent on their importation. The study area has potential in various fields whose exploitation can cut down on household imports. For instance, production of cooking fats and oil from the oil crops (chapter two), food cereals from cereal crops and manufacture of matches from the many forest woods among others. Government taxes have increased over the years 1992, 1993 and 1994 (District Development Plans, 1994—Kakamega, Bungoma, Busia and Vihiga). The cess tax and the agricultural tax have adversely affected raw material supplier's 'real' income. Taxed funds find their way back into the central government and it is unclear which sectors and regions they finally end up developing. Savings have reduced. Of the three industries supplied with regional raw materials, they indicate that suppliers save very little. At the Malakisi Leaf Centre farmers want to be paid cash as opposed to payment through the banks. Those with bank accounts have closed them citing the low crop income as being inadequate to meet their daily needs. Chances of increasing savings are therefore reduced. Thus the volume of leakage increases.

Other problems include ineffectiveness by the local authority to improve roads thereby increasing the costs of transport and subsequently poor marketing for the raw material(s). Middlemen take advantage of such structural weaknesses to exploit industrial raw material producers especially in the cotton industry. This reduces the overall level of injections on the one hand, and increases leakage on the other. Delayed payment also result in reduced earnings. More often than not payments are released after a year or more. This enigma is common among Busia, Teso and Bungoma's cotton suppliers.

5.3 IMPACT OF DEVELOPMENT INDUCING INDUSTRIES ON REGIONAL DEVELOPMENT

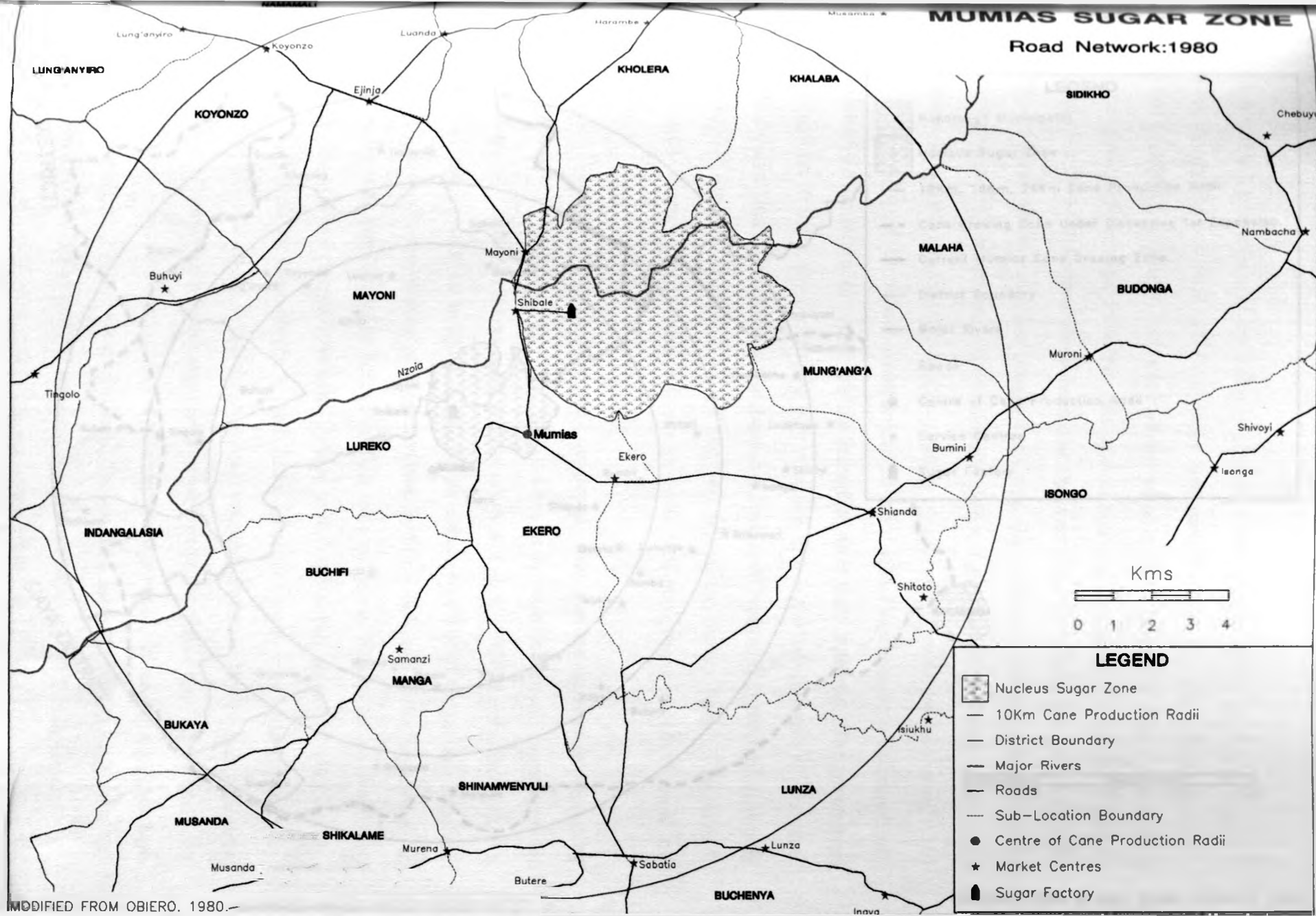
The development of infrastructural facilities in any region and the provision of social amenities is in most cases a prerogative of the government. When the central government provides them they become incentives that attract location of industries. Specific companies may also develop such facilities if through them they can realise their goals of loss minimisation and profit maximisation. More often than not the arising benefits are not retained around the industry but instead spill-over to the adjacent resource hinterland where they improve the physical and human infrastructure. Such benefits are known as growth inducing effects — emanating from the industry.

In the study area roads are classified into main access roads, feeder roads and access tracks. The main access roads (1st class general standard) are constructed by the government and are useful for delivery of machinery parts, raw material(s) and finished industrial products. From the three industries assessed Mumias Sugar Company has benefited more than Malakisi Leaf Centre or Nambale Ginnery from government road development. By the time of establishing Mumias factory this type of roads did not exist. The development of the roads have come with the inception of the factory (map 5.1). The feeder roads that link the outgrower's farms to the main access roads are second class gravel roads (Ministry of Works classification) and their development is the responsibility of the respective industries. Most suppliers of sugarcane indicate that the company, to some extent, has increased and improved the number of feeder roads within the Mumias sugar zone (map 5.2). Suppliers of tobacco think this is true but only to a lesser extent, while, cotton suppliers note that the ginneries have done little to improve feeder roads.

The access tracks which connect the farms and the feeder roads are also made by the respective companies. However, the expenses are borne by the farmers. This is later recovered from there cane supply earning(s). The sugar company has consequently expanded its sugar zone (map 5.3). The cotton and tobacco farmers show that they have not received any support in the construction of such access tracks. Though the roads are expected to improve accessibility and the delivery of farm inputs and other commercial products to the service centres (SC) and acquisition of raw materials, they are perceived by the suppliers as aiming at extracting much from the region and replacing less. As a matter of policy, transport priorities should be those favouring the development of rural transport network(s) aiming at improving raw material and market access especially among lower order urban centres.

MUMIAS SUGAR ZONE

Road Network:1980



MUMIAS SUGAR ZONE

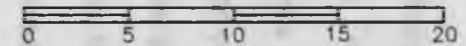
Expanded Road Network:1993

LEGEND

-  Kakamega Municipality
-  Nucleus Sugar Zone
-  10Km, 16Km, 24Km Cane Production Radii
-  Cane Growing Zone Under Discussion for Expansion.
-  Current Mumias Cane Growing Zone.
-  District Boundary
-  Major Rivers
-  Roads
-  Centre of Cane Production Radii
-  Service Centres
-  Sugar Factory

KAKAMEGA

Kms



MODIFIED FROM MUMIAS SUGAR COMPANY, 1993.

BUSIA DISTRICT

SIAYA DISTRICT

Schools and hospitals have also been developed. Mumias Sugar Company has built several schools for the children of staff and admit (only few) students from the sugar zone. Nambale ginnery and Malakisi Leaf Centre have not built any schools. Mumias factory also runs a training college specialising in the sugar industry. The schools however concentrate around the company area and Mumias town. No schools have been built far away from the factory but within the sugar zone. Nevertheless, the industry has bought some iron sheets for two schools within the zone which were destroyed by rainstorms. Raw material suppliers complain of poor performance by the local schools - a fact that has led to excessive spending on education outside the study area. They also note that 'harambees' for school construction and other school expenses have increased such that their income from industrial supplies is not enough to meet their expenses. The government and the companies in the study area should play an active role in the development of education. While 54% indicate that Mumias Sugar Company has developed education in the area, it is only beneficial to the company workers who are confined within the factory area. Education is expected to improve growth and prepare students for productive employment in both the rural and urban centres.

Medical facilities are few and not well developed. Large hospitals have been built by either the government or missionaries. The health centres in existence are mainly constructed by the church missions. These institutions lack essential drugs and staff. Only Mumias factory has a well maintained clinic. Nambale and Malakisi do not have any. 45.8% of the sugar-cane suppliers indicate satisfaction with the existing medical facilities, and only 40% and 38% respectively for the tobacco and cotton suppliers. The cost of medical services remain high as the private clinics which offer better services charge high fees. Private clinics are mainly found in urban centres which makes it difficult for some people to reach them. Though farmers earn some income from the sale of their crops, most of it find its way back into the urban centres through expensive medical services. There have been no significant reductions in the family size from 8 since the 1989 census. There is an increasing number of children whose medical care takes a big percentage of the farmers earning(s). On average a tobacco farmer spends Kshs 1,954, sugarcane Kshs 3,000 and a cotton farmer Kshs 750 on medical services per year from their crop income (appendix 6.3).

Development of piped water supply has not improved so much. Only 16.7% of the cane suppliers, 50% of the cotton suppliers and 35% of the tobacco suppliers think that water has been adequately provided since the inception of the specific industries. Within the Mumias sugar zone



water is still confined in the urban centre, while in Nambale and Malakisi a non governmental organisation, the Kenya Finland Co-operation (KEFINCO) has dug many boreholes which supply water to the communities.

Development of electricity network and provision of telephone facilities has tremendously improved after the construction of the industries. Most of the local markets visited have at least a telephone booth. Some prominent farmers have installed telephone lines. 62.5% of sugar-cane suppliers show that postal facilities have improved since Mumias factory was established. 80% note that though the postal facilities are now within physical reach, most of them are financially out of reach. 55% of the cotton suppliers are satisfied with postal services only and indicate that telephone facilities are a luxury they cannot afford.

Most of the farmers note that electricity supply is a necessity for regional development though the service lines have not been laid. This however vary between cotton, tobacco and sugar growing zones. Mumias sugar zone has electricity supplied to most of the markets. 83.3% of the interviewees in Mumias acknowledged that such improvements are a result of the influence of the industry. 95% of the tobacco suppliers note that though electricity was networked after the industry was constructed, it has not been supplied to their homes. Cotton farmers are still not supplied with electricity. Most farmers who have built permanent houses in the sugar and tobacco zones have electricity supplied to their homes. However this is still confined within short distances from the industries. Electricity supply is crucial for the development of intermediate producer goods industries in service centres and thus improve the rural economy through monetary expansion and the development of a manufacturing culture. Several welding shops are operational specialising in making steel doors and window frames, ox-carts and ox-ploughs besides repair of machinery. These are seasonal and employ only a handful of operatives.

5.4 THE USE OF THE CENTRIFUGAL MODEL IN ACHIEVING EQUITABLE REGIONAL DEVELOPMENT

The location of an industry in a resource hinterland is more often than not hoped to promote equitable regional development. This is accomplished through use of the local industrial resource base(s). The logic is founded on the premise that a symbiotic rather than a parasitic relationship between the industrial point and its resource hinterland should be in existence for the development of an industrial centre and its environs to take place. The industrial point (centre) initiates

development within its immediate raw material area by facilitating the improvement of most of the infrastructural network. It also grows to be a focal centre for initiating an industrial culture. At the point of industrial location, employment of the rural population is offered alongside market for local resource(s) especially material input. Moreover such centres develop to become points for producing substitute goods which are otherwise imported and thus increase the regional income. Regional industrial development is therefore a systematic method of expanding the rural monetary economy through successive demise of the less productive subsistence economy on the one hand and the introduction of production of goods and services with a higher value added on the other.

This study notes that benefits emanating from industries such as water supply, feeder roads and electricity supply have been tapped albeit piecemeal. Moseley's (1974) assertion that in the long-run, benefits from development inducing industries outweigh the negative effects is established to be in existence. The regional development problem encountered in the study area is "...how to evenly increase the industrial benefits (especially the development impulses) and equally distribute them within the whole resource hinterland..." as a means of procuring equitable regional development.

It is argued in the Centrifugal model that the desired, rational and composite industrial characteristics likely to support the right industrial development strategy for most developing countries should consider the following categories of industries (Ogendo 1980):

- a) Formal and informal industrial sectors
- b) Agro-based food processing, agro-based non food processing, non agro-based manufacturing and non agro-based allied service industries.
- c) Industrial classification and diversification.
- d) Development inducing industries and development supporting industries.
- e) Small scale, medium scale and large scale industries.
- f) Raw material orientated industries, market and (or) urban orientated industries, foot-loose (urban) labour orientated industries and political and socio-culturally located industries.
- g) Very fast, fast, slow and very slow growing industries.
- h) Import substitution and export orientated industries
- i) Local market (mass and luxury) consumer goods industries.

- j) High quality, low quality, and dangerous component and low quality pharmaceutical goods.
- k) Local raw material using and imported raw material using industries.
- l) Capital and intermediate goods industries.
- m) Capital and labour intensive industries.
- n) Public and privately owned industries.
- o) Extensively linked (backward and forward), narrowly linked and leading or key industries and lastly,
- p) Extractive, secondary and service industries.
- q) High potential, Intermediate potential and Low potential industries.
- r) Long range, Intermediate range and Short range development impulse industries.

The reason for such a consideration is that developing countries have their specific needs that require specifically structured industries to meet their goods and service needs. This should not necessarily be tailored alongside industries in developed countries where their regional development needs are different.

An evaluation of the three selected regional development inducing industries vis a vis the listed characteristics of industrial structure reveals a number of regional industrial flaws. Firstly, though Mumias Sugar Factory, Nambale Cotton Ginnery and Malakisi Leaf Centre induced regional development, the effect is only felt around the point of location. All the development impulses induced tend to fade fast with increased distance from the point of factory location. Areas far away, though within the same resource hinterland do not receive sufficient development impulses. Poor roads, insufficient telephone and electricity network system, inadequate clean water supply, few and poorly developed schools and health centres are prevalent. Housing conditions are predominantly poor. This demonstrates that industries have played a role in the existing imbalanced space economy through their poorly planned structure (especially when compared with the areas around the point of location of industries). Nearly one and half decades ago, Obiero (1980) found a similar situation at the Mumias sugar zone. Though she was sanguine that the condition would change over time, it has not been achieved (District Development Plan Kakamega 1994-96). A similar predicament is noted by Ogendo (1972) when he shows that industries concentrate in the Kenya highlands and the few urban areas where they induce development effects while their resource hinterlands continue in an impoverished state. This

condition, typical of Friedman's (1966) 'centre—periphery' resource accumulation and transitional areas of pauperism is continuing unabated despite many attempts by the government to solve it.

With the help of the Centrifugal model the current study demonstrates how the existing industrial structure has led to inequitable regional development and how this can be halted;

i) Predominance of agro-based processing industries with either short range activity radii or centripetal effects. Industries with short range activity radii (Sr.) consist of 38.1% of the sample industries. Intermediate range activity radii industries are 28.6%, while, those with long range activity radii account for 33.3%. In total 66.7% of the industries, though good, generate development impulses that are not able to reach far into their resource hinterlands. While those with long range activity radii are not well developed.

ii) The study also ascertains that very few industries are either very fast growing or fast growing. Even when combined with those that have the potential for very fast and fast growing the proportion is low at only 16.7%. Slow and very slow growing industries dominate the industrial scene of the study area as they account for 83.3% of industries. Studies have shown that very fast and fast growing industries play a leading role in regional development (Perroux, 1955; Ogendo, 1980). Practically, fast growing industries have many linkages (both forward and backward) that enhance employment, increase personal and regional income, widens range of manufactured products, and correspondingly expands the market size as well as reducing raw material wastage (especially what could have been waste product for one industry, as it is used as material input for another industry).

Most agro-based industries of Western Province can be transformed into fast growing only if they develop both forward and backward linkages. The cotton and sugar industries have several by-products which can be used by other industries. For instance a molasses (utilising waste molasses) plant for manufacturing power alcohol, industrial and agricultural chemicals is long overdue. Power generation from industrial steam for the supply of electricity to the rural population can be enhanced (this is now acceptable since the government has allowed private power generation and supply into the main power grid-lines). Filter mud and cake that currently goes to waste can be used as raw material for a fertiliser complex. While paper and paper board industry using baggasse as raw material can be constructed. From cotton produce both the textile and oil manufacturing industries

are long overdue. Specialising in the production of high quality paper for making important documents such as certificates can be done to substitute imports of certificate type paper from India where it is made from textile waste. Often, the use of agro-based industrial by-products results in fast growing chemical industries. The Province has a great potential for such industries. So far, there are only two chemical industries namely; East African Heavy Chemical which manufactures acids and alum and the Malakisi F.C.S that makes soaps and perfumes. A well structured sugar industry gives rise to profitable fast growing chemical plants.

iii) Very little diversification has taken place. Industrial development concentrates in the agricultural sector which is more vulnerable to weather changes and international price fluctuations. These challenges render development uncertain and so is entrepreneurship and raw material supply. The study shows that a great proportion of industries are either agro-based food processing or agro-based non food processing. Together they account for 78.6% of the industries (note that most agro-based food processing industries concentrate in the posho milling and bakery products manufacture with insignificant value added). Their contribution to the regional economy is as such small.

iv) There has been a continuous lack of effort on the part of (entrepreneurs) industrialists to improve their product quality or enhance marketing for their products. Since some industries are constructed for reasons of import substitution such as the sugar factories, they have not been able to meet the local sugar demand or stand competition with cheap sugar imports. The liberalised agricultural sector has adversely affected the regional import substitution industries notably sugar and cotton processing. Apart from tea, coffee and paper, the rest of the industries export very little. The worst affected is the cotton industry which is slowly grinding to a halt. Though most of the ginneries are being privatised, the new Asians owners are likely to invest their profits elsewhere in other regions as a form of security of capital. Moreover, farmers lack the incentives to grow the crop stemming from the unstable prices and late payment. The Province has the potential of producing 200,000,000 tons of cotton sufficient to supply more than five processing industries each employing over 120 industrial operatives.

v) Product development is centred around mass consumer goods as opposed to intermediate producer goods which can improve further the industrial growth. This process reinforces imports and increases leakage of regional development funds.

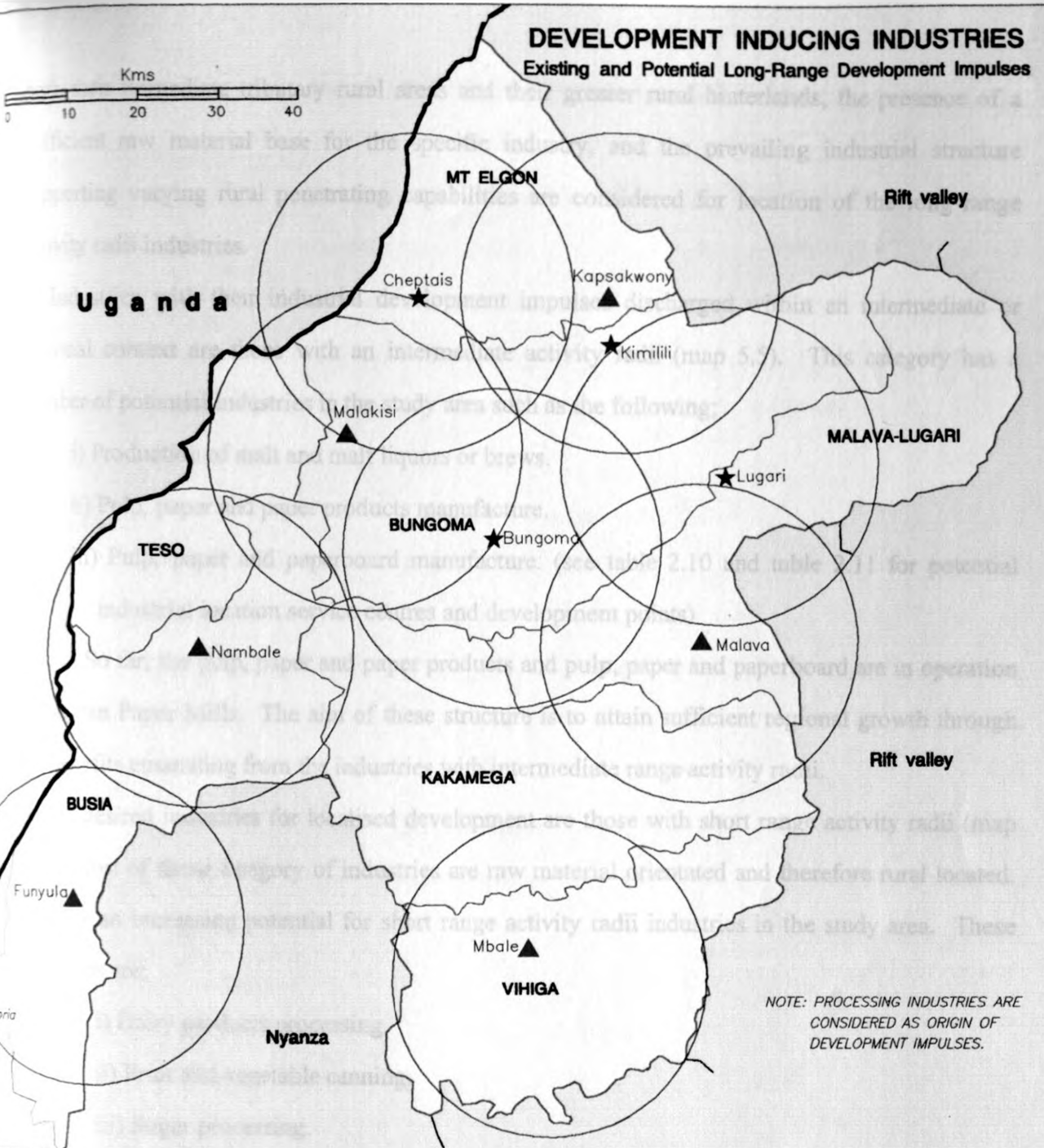
In order to curb and correct the arising inequitable regional development propagated by the flawed industrial structure, the Centrifugal model is used to make the following considerations for equitable regional development in study area.

Firstly, the need to acquire equitable development through planned industrial activity radii. This may be done through the transformation of the existing industries and (or) establishment of new ones on the basis of suggested activity radii;

a) For purposes of attaining dii that will discharge long range development impulses, a well planned structure and a deliberate location of the following industrial groups is needed (map 5.4);

- i) Meat product processing.
- ii) Manufacture of vegetable and animal oils and fats.
- ii) Coffee processing.
- iv) Manufacture of prepared animal feeds.
- v) Tobacco processing.
- vi) Other spinning, weaving and textile finishing.
- vii) Knitting mills.
- viii) Manufacture of wood and cork products n.e.c (not elsewhere classified) and;
- ix) Manufacture of soap, cosmetics and miscellaneous chemicals.

Western Province has sufficient potential for the expansion of the listed industrial groups. The district development plans have pointed out the need to develop a number of these industries in their respective resource hinterlands. The abundance of horticultural produce and oil (seed) crops can sustain a vegetable, animal oils and fats industry. Expansion of coffee production will increase the number of operatives in the 32 factories. The increased number of farmers engaged in the tobacco production and the subsequent hectareage under the crop is inclined to bring up a new tobacco processing factory. Improvement in the cotton industry right from the farmers to industrial processing and market will enhance quite a number of industries such as cigarette making. The resulting industrial pattern is expected to discharge development to most parts of the study area (map 5.4). Urban centres closely linked to introduction of economic development into



both their immediate tributary rural areas and their greater rural hinterlands, the presence of a sufficient raw material base for the specific industry, and the prevailing industrial structure supporting varying rural penetrating capabilities are considered for location of the long range activity radii industries.

b) Industries with their industrial development impulses discharged within an intermediate or regional context are those with an intermediate activity radii (map 5.5). This category has a number of potential industries in the study area such as the following;

- i) Production of malt and malt liquors or brews.
- ii) Pulp, paper and paper products manufacture.
- iii) Pulp, paper and paperboard manufacture. (see table 2.10 and table 2.11 for potential industrial location service centres and development points)

So far, the pulp, paper and paper products and pulp, paper and paperboard are in operation at the Pan Paper Mills. The aim of these structure is to attain sufficient regional growth through the benefits emanating from the industries with intermediate range activity radii.

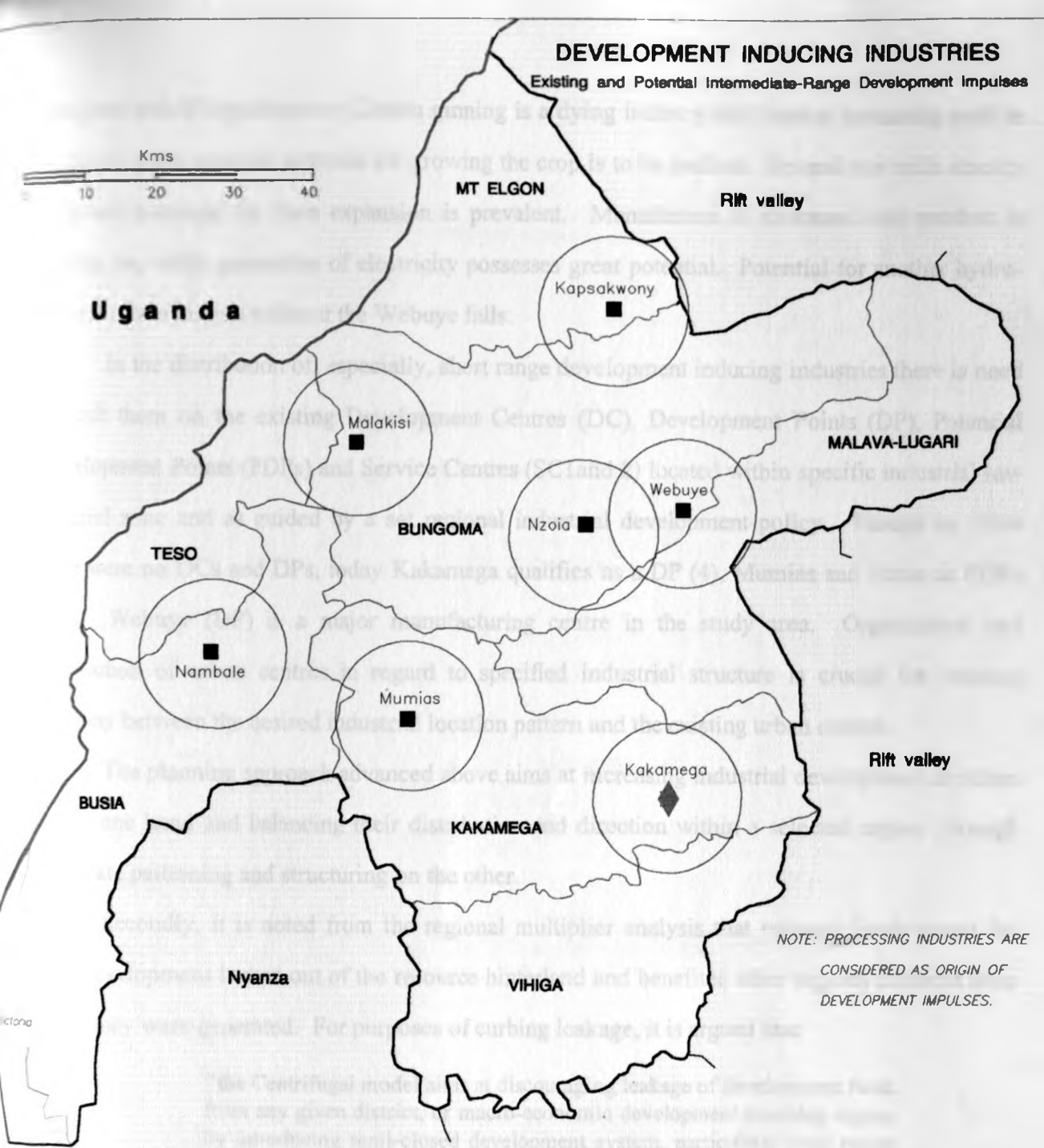
c) The desired industries for localised development are those with short range activity radii (map 5.6). Most of these category of industries are raw material orientated and therefore rural located. There is an increasing potential for short range activity radii industries in the study area. These industries are;

- i) Dairy products processing.
- ii) Fruit and vegetable canning.
- iii) Sugar processing.
- iv) Cotton ginning.
- v) Tanning extract processing and leather processing.
- vi) Saw milling.
- vii) Structural clay products manufacture.
- viii) generation and supply of electricity.
- ix) Processing and supply of water (see table 2.9 and table 2.10 for potential industrial location service centres and potential development points).

Note that some of the listed industrial categories already have plants in operation while some do not despite the existing resource potential. There is need to expand the dairy processing in areas shown on map 5.6. Fruit and vegetable canning has great potential in Mt. Elgon,

DEVELOPMENT INDUCING INDUSTRIES

Existing and Potential Intermediate-Range Development Impulses



LEGEND

- DISTRICT BOUNDARY
- INTERNATIONAL BOUNDARY
- PROVINCIAL BOUNDARY
- ◆ AGRICULTURAL FOOD PROCESSING
- AGRICULTURAL NON FOOD PROCESSING
- APPROXIMATED INTERMEDIATE-RANGE DEVELOPMENT IMPULSES.

RESEARCH DATA, 1995.

Map:5.5

Bungoma and Vihiga districts. Cotton ginning is a dying industry and there is increasing need to revamp it if the regional potential for growing the crop is to be realised. Several saw mills already exist and potential for their expansion is prevalent. Manufacture of structural clay product is picking up, while generation of electricity possesses great potential. Potential for another hydro-electric power station exists at the Webuye falls.

In the distribution of, especially, short range development inducing industries there is need to graft them on the existing Development Centres (DC), Development Points (DP), Potential Development Points (PDPs) and Service Centres (SC1 and 2) located within specific industrial raw material zone and as guided by a set regional industrial development policy. Though by 1994 there were no DCs and DPs, today Kakamega qualifies as a DP (4), Mumias and Nzoia as PDPs (1,2). Webuye (DP) is a major manufacturing centre in the study area. Organisation and distribution of urban centres in regard to specified industrial structure is crucial for creating harmony between the desired industrial location pattern and the existing urban centres.

The planning approach advanced above aims at increasing industrial development impulses on the one hand and balancing their distribution and direction within a selected region through deliberate patterning and structuring on the other.

Secondly, it is noted from the regional multiplier analysis that regional funds meant for local development leaked out of the resource hinterland and benefited other regions different from where they were generated. For purposes of curbing leakage, it is argued that

“the Centrifugal model aims at discouraging leakage of development funds from any given district, or macro-economic development planning region, by introducing semi-closed development system, particularly with regard to the development items most affected by such development capital leakage to other local and/or international centres of greater capital attraction” Ogendero (1989)

Regional leakage of funds occur in various ways. Some are direct through the many types of taxes that operate within the resource areas, while, others through savings. However, the greatest contribution to leakage arise from the development items consumed in the area but produced in other regions.

The introduction of a semi-closed system implies that the government or the local authority introduces fiscal, monetary and direct measures that reduce increased regional imports and enhance regional manufacture of household products as well as generate surplus for re-investment

DEVELOPMENT INDUCING INDUSTRIES

Existing and Potential Short-Range Development Impulses

Kms

Uganda

Rift valley

MT ELGON

MALAVA-LUGARI

BUNGOMA

TESO

Rift valley

KAKAMEGA

NOTE: PROCESSING INDUSTRIES ARE
CONSIDERED AS ORIGIN OF
DEVELOPMENT IMPULSES.

LEGEND

DISTRICT BOUNDARY

△ AGRICULTURAL NON FOOD PROCESSING

INTERNATIONAL BOUNDARY

• NON AGRICULTURAL MANUFACTURING

PROVINCIAL BOUNDARY

SERVICE INDUSTRY

◆ AGRICULTURAL FOOD PROCESSING

○ APPROXIMATED SHORT RANGE DEVELOPMENT IMPULSES.

RESEARCH DATA, 1995.

Map:5.6

locally. Policies in existence now favour inter-sectoral and inter-regional transfer of economic surplus for the principal benefit of the urban populations and the international community.

In doing this, care should be taken so as not to harm inter-regional product and service exchange(s). This is important since an abrupt cut-down on imports as a conservative mercantilists may urge, can undermine the regional economy. Gradual introduction of import substitution industries, fiscal and monetary policies is still in harmony with the economic thought that individual regions of a system can draw freely on the resources, products and skills of other regions in their efforts to develop their industries and raise their own income(s).

In the study area it is required that funds are used only in those sectors that reduce leakage such as import substitution local raw-material using industries in the manufacture of; i) soap, vegetable, animal oils, fats and cosmetic manufacture (3523, esrmo, lsumo, dii, lr), ii) textiles processing (3211, umo, dii, hp, lr), iii) dairy products processing (3112, esrmo, lsumo, dii, hp, sr), iv) Basic non-vegetable industrial chemical processing including fertilisers and pesticides (3511, rmo/umo, urcent, dsi), v) miscellaneous non vegetable chemical products processing (5314, rmo/umo, urcent, dsi), vi) meat products processing (3111, esrmo, esumo, dii, hp, lr), vii) fruit and vegetable canning and soft drinks processing (3113, 3134, esrmo, esumo, dii, mp, sr), viii) chocolate and sugar confectionery processing (3119, umo, dii, lp, dc), x) tanning extract, leather tanning and manufacture of non footwear leather goods (3231, umo, dii, lp, sr). Benefits arise if this is done in leading industries with greater internal and external economies as leakage is reduced.

The difficulties for achieving these are appreciated especially in a liberalised economy. However, it is economic and social imprudence for the central government, local authorities and even industrialists themselves to fail to initiate an expansionary development process that is likely to expand the local market for their goods and achieve other social and economic benefits. Intervention at the national level in form of short term protectionism is relevant to allow budding dii to develop. Importation of cheap competing agricultural products that are locally produced easily stifles the local production industries and reduces growth of the future market size. Recent trends (1990-1995) in the sugar industries, textiles (1990-1994) and grain (1992-1996) industry reveal that unlimited market liberalisation chokes local production. The Kenyan industrial policy should be transformed such that its import licensing and high tariffs does not permit development of inefficient industries. The long-run consequences of unemployment, lack of market for goods

and services, collapsing regional factories, poor health of the producing population and many others may be costly and dangerous to handle than prudent market liberalisation.

Summary

It is shown in this chapter that the three industries of; Mumias Sugar Company, Malakisi Leaf Centre and Nambale Cotton Ginnery have each a trade multiplier of 1.6, 1.5 and 0.8 respectively. They jointly have an inter-regional multiplier effect of 1.3. This means that either singly and (or) combined the trade multiplier is weak and therefore the industries do not discharge significant development impulses into their resource hinterland(s). The regional industries exhibit a parasitic relationship with their resource hinterland (s).

Consequently there is biased infrastructural development in the study area, poor development of industrial linkage(s), over-reliance on agriculture and increased leakage of regional development funds through imports of mainly household products that can locally be produced.

As a result the formulated hypothesis that

“The structure of development inducing and development supporting industries has not resulted in inequitable regional development in the Province”

is rejected and the alternative hypothesis that:

“Inequitable development in Western Province is due to the prevailing structure of development inducing and development supporting industries”.

is duly accepted.

CHAPTER SIX

6.0 THE NEED FOR BALANCED USE OF REGIONAL INDUSTRIAL RESOURCES IN DEVELOPMENT

6.1 INTRODUCTION

The interaction between the urban (core) industrial centres and the rural (periphery) resource hinterland and their relative magnitude are predicted by the degree of socio-economic disparity that exists between these ostensibly contrasting portions of the national space economy. Otherwise expressed, the greater the spatial disparity between regions the larger the flows and the interactions which serve to promote and maintain the difference.

Various studies (Ogendo, 1972, Darkoh, 1977, Haore 1975) demonstrate that industrialisation and commercialisation of goods and services promotes the extraction and transfer of regional development resources. In the study area Awuor (1979) shows how Kicomi extracts resources from the rural periphery without replenishing them. Obiero (1980) observes that Mumias Sugar Company does not promote regional development at the expected rate and scale despite extracting sugarcane and labour from the surrounding sugar zone. Wegulo (1984) also notes that Nyanza's industrial structure has reinforced imbalanced production of the non-critical goods.

Agricultural production in the study area is essential for sustaining the regional economy through constant supply of industrial raw material(s). This process outlines the nature of relationship between the resource hinterland and the existing industrial structure. The formulated null hypothesis that;

“The imbalances in regional production of goods and services has not led to biased resource extraction by development inducing industries and development supporting industries”

is tested and solutions provided.

6.2 REGIONAL GOODS AS INDICATORS OF EXTRACTION AND TRANSFER OF INDUSTRIAL DEVELOPMENT RESOURCES

Understanding the nature of goods produced is important to the current study as it shows how appropriate the goods are to regional development through their respective industries. Since the fabrication of any product(s) is directly related to the exploitation of resources that go into its

production, the findings of the study indicate which resources are heavily exploited and whether this benefits the resource periphery or urban industrial core centres. The consumption (centres) points of industrial products indicate the final destination of the resources earlier extracted.

In analysing the types of regional industrial goods, the study utilises a qualitative technique: "The Types of Goods Analysis". The technique has been successfully used in a number of studies among them Rweyemamu (1978), Baker et al (1977) and Wegulo (1984) in making inferences about industrial structure and regional development. The current study uses this technique in analysing the predominant regional resources extracted through industries and by extension their effect on regional development.

In using the method, Baker et al (1977) classifies industries into four categories namely; mass consumer goods, luxury consumer goods, manufactured export goods and intermediate / capital goods. Gross output and value added are used as indices of measurement. Wegulo (1984) applies similar sectoral groupings but employs industrial operatives as an index of measurement. Rweyemamu (1978) in his study of Industrialisation and the Realities of Underdevelopment uses a similar method. However, he had six categories of consumer necessities, luxuries, construction goods, capital producers, supplies and export industries.

In this study, industrial operatives are used as an index of measurement, while industries are subdivided into four categories namely; consumer goods, luxury goods, export products, and intermediate producer goods. This is necessitated by lack of sufficient data for other equally important indices such as value added. By using this sector breakdown of industrial production some indication of the progress made towards reducing the gap between the urban (core) and rural (periphery) hinterland is shown and crucial industrial planning adopted for regional development. An attempt is made to show the implication of imbalanced resource transfer through industrial development.

The weaknesses related to this method are mainly those of definition of various products. For instance, what is a necessity to one group of consumers is not necessarily the same to the other. Some products such as sugar and milk fall within more than one category of goods i.e. consumer necessity and consumer luxury depending on the economic class of the buyer. Difficulties arise where some industries engage in production of goods that traverse more than one identified category yet using the same number of industrial operatives. Despite this flaw the method yields meaningful results when proper estimates are used.

6.2.1 Industrial Production by Sectors

The volume of a particular product produced from a given resource(s) and the number of operatives involved in its production is established by the extent of exploitation of that regional resource. The knowledge about the final consumers and their respective location shows the point(s) of resource reception and the level of concentration.

From the sample industries selected, the number of operatives are established in each of the categories of industrial production to give the proportion of operatives in each sector as indicated in table 6.1

Industrial Sector	No. of Operatives.	% of Total
Export Goods	1952	48.8
Consumer Goods	1629	40.7
Intermediate / Producer Goods	235	5.9
Luxuries Goods	183	4.6
TOTAL	3999	100

Table. 6.1: Employment Structure of Industrial Sectors in Western Province

Source: Research Data, 1995.

Preliminary results show that export goods sector accounts for more industrial operatives (48.8%) than all the other three sectors of consumer (40.7%), luxury (4.6%) and intermediate goods sectors (5.9%). The consumer goods sector accounts for most of the number of firms surveyed (38%), followed by the luxury (31%), intermediate (24%) and lastly the export goods (7%) sectors. Plans to increase sugar production through the construction of Busia sugar industry to supplement Mumias, Nzoia and West Kenya Sugar industries will increase the percentage of exports. The construction of Mudete Tea Factory in Sabatia-Vihiga is aimed at boosting regional exports. On its own the sugar industry contributes a lot in terms of regional employment. This means that the sugar industry is a major conduit of regional resource through cane processing and export of sugar to other regional and national economies.

Most of the region's human and material resources are utilised in the export sector. Firms in this category are large and need more capital outlay to set them up. The consumer goods sector is dominated by posho mills, whose products are demanded locally. Though important, the intermediate goods sector employs fewer people with high value added to its products. The luxury goods category is dominated by bakery products industries which are cheaper to construct and operate.

The Chi-square technique is used to justify that the sample of operatives in the various industrial categories of luxury goods, mass consumer products, export goods and intermediate producer goods is taken from a population in which the operatives are equal and to significantly qualify the extent to which the sample chosen differs from the actual population.

Using the values in table 6.1, the resulting frequencies are shown in table 6.2. This gives the calculated Chi-square value of 9.64 derived as below.

Industrial Sector	Observed Frequencies	in '000's	Expected Frequencies	in '000's
Export Goods	1952	1.952	3999	3.9
Consumer Goods	1629	1.629	3999	3.9
Intermediate / Producer Goods	235	0.235	3999	3.9
Luxuries Goods	183	0.183	3999	3.9

Table :6.2 Calculation of The Chi Square

Source: Research Data, 1995.

$$X^2 = \left(\frac{(1.952 - 3.999)^2}{3.999} \right) + \left(\frac{(1.629 - 3.999)^2}{3.999} \right) + \left(\frac{(0.235 - 3.999)^2}{3.999} \right) + \left(\frac{(0.183 - 3.999)^2}{3.999} \right)$$

A Calculated X^2 value is found as 9.64

$$X^2 = 9.64$$

At 0.05 significant level and 3 degrees of freedom,

$$X_c^2 = 9.64 > X_t^2 = 7.82$$

The calculated Chi-square of 9.64 is greater than the tabulated Chi-square of 7.88 at 0.05 significance level and 3 degrees of freedom.

In the study area most of the major industrial concerns are agro-based and therefore draw their resources from areas in which they are located. The many small scale industries well spread over the whole macro-economic region though important have mainly a foreign raw material input component. These industries attract less regional labour-force and are not well reflected in the analysis above. Such factories are mainly bakery products processing and maize flour milling machines.

Principal consumption points of Western Kenya's sugar for instance include; Bungoma, Webuye, Kisumu, Lodwar, Kitale, Eldoret, Nakuru, Nairobi, Mombasa and other regional

Potential Development Points (PDPs) and Service Centres (SC). "Regional exports earn 'foreign exchange' to the 'region' that manufactures the product(s)"; It is difficult to assess the income that finds its way back into the resource hinterland(s). This is because owners of industries in the study area hail from other regions (i.e. outside the study area) and make investments from such earning(s) elsewhere. Most firms are jointly owned by the government and foreign investors. For instance, the Malakisi tobacco leaf processing centre is owned by BAT, Mumias Sugar Company is jointly owned by the Commonwealth Development Corporation (CDC), the Kenya government and Booker Tate. Pan Paper Mills is owned by the India Papers, the Kenya government and C.D.C. The other major industries are mainly Indian owned and hence non Kenyan. Earning(s) by foreign investors are repatriated to their home towns in their mother countries. What the government earns is put into the central treasury and it is not guaranteed for reinvestment in the region where it is extracted. The residents of the study area do not own any big industries —a fact that explains the prevalence of resource extraction and transfer set-ups that benefit other regions resulting in weak development impulses that cannot develop the raw-material periphery.

The number of industrial firms and consequently the number of industrial operatives shared among the four categories of industries is related to a number of factors chief among them being the preponderance of raw material supply that assists in the production processes. However the fact that one sector has many industrial operatives does not necessarily imply that it has many firms as well. Nevertheless, it implies that the sector exploits more resource(s) (in form of industrial raw materials and regional labour-force) than the sectors with fewer industrial operatives.

In an attempt to establish the level of regional resource extraction through industrial operatives and by extension production sectors, the problem faced is certainly that the number of industrial operatives is a fair reflection of the extent to which particular regional industrial (mainly raw material and labour) resources are exploited. Consequently, if the number of industrial operatives is a reflection of the frequency with which a particular resource is extracted, the argument is that the availability of such resource(s) influences the extent of exploitation as also shown by the number of operatives it employs. Conversely, if the frequency with which industrial operatives occur does not reflect the frequency of resource extraction, it is legitimate to argue that besides industrial operatives there are other measures that show the extent of regional resource extraction. The hypothesis that "The imbalanced distribution of industrial operatives among the

industrial production sectors is responsible for biased resource extraction and transfer in Western Province" (that is, the observed distribution of industrial operatives in the four industrial categories is expected to reflect the extent of extraction of industrial resource(s) that are needed by each sector) is reasonably expected in the light of the proportion of the different industrial groups i.e. that the distribution of industrial operatives simply represents a random distribution over industrial classes.

Industrial products as exemplified by the corresponding industrial operatives are conduits for regional industrial development resources to other regions other than those in which they are produced. It is noted that:

a). Most products are found to be exportable (in the sense of the term 'export') to other regions. There are various implications for this structure;

i) Earning of foreign exchange,

ii) Enhancing regional relationship.

iii) Major centres of consumption include other regions outside the study area and ;

iv) High cadre foreign employees influencing decision making that does not necessarily favour the local area. (network of funds transfer to the core metroplexes)

b) The consumer goods sector contributes quite a number of industrial operatives and hence industrial products but this are found to have less value added and therefore not very much essential for regional development. This results in low savings and investments.

c) The luxury goods sector has the largest number of firms but employs the least number of industrial operatives. The production of these goods though important for a few wealthy people is not crucial for regional development and especially the rural majority whose income is low and constraint to essential expenditure only. The sector also transfers industrial resources to the high income consumers scattered over the whole national space economy and mainly in urban areas.

d) The intermediate goods sector, despite its importance is not well developed so well since it only employs a few industrial operatives. The products of this sector are important for sustaining further regional growth and development through the assistance of further manufacturing.

6.3 SECTORAL IMBALANCES OF INDUSTRIAL PRODUCTION AND BIASED RESOURCE EXTRACTION AND TRANSFER

The arising sectoral difference in the level of utilisation of regional industrial resources are meaningful for identifying the production sectors that do not necessarily support regional development. The assigning of related activities into one sector throws more light on the sectoral distribution of production. This helps to check the total number of operatives involved in the whole production and those involved in each product line.

A further grouping of the industries' products is undertaken based on the evaluation of the nature of the final consumers and how the product is perceived. For instance, bread to some people is a consumer luxury, while to others a consumer necessity. (Note that this are estimates which may change from place to place and from time to time). The resulting data classification is shown in table 6.3.

6.3.1 Production of Consumer Goods

Majority of the consumer goods produced include white meal flour, jaggery products and paper products. The production of consumer goods utilises to a greater extent local human and material resources. Among the sector's products are milled flour, paper and paper board and jaggery products. Since most of the products are consumed locally, it is concluded that their production extracts resources confined within the region and therefore help develop it. The sector employs 1,629 operatives (from the sample) and has sixteen firms. Increased production of consumer goods has the advantage of reducing expenditure on consumer imports into the region, which is somewhat needed even if local production cannot take place. This stimulates regional savings and later on regional investments in the intermediate producer goods sector. The anomaly is that a region struggling to industrialise does not require so much of its resources tied up in this sector which has little value added. The market forces grow very slowly if they are dependent on the consumer goods sector. Major consumer imports in the study area are household goods such as cooking fat, soap, matches, salt and margarine.

6.3.2 Production of Intermediate and Producer Goods

The intermediate and producer goods are noted to be 'intermediate' to production of consumer, luxury and export products. For instance, fabrication of ploughs are important for exploitation of

sugarcane necessary for sugar production. Production of cane crushers is crucial in the sugar-processing firms, just as milling wheat is important in bakery products processing. Manufacture of cotton looms is essential in the textile industry.

The intermediate goods sector accounts for only 235 operatives from the sample. The number of firms in these category are ten. The dominant industries include the motor vehicle repair and metal fabrication. Other firms also produce intermediate goods although to a lesser extent. In comparison to other sectors this is small given the role the sector plays in regional development especially in servicing other productive industries. As it stands, the intermediate goods sector has served better the 'export' goods sector. Most products from the intermediate sector assist agricultural production and semi-processing of the produce. Industries affected by this are; tobacco processing (real production of tobacco takes place in Nairobi), cotton and sugar processing and production of fruits and vegetables. This sector has by implication reinforced the extraction and transfer of regional development resources and therefore should be transformed to support all kinds of industries important to regional development. More capital should be advanced to this sector by the financial institutions to promote the production of intermediate producer goods. Training of both entrepreneurs and operatives is a necessary step towards uplifting the sector so that it can have the capacity to meet the needs of other firms.

6.3.3. Production of Luxury Goods

One of the difficulties of a free market economy is to make choices for the consumer. Through their purchasing power, they direct which resources should be used. If capital is vested in the hands of a few people whose tastes tend towards increased consumption of luxury goods, then resources used may not necessarily develop the regional economy. But, the difficulty is to classify what is a necessity for one consumer and a 'luxury' for the other. Tobacco for instance is a necessity from the physiological viewpoint. It suffices that it is habitually thus. The inability to arrive at proper identification of who are 'luxury' consumers and their location, complicates the assessment of 'luxury' goods contribution to regional industrial development especially as resource transfer is concerned. However it is noted that this sector is non-critical as it is skewed towards the tastes of a few consumers. Nevertheless, if the sector serves to substitute for regional imports of 'luxury', then it is beneficial albeit to a smaller extent as it retains regional income that

could otherwise be spent outside the study area. This sector has many firms which only employ a few operatives. Industries producing 'luxury' goods need to employ more industrial operatives. This can be done through use of more labour intensive production methods (without necessarily compromising quality and time) as opposed to the highly capital intensive production methods in place now.

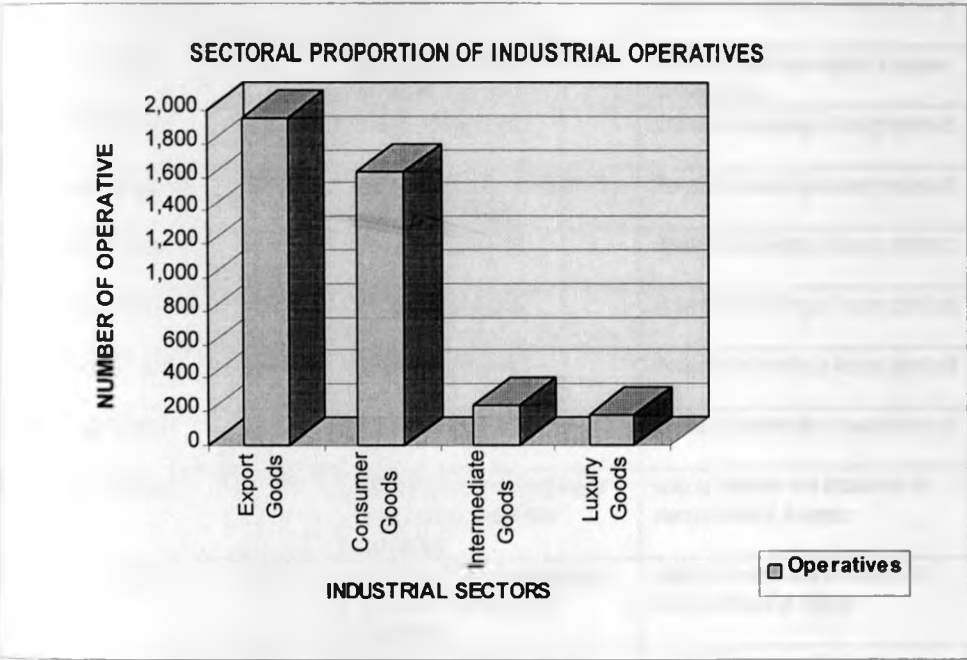


Fig 6.1: Sectoral Proportion of Industrial Operatives.

Source: Research Data, 1995.

6.3.4. Production of Export Goods

In the export sector most of the goods produced are primarily unprocessed or semi-processed agricultural products. Most of the horticultural products are also exported in this form. This nature of export earns very little regional income in as much as it uses most of the regional human and material resources. This form of raw material processing especially for export, develops recipient regions and impoverishes material source hinterland(s). This creates an imbalanced space economy. To curb this problem, manufacturing firms should be encouraged to transform their products from semi-processed to fully processed products ready for final consumption irrespective of their destination. Packaging and informative advertisement need to be done as well. Products exported need to bring back full benefits to the producing countries and especially regions.

Table 6.3: Estimated Industrial Operatives for Selected Industries in Western Province.

4 DIGIT LSLC	Industry	A	Aggregate sectoral classification using regional data	Actual Production and tendency by sample industries	Percentage operatives. by sectors :1994	Sectoral operatives :1994 (est.)
3112	Kitinda Dairy	47	Milk skimming, fermentation & packaging	increased milk prices have made milk a commodity of the rich.	CG 60% LG 40%	28 19
3115(B)	Gambogi Posho	7	Grain milling	Flour products for domestic use	CG 100	7
3116(B)	Kimilli Posho	10	Grain milling	Flour products for domestic use	CG 100	10
3116(B)	Nurdin Mohamed	23	Grain milling	Flour products for domestic use	CG 100	23
3117	Africana Bakery	12	Bread, Sconce, etc.	Bread is becoming a luxury product	LG 60% CG 40%	7 5
3117	Cheskaki Bakery	8	Bread, Sconce, etc.	Bread is becoming a luxury product	LG 60% CG 40%	5 3
3117	Golf Hotel	32	Bakery products & other hotel services	A tourist hotel catering for a higher income class	LG 60% CG 40%	22 10
3117	Jiwa Bakery	42	Bread, Sconce, etc.	Bread is becoming a luxury product	LG 60% CG 40%	25 17
3117	Malaba bakery	8	Bakery products sold within & outside the district	Bread is becoming a luxury product	LG 60% CG 40%	5 3
3117	Milimani Bakery	14	Bread, Sconce, etc.	Bread is becoming a luxury product	LG 60% CG 40%	8 6
3117	Shianda Bakery	10	Bread, Sconce, etc.	Bread is becoming a luxury product	LG 60% CG 40%	6 4
3117	Sirisia Bakery	8	Bread, Sconce, etc.	Bread is becoming a luxury product	LG 60% CG 40%	5 3
3117	Tasiri Bakery	12	Bread, Sconce, etc.	Bread is becoming a luxury product	LG 60% CG 40%	7 5
3118	Bash Jaggery	12	production of unrefined sugar molasses products and molasses	sold to farmers and industries in Kenya & the E.A region	CG 65% IG 35%	7 5
3118	Kabi Jaggery	19	production of unrefined sugar molasses products and molasses	sold to farmers and industries in Kenya & the E.A region	CG 65% IG 35%	13 6
3118	Kwambiha Jaggery	30	production of unrefined sugar molasses products and molasses	sold to farmers and industries in Kenya & the E.A region	CG 65% IG 35%	20 10
3118	Lutonyi Jaggery	25	production of unrefined sugar molasses products and molasses	sold to farmers and industries in Kenya & the E.A region	CG 65% IG 35%	13 12
3118	Miwa Millers	34	production of unrefined sugar molasses products and molasses	sold to farmers and industries in Kenya & the E.A region	CG 65% IG 35%	
3118	New Bunyore Jag	10	production of unrefined sugar molasses products and molasses	sold to farmers and industries in Kenya & the E.A region	CG 65% IG 35%	
3118	Remosy Sugar Industry	32	production of unrefined sugar molasses products and molasses	sold to farmers and industries in Kenya & the E.A region		
3118	Sululu Industries	28	production of unrefined sugar molasses products and molasses	sold to farmers and industries in Kenya & the E.A region		
3118	Webuye H Jaggery	14	production of unrefined sugar molasses products and molasses	sold to farmers and industries in Kenya & the E.A region		
3118	Mumias sugar Company	1800	production of white sugar, molasses, baggasse, electricity.	produces mainly export and consumer goods	CG 100 EG 75% IG 5%	
3220	Sheywe Enterprise	8	production of school uniforms and other wearing apparel	production for local consumption	CG 100%	

4 DIGIT LSLC	Industry	A	Aggregate sectoral classification using regional data	Actual Production and tendency by sample industries	Percentage operatives. by sectors :1994	Sectoral operative :1994 (es
3320	Namandi Garments	10	production of school uniforms and other wearing apparel	production for local consumption	CG 100%	10
3320	Andimi Joinery	7	Manufacture of household and office furniture, & other furniture	increased production of household goods	CG 80% IG 20%	6 1
3320	Busia joinery	8	Manufacture of household and office furniture, & other furniture	increased production of household goods	CG 80% IG 20%	6 2
3320	Friends Isukha W	12	Manufacture of household and office furniture, & other furniture	increased production of household goods	CG 80% IG 20%	10 2
3140	Mudambi Furniture	10	Manufacture of household and office furniture, & other furniture	increased production of household goods	CG 80% IG 20%	8 2
3211(A)	Malakisi Leaf Centre	32	tobacco production, curing and storage	curing mainly done by farmers, centres mainly stocks	CG 5% EG 95%	2 30
3311	Nambale Ginnery	120	Cotton ginning, seed & oil	decline of industry shifting emphasis to consumer goods, some luxury goods too.	EG 75% IG 20% LG 5%	90 24 6
3411	Sembi Saw Mill	35	Timber production	increased diversification & production of IG	IG 95% CG 5%	33 2
3420	PanPaper Mills	1320	production of paper, paperboard, plywood & electricity supply	increased product range & diversification	IG 15% CG 80% LG 5%	198 1056 66
3511	Premier printers	24	printing & publishing	faster growth	IG 70% CG 30%	17 7
3691	E.A Heavy Chemicals	27	production of acids & alum	import of raw material hampering development	IG 100%	27
3691	Eshibinga Clay	30	manufacture of tiles, bricks, blocks, ceramics, vases	increasing diversification of products	IG 65% CG 30% LG 5%	19 9 2
3811	Solongo Blocks	17	manufacture of blocks, tiles, slabs etc.	increasing diversification of the industry	IG 65% CG 30% LG 5%	11 5 1
3811	Bungoma furniture house	20	fabrication of metal products, nuts, bolts ploughs, trailers, window & door frames & welding	an increasingly important industry	IG 80% CG 20%	16 4
3820	Davinder Engineering	24	fabrication of metal products, nuts, bolts ploughs, trailers, window & door frames & welding	an increasingly important industry	IG 80% CG 20%	19 5
3844	Sugar Engineering	32	production of cane crashers & rollers	potentially crucial for growth & development	IG 100%	32
3844	Kakamega General motors	12	repair & maintenance of motor vehicles	a fast growing regional service industry	IG 45% CG 20% LG 35%	6 2 4
3844	Mwaura Motors	14	repair & maintenance of motor vehicles	a fast growing regional service industry	IG 45% CG 20% LG 35%	6 3 5

See Appendix 5.0 for codes to letter symbols.

Source: Research Data, 1995.

Summary

Industrial production in the study area is biased in its use of regional development resources. A high percentage of manufacturing operatives are employed in industrial sectors that extract regional resources and transfers them to outside regions where they benefit the entrepreneurs more than the regions they are extracted from. The export sector predominantly transfers development resources than the consumer goods sector or the intermediate goods sector. The intermediate goods sector is not well developed and employs few industrial operatives. Industries aimed at substitution especially in the consumer goods sector have not been established. Consequently, the null hypothesis formulated that

“The imbalances in regional production of goods and services has not led to biased resource extraction by development inducing industries and development supporting industries”

is rejected and the alternative hypothesis that;

“The biased nature of resource extraction and transfer by development inducing industries and development supporting industries is as a result of imbalanced sectoral production by industries in Western Province”

is accepted..

Regional development is hampered by the biased extraction of development resources through improperly planned industrial structure. Investment in extractive industries geared towards exporting unprocessed or semi-processed products stifles growth and development apart from generating a polarised space economy. Regional policies guiding industrial sectors are wanting as they do not enforce use of local industrial raw material or the use of resources within the rural hinterland(s). The use of the centrifugal model however suggests crucial ways of transforming the sectors so that their extraction of regional resources for purposes of production of goods and services is in harmony with regional development needs.

CHAPTER SEVEN

7.0 SUMMARY OF RESEARCH FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

7.1 INTRODUCTION

This chapter is a summary of the research findings in view of the statement of the research problem that there is a regional development enigma especially in the manner in which industries are located and structured. These problems apparently are caused by use of inappropriate regional development models that reinforce development of a few places especially urban areas at the expense of rural areas which produce industrial inputs in form of raw material(s) and labour. The summary is in the light of the stated objectives and formulated hypothesis. It shows the resulting conclusions from the findings of the study and makes relevant recommendations that may be pursued by scholars, planners, policy makers and industrial entrepreneurs.

This study's main objectives as stated are:

1). To investigate the role of government influence on regional industrial location in Western Province

In order to accomplish the goals of this objective, a number of factors affecting industrial location along with government influence are assessed. The aim is to show the extent to which the government has influenced regional industrial location. The main variables affecting industrial location are categorised as; economic variable, physical and socio-political variables.

2). To examine and evaluate the industrial structure of the development inducing industries (*dii*) and development supporting industries (*dsi*) in Western Province. This objective has two ends to realise;

- i) It assesses the nature of products mainly manufactured in the study area and their corresponding raw material sources.
- ii) Investigates the benefits gained by the region from the location of *dii* and *dsi* at a given point. Injections into the region are considered and the emanating exchange of goods and services between owners of resources and buyers evaluated.

Three main hypotheses are formulated. This is done in regard to the problems earlier stated.

These Hypotheses are;

1). Hypothesis on government influence that ;

H_0 : The Kenyan government has had insignificant influence on regional location and patterning of industries in Western Province.;

H_1 : The government has significantly influenced regional location and patterning of industries in Western Province.

2). Hypothesis on the regional multiplier of industries in Western Province that ;

H_0 : The structure of development inducing and development supporting industries has not caused inequitable regional development in the Province. ;

H_1 : Inequitable development in Western Province is due to the prevailing structure of development inducing and development supporting industries.

Lastly,

3). The hypothesis on the extraction and transfer of regional industrial development resources that ;

H_0 : The imbalances in regional production of goods and services has not led to biased resource extraction by development inducing industries and development supporting industries.

H_1 : The biased nature of resource extraction and transfer by development inducing industries and development supporting industries is as a result of imbalanced sectoral production by industries in Western Province.

The assertion of the truth or falsity of the above three hypotheses is done by the use of various statistical techniques discussed in chapter three of this study.

7.2 RESEARCH FINDINGS

The findings in this study point out the problems of regional development as exerted by the use of the centripetal planning models in regional development and their correction by the use of the centrifugal model. They also show the existing imbalanced development and the performance of the various industrial sectors. The findings are a useful foundation upon which solutions to the problem of regional development can be done. It is from the findings that meaningful recommendations are made to planners, policy makers and scholars.

7.2.1 Findings on Influence of the Government in Industrial Location and Patterning.

The intention of evaluating the extent of government influence in the regional location of industries is to establish the role played by the government in designing and directing the actual point of location of industries in the study area. From the opinion of 42 industrialists known through the analysis of fifteen variables that affect choice of an industrial location point, preliminary results show that the government has exerted the weakest direct influence on industrial location. However further analysis show that the government has influenced the existing location through other facilities such as electricity and water supply. The main findings are;

- a) It is established that the main factor that has influenced industrial location in the study area is the influence of the government and the perception of entrepreneurs. Secondly; is the factor of production and marketing costs, thirdly; is the availability of capital and land and lastly presence of power (both animate and inanimate).
- b) Further analysis of this factors show that the government and its intermediaries have played a minimal role in an attempt to eradicate regional development imbalances through equitable patterning of development inducing and supporting industries. The government is instead systematically promoting the development of a polarised space economy by continuously concentrating development resources in the urban areas at the expense of the rural resource hinterland (s). The industrialists show that the urban centres offer market for their goods.
- c) There has been no effort to quantify the existing industrial resources in the study area except scattered works by a few scholars and firms. Entrepreneurs are therefore not aware of the existing industrial development potential.
- d) It is established that financial institutions do not have an appropriate regional industrial development policy as their loaning system reinforces regional development inequality since it seeks to develop the urban areas at the expense of the rural resource hinterland.

7.2.2 Findings on Industrial Structure.

Industrial structure is found to affect industrial development and specifically equitable regional development. Industrial structure determines the pace of regional development and the distribution of development over space and time. There are a number of facts that this study establishes in relation to industrial structure. These are stated in relation to the inter-regional trade multiplier and the types of industrial goods produced in the study area.

2.2.1 Regional Industrial Multiplier

The location of an industry at any place is expected to; i) earn income to the entrepreneurs and, ii) induce regional development through development of infrastructure and offering markets to local human and material resources. The findings related to this are;

a) It is established that the three industries of Mumias Sugar Company, Malakisi Leaf Centre and Vambale Cotton Ginnery have each a trade multiplier of 1.6, 1.5 and 0.8 respectively. They jointly have an inter-regional multiplier effect of 1.3. This means that either singly and (or) combined the trade multiplier is weak and therefore the industries do not discharge significant development impulses into their resource hinterland(s).

b) These regional industries exhibit a parasitic relationship with their resource hinterland (s). They are found to extract industrial raw material(s) and labour without replenishing them through sufficient capital plough-back into the resource hinterland(s).

c) There is biased infrastructural development in the study area which is found within a short radius from the industries and which therefore concentrates development around the factories. This has created areas of prosperity and those of impoverishment.

The study shows that there is poor development of industrial linkage(s) in some industries and none in others. This has resulted in under-utilisation of the regional resources.

d) There is over-reliance on agriculture by the entrepreneurs and would-be entrepreneurs. Agriculture is more vulnerable to natural disasters which affect the supply of agrico-industrial raw material. Consequently lucrative areas in non agricultural manufacturing are not exploited.

e) There is increased leakage of regional development funds through imports of mainly household products that can locally be produced.

2.2.2 Types of Goods Produced

It is noted that the nature of industrial structure shows the predominant types of goods produced and the level of resources utilised. Consumers dictate the type of goods to be produced to meet their needs. Through production of industrial goods a form of transfer of regional industrial resources is established. The findings related to production of regional industrial goods are;

f) Industrial production in the study area is biased in using regional resources. A high percentage of manufacturing operatives are employed in industrial sectors that extract regional resources and transfer them to outside regions where they benefit the entrepreneurs more than the regions they

are extracted from. Export sector predominantly transfers development resources than the consumer goods sector or the intermediate goods sector. Export of unprocessed and (or) semi-processed goods is prevalent.

b) The intermediate goods sector is not well developed despite its usefulness in promoting other industrial sectors. This sector employs few industrial operatives in comparison to the consumer goods and the export product sectors.

c) Industries aiming at product substitution especially in the consumer goods sector have not been established. Many household products are imported from other regions (outside the study area).

d) Regional policies guiding industrial sectors are wanting as they do not enforce use of local industrial raw material or the use of resources within the rural hinterland(s).

7.3 CONCLUSION

Following the findings of this study it is concluded that;

i) Although direct government influence has been minimal, it is noted that industries favourably respond to government infrastructural development such as roads, water supply, power supply and industrial sites as they have so far done in choosing their urban location. With additional provision of incentives, industries can be distributed and patterned to balance regional development.

ii) That the loaning institutions can impact more the location and patterning of industries through their credit facilities—a process they have not been doing efficiently and effectively.

iii) Though regional industries make profits, the suppliers of raw materials do not benefit as expected. This is because the raw material producers meet exorbitant costs of producing and delivering of the produce to the factories. The industries should be encouraged to do more investments especially in areas they draw their material and human resources. These can be done through increased pay-backs and improvement of supportive infrastructure. Moreover establishment of many local raw material using industries will provide many products that are currently imported, hence increase the regional multiplier. Proper structuring and patterning of industries will override industrially anaemic areas and thus induce more equitable development as cartographically depicted by the Centrifugal model.

iv) The industrial production process in existence does not support equitable regional development. There is an insufficient emphasis on the intermediate and producer goods sector that

sustain further industrialisation. Industries in the study area concentrate in the export and consumer goods sectors which transfer more regional resources to other areas. If exports have to be pursued, then the sector should concentrate on the production of finished products.

RECOMMENDATIONS

The study gives a number of findings from which various conclusions are based. From these recommendations are made which offers practical suggestions for those in search of knowledge in the field of industrial development especially in the context of regional development. Ideas on how to achieve balanced regional development are also proposed. Suggestions to planners, policy makers and scholars are presented.

14.1 Recommendations on Government Influence in Industrial Location and Patterning To Scholars

With the changing entrepreneurs' behaviour, economic conditions and technological orientation, industrial location variables are bound to change fast. The study of the influence of the government and especially policies related to industrial patterning and regional development requires constant review.

i) From this study scholars have additional opportunities to reconsider carrying out empirical studies and formulating theoretical models for industrial development as an element of regional development.

ii) There is now an increasing need to refine the Centrifugal planning model and make practical attempts to apply in regional development planning and especially industrial location and patterning.

Researchers

Government influence is dynamic in a liberalised economy, while industrial development is synonymous to regional development. These two issues call for continuous research to chart out a proper path that industrial development and regional growth should follow into the next century.

From this study researchers will find quick variables for assessing regional resource extraction and transfer. They also have at their disposal methods of analysing regional industrial structure.

(ii) Researchers intending to do detailed research on industrial and regional development will appreciate the immense costs involved in large scale operations and the difficulties of harmonising the disparities.

Planners and Policy Makers

More often the government seeks ways of achieving balanced regional development. Planners can now identify from this research what the government needs to practically apply in order to strengthen peripheral industrial production.

(i) The necessity to develop infrastructure in areas that lack them and the advantages of providing industrial incentives in the areas that need them is now clear and more urgent. The areas that require such inputs are identified and so are the kinds of incentives.

(ii) Industrial patterning should now gain currency as a means of developing rural areas. Government participation and local people's goodwill are crucial input for regional development. The government cannot afford to play a passive role through documentation of strong 'paper' policies but instead should be practically involved in regional industrial location.

(iii) Bureaucratic tendency by the lending institutions should be reduced to fasten the development of industries.

4.2 Recommendations on Industrial Structure.

Scholars

(i) Classification of industries is not only difficult but cumbersome. Nevertheless the existing classification is not exhaustive. Scholars have room to refine the classification of industries.

(ii) In analysing industrial structure the indices used vary a great deal. Scholars can continue the search for accurate indices of regional analysis especially concerning movement of resources between and within regions.

(iii) Regional parasitism is prevalent in poorly structured industries. This fact gives scholars a chance to establish from the onset how a proper symbiotic relationship can be established and maintained between industries and regions that supply the raw material(s).

Researchers

- i) The Centrifugal model is noted to have some use in studying industrial structure among other things. While some of its aspects such as range of development impulses have been used, most of the other of its characteristics have not been used. Researchers can ascertain their applicability in regional industrial development.
- ii) In the study area there are very few industrial linkages among the existing industrial giants. Researchers can find out the reasons for prevalence of such a state.
- iii) In this study it is noted that there is an increased over-reliance on agrico-industrial raw material input. Researchers have an opportunity to establish other sources of industrial material inputs that can help sustain many industries especially those in the intermediate producer goods sector.
- iv) Researchers also need to establish the existence of resources in the study area, map them out and make them available to entrepreneurs for purposes of investment.

Planners and Policy Makers

- i) The need to note the relevance of the distribution of carefully selected development inducing and development supporting industries in rural raw material resource areas for purposes of attaining effective development.
- ii) Small industries are crucial in regional development and should be emphasised in both the credit system and government support programmes. Small industries are not a sign of archaic production but instead create an industrial culture and an opportunity for proper structuring of industries and their transformation into big manufacturing concerns.

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9.0 APPENDICES

APPENDIX 1.0 INDUSTRIAL CHARACTERISTICS OF INDUSTRIES IN WESTERN PROVINCE

NO	4 DIGIT I.S.I.C	INDUSTRIAL DEVELOPMENT SECTOR	SIZE	NO	SEQUENTIAL SYMBOLS (structure, location, activity, potential)	LOCATION
1	3112	KITINDA DAIRY INDUSTRY	B	47	esmo, lsumo, dii, lp, sr	BUNGOMA
2	3113	MASHAMBANI INDUSTRIES	B	24	esmo, lsumo, dii, lp, sr	GAMBOGI
3	3115	MALAKIS OIL INDUSTRY	C	59	esmo, lsumo, dii, mp, lr	MALAKISI
4	3115	AFYA COOKING OIL MANF	A	15	esmo, lsumo, dii, mp, lr	KAKAMEGA
5	3116(B)	CHAKULA BORA INDUSTRY	A	6	umo, dii, mp, lr	LUANDA
6	3116(B)	GAMBOGI POSHO MILL	A	7	umo, dii, mp, lr	GAMBOGI
7	3116(B)	KABRAS MILLERS	A	11	umo, dii, mp, lr	KABRAS
8	3116(B)	KIMILILI POSHO MILL	A	10	umo, dii, mp, lr	KIMILILI
9	3116(B)	OKWARA INDUSTRIES	A	19	umo, dii, mp, lr	KAKAMEGA
10	3116(B)	MATHAYA AGUFA MILLERS	A	5	umo, dii, mp, lr	MARAGOLI
11	3116	MBOGA POSHO MILL	A	9	umo, dii, mp, lr	MAJENGO
12	3116(B)	MUCCUNDUSHI GRINDERS	A	8	umo, dii, mp, lr	KHAYEGA
13	3116(B)	NAKHONE MILLERS	A	6	umo, dii, mp, lr	BUSIA
14	3116(B)	NURDIN MOHAMMED	B	23	umo, dii, mp, lr	KAKAMEGA
15	3116(b)	SHIHOMBE INDUSTRY	A	12	umo, dii, mp, lr	IDAKHO
16	3117	AFRICANA BAKERY	A	15	umo, dii, lp, lr	WEBUYE
17	3117	BARAKA BAKERY	A	12	umo, dii, lp, lr	BUNGOMA
18	3117	CHESKAKI BAKERY	A	8	umo, dii, lp, lr	CHESKAKI
19	3117	GEORGE KUTONDO	A	6	umo, dii, lp, lr	KAKAMEGA
20	3117	GOLF HOTEL	B	32	umo, dii, lp, lr	KAKAMEGA
21	3117	ISAYA KULECHO BAKERS	A	12	umo, dii, lp, lr	KAKAMEGA
22	3117	JIWA BAKERY	B	42	umo, dii, lp, lr	MALAKISI
23	3117	JOHN AMBANI	A	14	umo, dii, lp, lr	BUNYORE
24	3119	KAKAMEGA FOOD INDUSTRY	C	55	umo, dii, lp, lr	KAKAMEGA
25	3117	KABRAS BAKERS	A	7	umo, dii, lp, lr	KABRAS
26	3117	KISA BAKERS & CONF.	A	10	umo, dii, lp, lr	KISA
27	3117	MALABA BAKERY	A	8	umo, dii, lp, lr	MALABA
28	3117	MALAKISI BAKERY	A	12	umo, dii, lp, lr	MALAKISI
29	3117	MAINE BAKERY	B	24	umo, dii, lp, lr	PORT VICTORIA
30	3117	MUJESIA ISENJIA	A	15	umo, dii, lp, lr	BUNYORE
31	3117	MUSSA INDUSTRIES	C	54	umo, dii, lp, lr	LUANDA
32	3117	MILIMANI BAKERY	A	14	umo, dii, lp, lr	BUSIA
33	3117	NAJIB SAID MOHAMED	A	18	umo, dii, lp, lr	KAKAMEGA
34	3117	PLASMO LTD	A	16	umo, dii, lp, lr	KAKAMEGA
35	3117	RIGE BAKERY	A	15	umo, dii, lp, lr	BUNGOMA
36	3117	SHIANDA BAKERY	A	10	umo, dii, lp, lr	SHIANDA
37	3117	SIRISIA BAKERY	A	8	umo, dii, lp, lr	SIRISIA
38	3117	TASIRI BAKERY	A	12	umo, dii, lp, lr	BUNGOMA
39	3118	BADA JAGGERY	B	22	umo, dii, lp, lr	MUMIAS
40	3118	BASH INDUSTRIES	A	12	rmo, dii, hp, sr	NDALAKASI
41	3118	BENDERA JAGGERY	A	9	rmo, dii, hp, sr	KAKAMEGA
42	3118	BULOVI JAGGERY	A	10	rmo, dii, hp, sr	KAKAMEGA
43	3118	KABI JAGGERY	A	19	rmo, dii, hp, sr	KAKAMEGA
44	3118	KALSI JAGGERY	A	19	rmo, dii, hp, sr	KAKAMEGA
45	3118	KWAMBIHA JAGGERY	B	30	rmo, dii, hp, sr	KAKAMEGA
46	3118	LUBAO JAGGERY	A	12	rmo, dii, hp, sr	LUBAO
47	3118	LUNYESHE JAGGERY	A	10	rmo, dii, hp, sr	KABRAS
48	3118	LUTONYI JAGGERY	B	25	rmo, dii, hp, sr	KABRAS
49	3118	LUKUSI JAGGERY	A	16	rmo, dii, hp, sr	KABRAS
50	3118	MIWA MILLERS	B	34	rmo, dii, hp, sr	KAKAMEGA
51	3118	MUKANGU PRODUCERS	A	12	rmo, dii, hp, sr	KAKAMEGA
52	3118	MUGOMBERO JAGGERY	A	16	rmo, dii, hp, sr	KHAYEGA
53	3118	NEW BUNYORE JAGGERY	A	10	rmo, dii, hp, sr	BUNYORE
54	3118	REMOSY SUGAR INDUSTRY	B	32	rmo, dii, hp, sr	SHIMALABANDU
55	3118	SULULU SUGAR MILLERS	B	28	rmo, dii, hp, sr	KAKAMEGA
56	3118	VICTORIA JAGGERY	A	12	rmo, dii, hp, sr	KAKAMEGA

NB: See below for key to industrial sizes.

NO	4 DIGIT LS.LC	INDUSTRIAL DEVELOPMENT SECTOR	SIZE	NO	SEQUENTIAL SYMBOLS (structure, location, activity, potential)	LOCATION
57	3118	WEBUYE HIGHWAY JAGGERY	A	14	rmo, dii, hp, sr	WEBUYE
58	3118	ZAKARIA JAGGERY	A	16	rmo, dii, hp, sr	KAKAMEGA
59	3118	ZINGA FARM JAGGERY	B	27	rmo, dii, hp, sr	KAIMOSI
60	3118	WEST KENYA CO.	E	570	rmo, dii, hp, sr	KABRAS
61	3118	MUMIAS SUGAR CO.	F	1800	rmo, dii, hp, sr	MUMIAS
62	3118	NZOIA SUGAR CO.	E	890	rmo, dii, hp, sr	NZOIA
63	3220	CHAVAKALI TAILORING	A	7	umo, dii, lp, dc	CHAVAKALI
64	3220	SHEYWE ENTERPRISE.	A	8	umo, dii, lp, dc	MBALE
65	3220	NAMANDI GARMENTS	A	10	umo, dii, lp, dc	BUNGOMA
66	3220	SHANDO UNIFORMS	A	12	umo, dii, lp, dc	MUMIAS
67	3320	ANDIMI JOINERY	A	7	umo, dii, lp, dc	VIHIGA
68	3320	ARROW FURNITURE	A	10	umo, dii, lp, dc	KAKAMEGA
69	3320	BUNGOMA FURNITURE	A	7	umo, dii, lp, dc	BUNGOMA
70	3320	BUSIA JOINERY	A	8	umo, dii, lp, dc	BUSIA
71	3320	FRIENDS ISUKHA WORKSHOP	A	12	umo, dii, lp, dc	ISUKHA
72	3320	JAMES ALWANDA WORKSHOP	A	10	umo, dii, lp, dc	MBALE
73	3320	LIKABAKI & SONS WORKSHOP	A	6	umo, dii, lp, dc	KAKAMEGA
74	3320	LURAMBI WOOD FURNITURE	A	6	umo, dii, lp, dc	KAKAMEGA
75	3320	MODERN FURN & BUILDERS	A	11	umo, dii, lp, dc	KAKAMEGA
76	3320	MUDAMBI FURNITURE	A	10	umo, dii, lp, dc	BUSIA
77	3320	WOOD MOLDS	A	14	umo, dii, lp, dc	KAKAMEGA
78	3121(A)	KAIMOSI TEA ESTATE	C	56	rmo, dii, hp, sr	KAIMOSI
79	3121(A)	KAIMOSI TEA FACTORY	C	70	rmo, dii, hp, sr	KAIMOSI
80	3134	EQUATOR BOTTLERS	B	38	esrmo, lsumo, dii, mp, sr	KAKAMEGA
81	3140	MALAKISI LEAF CENTRE	B	32	esrmo, lsumo, dii, mp, lr	MALAKISI
82	3211(A)	AMAGORO	A	14	rmo/umo, dii, mp, sr	AMAGORO
83	3211(A)	NAMBALE GINNERY	D	120	rmo/umo, dii, mp, sr	NAMBALE
84	3211(A)	MALAKISI GINNERY	C	57	rmo/umo, dii, mp, sr	MALAKISI
85	3211(A)	SAMIA GINNERY	B	38	rmo/umo, dii, mp, sr	FUNYULA
86	3311	ELIJAH ISIAYO SAW MILL	A	14	esrmo, lsumo, dii, lp, sr	KABRAS
87	3311	EZRA MASISISA SAW MILL	A	19	esrmo, lsumo, dii, lp, sr	KAKAMEGA
88	3311	LURAMBI SAW MILLS	A	16	esrmo, lsumo, dii, lp, sr	LUGARI
89	3311	MBALE SAW MILL	B	35	esrmo, lsumo, dii, lp, sr	KAKAMEGA
90	3311	SEMBI SAW MILL	B	47	esrmo, lsumo, dii, lp, sr	KAKAMEGA
91	3319	PETGIL LTD	B	25	esrmo, lsumo, dii, lp, sr	KAKAMEGA
92	3411	PAN AFRICAN PAPER MILL	F	1320	esrmo, esumo, dii, mp, lr	WEBUYE
93	3411	WESTERN PAPER CONVERTERS	A	17	esrmo, esumo, dii, mp, lr	KAKAMEGA
94	3420	BUNGOMA CO-OP UNION	A	10	umo, ucent, dc	BUNGOMA
95	3420	IMARA PRINTING	A	12	umo, ucent, dc	KAKAMEGA
96	3420	KAKAMEGA OFFICE SUPPLIERS	B	26	umo, ucent, dc	KAKAMEGA
97	3420	KOS PRINTING WORKS	B	22	umo, ucent, dc	KAKAMEGA
98	3420	PREMIER PRINTING	B	24	umo, ucent, dc	KAKAMEGA
99	3511	E.A HEAVY CHEMICALS	B	27	esrmo, lsumo, dii, mp, lr	WEBUYE
100	3523	MALAKISI FCS	C	57	esrmo, lsumo, dii, mp, lr	MALAKISI
101	3691	BUNYORE BRICKS & BLOCKS	B	40	rmo/umo, dii/dsi, lp, sr	BUNYORE
102	3691	ESHIBINGA CLAY	B	30	rmo/umo, dii/dsi, lp, sr	BUNYORE
103	3691	KAKAMEGA BLOCKS	B	35	rmo/umo, dii/dsi, lp, sr	KAKAMEGA
104	3691	SOLOGO BRICKS AND TILES	A	17	rmo/umo, dii/dsi, lp, sr	VIHIGA
105	3699	BHANDARI QUARRIES	C	62	rmo/umo, dii/dsi, lp, sr	VIHIGA
106	3699	LABA INDUSTRIES	B	36	rmo/umo, dii/dsi, lp, sr	VIHIGA
107	3699	P/S KONDOLE CONST. CO.	B	40	rmo/umo, dii/dsi, lp, sr	VIHIGA
108	3699	TM-AM QUARY	C	78	rmo/umo, dii/dsi, lp, sr	LUGARI
109	3811	BENBRIDGE MOTCRS	A	12	umo, urcent / dsi, mp, dc	KAKAMEGA
110	3811	BUNGOMA FURNITURE HOUSE	B	20	umo, urcent / dsi, mp, dc	BUNGOMA
111	3811	DAVINDER ENGINEERING	B	24	umo, urcent / dsi, mp, dc	KAKAMEGA

NB: See below for key to industrial sizes.

NO	4 DIGIT I.S.I.C	INDUSTRIAL DEVELOPMENT SECTOR	SIZE	NO	SEQUENTIAL SYMBOLS (structure location, activity, potential)	LOCATION
112	3811	EPHANTUS FABRICATORS	A	10	umo, urcent / dsi, mp, dc	KAKAMEGA
113	3811	KAKAMEGA BODY BUILDERS	A	12	umo, urcent / dsi, mp, dc	KAKAMEGA
114	3811	KAKAMEGA ENGINEERING WORKS	A	13	umo, urcent / dsi, mp, dc	KAKAMEGA
115	3811	MUGHAL ENGINEERING	A	16	umo, urcent / dsi, mp, dc	KAKAMEGA
116	3811	M/S AGRIC MOTORS	A	8	umo, urcent / dsi, mp, dc	KAKAMEGA
117	3811	M/S COAST NAILS CO.	A	15	umo, urcent / dsi, mp, dc	KAKAMEGA
118	3811	M/S STAKAM ENG.	A	14	umo, urcent / dsi, mp, dc	KAKAMEGA
119	3811	M/S STANDARD ENGINEERING.	A	10	umo, urcent / dsi, mp, dc	KAKAMEGA
120	3820	SUGAR ENGINEERING WORKS	B	32	umo, urcent / dsi, mp, dc	KAKAMEGA
121	3844	BROWN GARAGE	A	10	umo, urcent / dsi, mp, dc	KAKAMEGA
122	3844	E.AST AFICAN MARSHALLS	B	25	umo, urcent / dsi, mp, dc	KAKAMEGA
123	3844	KAKAMEGA GENERAL. MOTORS	A	12	umo, urcent / dsi, mp, dc	KAKAMEGA
124	3844	MWAURA MOTORS	A	14	umo, urcent / dsi, mp, dc	KAKAMEGA
125	3844	MWINAMO GARAGE	A	10	umo, urcent / dsi, mp, dc	KAKAMEGA
126	3844	M/S CARPET AUTO SPARES	A	8	umo, urcent / dsi, mp, dc	KAKAMEGA
127	3844	NEW KAKAMEGA STATION	A	10	umo, urcent / dsi, mp, dc	KAKAMEGA
128	3844	SEMBI GARAGE	B	24	umo, urcent / dsi, mp, dc	KAKAMEGA
129		K.N.T.C CO.	B	30	umo, urcent / dsi, mp, dc	KAKAMEGA

KEY TO INDUSTRIAL SIZE.

NO	SIZE
A	5-19
B	20-49
C	50-99
D	100-199
E	200-499
F	500+

APPENDIX 1.1 INDUSTRIAL STRUCTURE OF SAMPLE INDUSTRIES IN WESTERN PROVINCE

NO	4 DIGIT I.S.I.C	INDUSTRIAL DEVELOPMENT SECTOR	SIZE	NO	SEQUENTIAL SYMBOLS (structure, location, activity, potential)	LOCATION
1	3112	KITINDA DAIRY INDUSTRY	B	47	esmo, lsumo, dii, lp, sr	BUNGOMA
2	3116(B)	GAMBOGI POSHO MILL	A	7	umo, dii, mp, lr	GAMBOGI
3	3116(B)	KIMILILI POSHO MILL	A	10	umo, dii, mp, lr	KIMILILI
4	3116(B)	NURDIN MOHAMMED	B	23	umo, dii, mp, lr	KAKAMEGA
5	3117	AFRICANA BAKERY	A	15	umo, dii, lp, lr	WEBUYE
6	3117	CHESKAKI BAKERY	A	8	umo, dii, lp, lr	CHESKAKI
7	3117	GOLF HOTEL	B	32	umo, dii, lp, lr	KAKAMEGA
8	3117	JIWA BAKERY	B	42	umo, dii, lp, lr	MALAKISI
9	3117	MALABA BAKERY	A	8	umo, dii, lp, lr	MALABA
10	3117	MILIMANI BAKERY	A	14	umo, dii, lp, lr	BUSIA
11	3117	SHIANDA BAKERY	A	10	umo, dii, lp, lr	SHIANDA
12	3117	SIRISIA BAKERY	A	8	umo, dii, lp, lr	SIRISIA
13	3117	TASIRI BAKERY	A	12	umo, dii, lp, lr	BUNGOMA
14	3118	BASH INDUSTRIES	A	12	rmo, dii, hp, sr	NDALAKASI
15	3118	KABI JAGGERY	A	19	rmo, dii, hp, sr	KAKAMEGA
16	3118	KWAMBIHA JAGGERY	B	30	rmo, dii, hp, sr	KAKAMEGA
17	3118	LUTONYI JAGGERY	B	25	rmo, dii, hp, sr	KABRAS
18	3118	MIWA MILLERS	B	34	rmo, dii, hp, sr	KAKAMEGA
19	3118	NEW BUNYORE JAGGERY	A	10	rmo, dii, hp, sr	BUNYORE
20	3118	REMOSY SUGAR INDUSTRY	B	32	rmo, dii, hp, sr	SHIMALABANDU
21	3118	SULULU SUGAR MILLERS	B	28	rmo, dii, hp, sr	KAKAMEGA
22	3118	WEBUYE HIGHWAY JAGGERY	A	14	rmo, dii, hp, sr	WEBUYE
23	3118	MUMIAS SUGAR CO.	F	1800	rmo, dii, hp, sr	MUMIAS
24	3220	SHEYWE ENTERPRISE	A	8	umo, dii, lp, dc	MBALE
25	3320	ANDIMI JOINERY	A	7	umo, dii, lp, dc	VIHIGA
26	3320	BUSIA JOINERY	A	8	umo, dii, lp, dc	BUSIA
27	3320	FRIENDS ISUKHA WORKSHOP	A	12	umo, dii, lp, dc	ISUKHA
28	3320	MUDAMBI FURNITURE	A	10	umo, dii, lp, dc	BUSIA
29	3140	MALAKISI LEAF CENTRE	B	32	esmo, lsumo, dii, mp, lr	MALAKISI
30	3211(A)	NAMBALE GINNERY	D	120	rmo/umo, dii, mp, sr	NAMBALE
31	3311	SEMBI SAW MILL	B	47	esmo, lsumo, dii, lp, sr	KAKAMEGA
32	3411	PAN AFRICAN PAPER MILL	F	1320	esmo, esumo, dii, mp, lr	WEBUYE
33	3420	PREMIER PRINTING	B	24	umo, ucent, dc	KAKAMEGA
34	3511	E.A HEAVY CHEMICALS	B	27	esmo, lsumo, dii, mp, lr	WEBUYE
35	3691	ESHIBINGA CLAY WORKS	B	30	rmo/umo, dii/dsi, lp, sr	BUNYORE
36	3691	SOLOGO BRICKS AND TILES	A	17	rmo/umo, dii/dsi, lp, sr	VIHIGA
37	3811	BUNGOMA FURNITURE HOUSE	B	20	umo, urcent / dsi, mp, dc	BUNGOMA
38	3811	DAVINDER ENGINEERING	B	24	umo, urcent / dsi, mp, dc	KAKAMEGA
39	3820	SUGAR ENGINEERING WORKS	B	32	umo, urcent / dsi, mp, dc	KAKAMEGA
40	3844	KAKAMEGA GENERAL MOTORS	A	12	umo, urcent / dsi, mp, dc	KAKAMEGA
41	3844	MWAURA MOTORS	A	14	umo, urcent / dsi, mp, dc	KAKAMEGA

APPENDIX 1.2 KEY TO INDUSTRIAL STRUCTURE SEQUENTIAL SYMBOLS

Symbol	Meaning	Symbol	Meaning
esmo	Early stage raw material orientated (location)	sr	Short range activity radii (dev. impulse)
lsumo	Late stage raw material orientated (location)	ir	Intermediate range activity radii
umo	urban market orientated (location)	lr	Long range activity radii (dev. impulse)
dii	Development inducing industries (regional dev. effect)	ucent	Urban centripetal (centralising)
dsi	Development supporting industries (regional dev. effect)	urcent	Urban or rural centripetal (centralising)
lp	Low industrial potential		
mp	Medium industrial potential		
hp	High industrial potential		

APPENDIX 2.0 INDUSTRIAL LOCATION VARIABLES RANK SCORE TABLE

LSLC	INDUSTRY	LV01	LV02	LV03	LV04	LV05	LV06	LV07	LV08	LV09	LV10	LV11	LV12	LV13	LV14	LV15	SIZE
3112	KITINDA DAIRY I	11	11	4	11	4	7	4	1	1	7	1	11	7	7	4	B
3116(B)	GAMBOGI POSHO	11	11	4	7	4	11	4	4	1	1	4	1	7	11	4	A
3116(B)	KIMILILU POSHO MILL	11	7	4	4	7	7	4	4	1	1	7	1	4	11	4	A
3116(B)	NURDIN MOHAMMED	11	11	1	11	4	11	4	1	1	1	4	1	7	11	4	B
3117	AFRICANA BAKERY	11	11	7	7	4	7	4	4	1	4	1	1	4	7	4	A
3117	CHESKAKI BAKERY	11	11	7	7	4	7	4	4	1	4	1	1	4	7	4	A
3117	GOLF HOTEL	1	1	4	4	4	7	1	1	4	11	1	11	4	4	4	B
3117	JIWA BAKERY	11	7	4	4	4	7	4	4	4	4	1	1	4	7	4	B
3117	MALABA BAKERY	11	11	7	7	4	7	4	4	1	4	1	1	4	7	4	A
3117	MILIMANI BAKERY	11	11	7	7	4	7	4	4	1	4	1	1	4	7	4	A
3117	SHIANDA BAKERY	11	7	4	4	4	4	4	4	1	4	4	1	4	7	4	A
3117	SIRISIA BAKERY	11	7	7	4	4	7	4	4	1	4	1	1	4	7	4	A
3117	TASIRI BAKERY	11	11	7	7	4	7	4	1	1	1	1	1	4	7	4	A
3118	BASH INDUSTRIES	7	7	1	4	1	7	11	4	4	1	11	4	7	11	4	A
3118	KABI JAGGERY	7	4	1	4	1	4	7	4	4	1	11	4	7	11	4	A
3118	KWAMBIHA JAGGERY	11	7	1	7	4	7	4	4	4	7	4	7	7	11	7	B
3118	LUTONYI JAGGERY	7	7	1	4	1	7	11	4	4	1	11	4	7	11	4	B
3118	MIWA MILLERS	4	4	1	4	1	4	4	4	4	7	7	7	7	11	4	B
3118	NEW BUNYORE JAG.	11	7	1	7	4	7	7	4	4	1	7	4	4	11	4	A
3118	REMOSY SUGAR I	11	11	1	4	1	4	4	4	4	4	4	7	4	11	4	B
3118	SULULU SUGAR	11	11	1	7	1	4	7	4	4	1	4	4	7	11	4	B
3118	WEBUYE H JAG.	11	11	1	4	1	7	4	4	4	1	4	4	7	11	4	A
3118	MUMIAS SUGAR CO.	1	4	1	4	1	4	11	4	4	11	11	11	1	4	1	F
3220	SHEYWE ENTERPRISE.	11	7	7	7	7	11	4	1	1	1	4	1	11	11	11	A
3220	NAMANDI GARMENTS	11	11	7	7	7	11	4	1	1	1	4	1	11	11	11	A
3320	ANDIMI JOINERY	11	7	1	4	7	7	4	1	1	1	4	1	7	11	7	A
3320	BUSIA JOINERY	11	11	1	4	7	7	4	1	1	4	7	1	7	7	7	A
3320	ISUKHA WORKSHOP	11	7	1	4	4	7	4	4	1	4	7	1	7	7	11	A
3320	MUDAMBI FURNITURE	11	11	1	4	4	7	4	1	1	1	4	4	7	11	11	A
3140	MALAKISI LEAF CENTRE	7	7	1	4	1	4	11	4	7	11	11	11	7	7	7	B
3211(A)	NAMBALE GINNERY	4	4	1	4	7	7	7	4	7	4	7	11	11	4	1	D
3311	SEMBI SAW MILL	7	7	1	4	1	4	4	1	1	4	4	7	4	4	4	B
3411	PAN PAPER MILLS	1	1	1	4	4	1	7	1	7	11	7	11	4	1	1	F
3420	PREMIER PRINTING	4	4	1	4	1	7	4	4	1	7	4	4	7	7	4	B
3511	E.A HEAVY CHEMICALS	4	1	4	7	1	1	1	4	1	4	4	4	4	4	1	B
3691	ESHBINGA CLAY	7	4	1	1	11	4	7	4	4	1	4	4	7	4	1	B
3691	SOLOGO BRICKS	7	4	4	1	7	4	1	4	4	4	4	4	7	7	1	A
3811	BUNGOMA FUR. HOUSE	11	11	4	7	4	7	4	1	1	4	4	4	7	7	7	B
3811	DAVINDER ENG.	11	11	4	7	4	7	4	1	1	4	4	4	7	7	7	B
3820	SUGAR ENG WORKS	7	4	7	7	1	7	1	1	1	4	4	7	7	7	7	B
3844	KAKAMEGA GEN. MOT	11	11	7	7	1	11	4	1	1	4	4	4	7	7	7	A
3844	MWAURA MOTORS	11	11	7	7	1	11	4	1	1	4	4	4	7	7	7	A

RANKING SCORE TABLE FOR INDUSTRIAL LOCATION VARIABLE

SCORE	CODE
1 — 3	1
4 — 6	4
7 — 10	7
11 — 15	11

APPENDIX 2.1 INDUSTRIAL LOCATION INCENTIVES RANK SCORES TABLE

LSLC	INDUSTRY	IN01	IN02	IN03	IN04	IN05	IN06	IN07	IN08	IN09	IN10	IN11	IN12	IN13	IN14	IN15	IN16
3112	KITINDA DAIRY I	10	4	10	1	4	4	1	10	10	10	7	4	4	7	4	7
3116(B)	GAMBOGI POSHO	10	4	10	4	10	7	10	10	10	10	10	4	10	7	4	10
3116(B)	KIMILILI POSHO MILL	10	4	10	4	4	7	10	10	10	10	10	4	10	7	4	10
3116(B)	NURDIN MOHAMMED	10	1	10	4	4	7	7	4	10	10	10	4	7	4	4	10
3117	AFRICANA BAKERY	7	1	10	4	1	4	7	10	10	10	10	4	1	4	1	10
3117	CHESKAKI BAKERY	10	7	10	4	10	7	7	10	10	10	4	10	7	4	10	10
3117	GOLF HOTEL	4	1	7	1	1	1	1	4	4	7	4	1	7	4	4	4
3117	JIWA BAKERY	10	4	10	4	7	7	7	4	10	10	10	1	10	4	4	7
3117	MALABA BAKERY	10	4	10	4	7	7	7	4	10	10	10	4	1	4	4	7
3117	MILIMANI BAKERY	10	4	10	7	4	7	7	4	10	10	10	4	7	4	4	7
3117	SHIANDA BAKERY	10	4	10	7	10	7	7	4	10	10	10	4	7	4	4	7
3117	SIRISIA BAKERY	10	4	10	7	10	10	10	4	10	10	10	7	7	4	4	7
3117	TASIRI BAKERY	10	4	10	4	7	7	7	7	7	10	7	1	1	4	4	7
3118	BASH INDUSTRIES	7	4	7	4	10	4	7	10	10	10	7	4	7	4	4	7
3118	KABI JAGGERY	7	4	7	4	10	7	10	10	10	10	7	4	7	7	4	7
3118	KWAMBIHA JAGGERY	7	4	10	4	10	7	10	10	10	10	7	4	7	7	7	10
3118	LUTONYI JAGGERY	7	4	10	4	10	7	7	10	10	10	7	4	7	7	7	10
3118	MIWA MILLERS	10	4	10	4	10	10	10	10	10	10	7	4	10	7	4	10
3118	NEW BUNYORE JAG.	10	7	10	7	10	10	10	10	10	10	7	4	10	7	4	10
3118	REMOSY SUGAR I	7	7	7	4	10	4	7	10	10	10	4	1	10	1	4	7
3118	SULULU SUGAR	7	4	10	4	7	7	7	7	10	10	10	4	10	7	4	10
3118	WEBUYE H JAG.	7	4	10	7	10	10	7	7	7	10	7	4	10	7	4	10
3118	MUMIAS SUGAR CO.	1	1	7	1	4	1	1	7	1	1	4	7	1	1	1	1
3220	SHEYWE ENT.	10	7	10	4	10	7	10	10	7	10	10	4	10	7	4	10
3220	NAMANDI GARMENTS	10	4	10	4	4	4	10	10	4	10	7	4	1	4	4	7
3320	ANDIMI JOINERY	10	4	10	4	4	4	10	10	4	10	7	4	10	4	4	10
3320	BUSIA JOINERY	10	4	10	4	4	4	10	7	4	7	10	4	10	4	4	10
3320	ISUKHA WORKSHOP	10	10	10	7	10	10	10	10	10	10	10	7	10	7	4	10
3320	MUDAMBI FURNITURE	10	4	10	7	10	4	4	10	4	10	7	4	10	4	4	10
3140	MALAKISI LEAF CENTRE	1	1	10	1	7	7	1	10	10	10	4	4	7	4	4	10
3211(A)	NAMBALE GINNERY	4	4	7	7	7	4	4	7	10	10	4	7	10	4	4	10
3311	SEMBI SAW MILL	10	1	10	1	4	4	7	7	10	10	7	4	10	7	4	10
3411	PAN PAPER MILL	1	1	4	1	1	1	1	1	4	4	4	4	1	4	4	4
3420	PREMIER PRINTING	10	1	10	1	1	4	4	1	7	7	10	1	10	4	4	10
3511	E.A HEAVY CHEMICALS	10	1	10	1	1	4	10	4	10	10	10	4	1	4	1	10
3691	ESHBINGA CLAY	4	10	10	4	10	1	4	4	7	10	4	7	1	10	7	10
3691	SOLOGO BRICKS	7	4	10	4	4	4	7	7	7	10	4	4	10	7	4	10
3811	BUNGOMA FUR. HOUSE	10	1	10	4	1	10	10	10	10	10	10	4	1	4	4	10
3811	DAVINDER ENG.	10	1	10	1	1	10	10	10	10	10	10	4	10	7	4	10
3820	SUGAR ENG WORKS	10	1	10	4	4	4	7	7	10	10	10	7	10	7	7	10
3844	KAKAMEGA GEN. MOT	7	1	10	1	1	4	4	7	1	10	4	4	10	7	4	10
3844	MWAURA MOTORS	7	1	7	1	1	4	4	7	4	10	10	4	10	7	4	10

RANK SCORE TABLE FOR INDUSTRIAL LOCATION INCENTIVES

SCORE	CODE
1 — 3	1
4 — 6	4
7 — 9	7
10 — 12	10

X 3.0 REGIONAL DISTRIBUTION OF ICDC LOANS AND EQUITY (WESTERN PROVINCE AND KENYA)

COMMERCIAL	PROPERTY	SMALL INDUSTRIES.	MACHINENERY	LARGE AND MEDIUM INDUSTRIES	EQUITY	TOTAL
10,121,950	4,433,950	4,116,390	-	-	7,337,810	26,010,100
92,574,990	88,453,160	44,430,420	11,385,790	131,196,280	445,115,570	813,096,210
11,712,950	3,795,676	4,219,299	-	-	10,979,740	30,707,665
106,038,632	77,581,444	45,897,451	11,893,207	126,569,189	235,236,658	847,504,241
11,537,985	5,363,038	4,631,398	-	-	7,337,810	28,870,231
108,365,175	77,182,265	50,559,447	11,846,672	194,191,527	532,131,890	975,076,976
12,225,787	5,929,866	5,328,371	-	-	7,337,810	30,821,834
111,969,841	75,039,982	52,372,686	20,098,994	303,183,608	560,909,579	1,123,574,690
12,355,360	6,411,484	6,031,065	-	-	7,337,810	32,135,719
112,727,626	73,125,163	56,272,362	15,237,560	297,075,130	573,260,090	1,127,697,931
13,164,285	7,016,138	6,578,682	-	-	10,979,740	3,773,8845
120,944,053	87,395,724	60,565,662	16,439,984	363,715,450	731,593,008	1,380,653,881
16,773,460	7,637,380	7,440,760	-	-	7,337,810	48,087,410
142,729,440	84,209,190	65,439,900	18,556,290	406,916,620	605,739,190	1,323,590,630
22,852,720	8,036,610	9,860,270	-	-	7,337,810	48,087,410
184,177,410	81,800,080	78,799,120	21,134,060	473,780,800	678,145,680	1,517,837,150
27,448,310	8,424,760	12,299,400	-	-	7,337,810	67,600,500
228,073,990	82,885,520	95,700,350	23,915,930	542,137,000	724,667,670	1,697,380,460
34,138,100	9,290,000	16,834,680	-	-	7,337,810	67,600,590
298,618,480	86,903,220	126,474,720	27,170,120	659,690,380	759,899,350	1,958,756,270
43,631,510	7,839,550	22,963,820	-	-	7,337,810	81,763,690
401,318,220	125,739,430	164,524,480	31,370,140	700,732,920	731,251,340	2,154,936,530
49,239,770	90,73,710	25,501,200	-	-	7,337,810	91,152,490
465,030,130	465,030,130	133,645,670	197,013,260	30,241,410	767,224,720	2,656,579,540
54,985,300	9,631,330	29,216,110	0	0	7,337,810	101,170,550
507,757,140	143,542,130	223,191,700	31,587,930	1,436,688,670	722,282,290	3065049860

R KENYA

APPENDIX 4 0 SPSS DATA ANALYSIS

APPENDIX 4.1 VARIABLE CORRELATION MATRIX

	LV01	LV02	LV03	LV04	LV05	LV06	LV07	LV08	LV09	LV10	LV11	LV12	LV13	LV14	LV15
LV01	1.0000														
LV02	.7615	1.0000													
LV03	.3502	.1996	1.0000												
LV04	.4145	.4454	.4182	1.0000											
LV05	.2100	-.0115	.1180	-.1567	1.0000										
LV06	.5310	.5247	.4380	.4832	.1783	1.0000									
LV07	-.2431	-.0460	-.4675	-.2178	-.1976	-.1786	1.0000								
LV08	-.0962	-.1072	-.2224	-.3616	-.1328	-.3587	.3153	1.0000							
LV09	-.5475	-.4114	-.5540	-.5432	-.0939	-.4738	.5641	.3616	1.0000						
LV10	-.6107	-.3454	-.0978	-.1110	-.2496	-.3835	.0781	-.0150	.3781	1.0000					
LV11	-.4058	-.2471	-.6131	-.3730	-.2528	-.2553	.7432	.2324	.5155	.0801	1.0000				
LV12	-.6866	-.3883	-.3925	-.1291	-.2894	-.4212	.2913	-.0807	.6483	.7123	.3247	1.0000			
LV13	.1476	.1778	-.0718	.0856	.2683	.4502	.0072	-.2552	.0469	-.3309	.1615	-.0291	1.0000		
LV14	.5372	.4376	-.1306	.1830	-.0839	.4112	.0731	.1311	-.1411	-.6021	.1584	-.4120	.3547	1.0000	
LV15	.5054	.4271	.1894	.2250	.0672	.5483	-.1727	-.4581	-.4224	-.2135	-.0408	-.2981	.4897	.4182	1.0000

APPENDIX 4.2 FACTOR CUT-OFF GRAPH



APPENDIX 4.3 FACTOR TRANSFORMATION MATRIX:

FACTORS	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
FACTOR 1	.68378	-.57625	.44202	.07071
FACTOR 2	.54911	.80898	.20868	-.02176
FACTOR 3	-.47311	.11172	.83774	.24874
FACTOR 4	.08417	.03164	-.24343	.96574

APPENDIX 4.4 FACTOR SCORE COEFFICIENT MATRIX

VARIABLES	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
LV01	.22238	-.04031	-.04600	.05956
LV02	.16207	.01804	.01843	.25991
LV03	-.03260	-.23919	-.02650	.04784
LV04	-.02568	-.09003	.09770	.38729
LV05	0.00512	-.07384	.09191	-.56237
LV06	.04790	-.01270	.22461	.04848
LV07	.07493	.25854	-.00742	.14475
LV08	.21847	.08677	-.37978	.00135
LV09	-.06068	.19021	.01886	-.05568
LV10	-.26959	-.04857	.06562	.19477
LV11	.03692	.28984	.08292	.04338
LV12	-.25887	.08246	.17469	.15925
LV13	-.01870	.14722	.38580	-.22569
LV14	.25516	.17148	.01451	.08735
LV15	.00428	.04891	.31519	.02500

APPENDIX 4.5 FACTOR EXTRACTION (INITIAL STATISTICS)

VARIABLES	COMMUNALITY	FACTOR	EIGEN VALUE	% OF VARIANCE	CUMMULATIVE %
LV01	1.0000	1	5.34047	35.6	35.6
LV02	1.0000	2	2.51828	16.8	52.4
LV03	1.0000	3	1.70768	11.4	63.8
LV04	1.0000	4	1.42813	9.5	73.3
LV05	1.0000	5	.78236	5.2	78.5
LV06	1.0000	6	.66136	4.4	82.9
LV07	1.0000	7	.64230	4.3	87.2
LV08	1.0000	8	.57023	3.8	91.0
LV09	1.0000	9	.32136	2.1	93.1
LV10	1.0000	10	.29881	2.0	95.1
LV11	1.0000	11	.28802	1.9	97.1
LV12	1.0000	12	.16306	1.1	98.1
LV13	1.0000	13	.11297	.8	98.9
LV14	1.0000	14	.10290	.7	99.6
LV15	1.0000	15	.06208	.4	100.0

APPENDIX 5.0 KEY TO INDUSTRIAL OPERATIVES ESTIMATED CONTRIBUTIONS

SYMBOL	MEANING	SYMBOL	MEANING
A	NUMBER OF INDUSTRIAL OPERATIVES	LG	LUXURY GOODS
IG	INTERMEDIATE GOODS	EG	EXPORT GOODS
CG	CONSUMER GOODS		

INCOME AND EXPENDITURE OF INDUSTRIAL RAW MATERIAL SUPPLIERS

INCOME OF SELECTED SUPPLIERS OF INDUSTRIAL RAW MATERIAL

TOBACCO SUPPLIERS		
AREA (HA)	YIELD (KGS)	APPROXIMATE EARNINGS [KSHS]
0.5	700	35,000
0.7	1,000	50,000
0.8	1,200	60,000
0.9	1,800	90,000
0.5	900	45,000
0.6	800	40,000
0.8	1,100	55,000
0.8	1,300	65,000
0.7	1,300	65,000
0.5	700	35,000
0.8	1,200	60,000
0.5	600	30,000
0.7	1,100	55,000
0.6	850	42,500
0.8	1,200	60,000
0.8	1,300	65,000
2.0	2,800	140,000
0.9	1,700	85,000
1.6	2,000	100,000
0.2	200	10,000
0.3	500	25,000
0.7	1,100	55,000
0.6	800	40,000
0.5	600	30,000
0.8	1,200	60,000
0.9	1,400	70,000
0.7	900	45,000
0.8	1,300	65,000
1.3	1,900	95,000
1.4	2,000	100,000
1.7	2,200	110,000
0.4	500	25,000
25.8	38,150	1,907,500

EARNINGS BY COTTON SUPPLIERS		
AREA (HA)	YIELD (KGS)	APPROXIMATE EARNINGS [KSHS]
0.2	100	3,500
0.6	300	10,500
0.1	80	2,800
0.3	120	4,200
0.5	280	9,800
0.8	500	17,500
1.0	550	19,250
0.5	300	10,500
0.2	150	5,250
0.4	250	8,750
0.2	180	6,300
0.6	320	11,200
0.5	300	10,500
0.2	130	4,550
0.3	300	10,500
0.3	230	8,050
0.2	160	5,600
0.4	180	6,300
0.2	90	3,150
0.5	150	5,250
0.2	120	4,200
0.4	260	9,100
0.6	400	14,000
0.9	700	24,500
0.4	290	10,150
0.3	200	7,000
0.2	140	4,900
0.4	260	9,100
0.7	400	14,000
0.8	600	21,000
0.3	280	9,800
0.5	300	10,500
10.8	8,620	301,600

EARNINGS BY CANE SUPPLIERS		
AREA (HA)	YIELD (TON)	APPROXIMATE EARNINGS [KSHS]
6.0	200	311,000
3.5	100	155,500
1.0	25	38,875
1.9	30	46,650
3.7	90	139,950
0.4	15	23,325
6.0	150	233,250
1.5	30	46,650
3.0	60	93,300
2.0	84	130,620
4.0	120	186,600
7.5	168	261,240
1.5	28	43,540
2.8	40	62,200
1.5	17	26,435
2.6	90	139,950
4.9	30	46,650
4.0	132	205,260
4.0	110	171,050
0.5	4	6,220
1.0	20	31,100
1.0	18.2	27,990
3.0	36	55,980
2.0	22	34,240
1.0	23	35,765
1.5	25	38,875
0.5	13	20,215
1.6	19	29,545
2.0	35	54,425
1.2	23	35,765
2.7	50	77,750
0.5	14	21,795
80.3	1,821	2,831,680

APPENDIX 6.2 EXPENDITURE BY INDUSTRIAL RAW MATERIAL SUPPLIERS WITHIN THEIR REGION

ITEM NO.	PRODUCT TYPE	EXPENSES IN [KSHS] BY TOBACCO SUPPLIERS	EXPENSES IN [KSHS] BY SUGAR ANE SUPPLIERS	EXPENSES IN [KSHS] BY COTTON SUPPLIERS
1	LABOUR	20,000	40,520	20,000
2	SCHOOL FEES	100,000	200,000	83,000
3	DOWRY	40,000	40,300	19,000
4	SUGAR	45,000	132,960	53,700
5	MEAT	35,000	106,368	21,000
6	CEREMONIES	46,000	51,700	9,000
7	MAIZE	54,000	163,880	18,000
8	VEGETABLES	20,500	9,515	3,000
9	BEANS	15,100	40,000	8,000
10	POTATOES	8,800	5,000	1,300
11	FRUITS	9,700	13,130	4,000
12	CHICKEN	5,600	12,800	2,000
13	BANANAS	12,300	25,080	3,500
14	PEAS	2,400	1,500	1,400
15	CHARCOAL	3,000	7,200	3,000
16	FINGERMILLET	6,000	13,248	3,500
17	SORGHUM	3,000	3,000	1,700
18	CASSAVA	2,000	2,000	1,600
19	TOMATOES	5,000	30,830	4,000
20	ONIONS	6,800	20,000	3,300
	TOTAL	438,700	919,031	264,500

APPENDIX 6.3 EXPENDITURE BY INDUSTRIAL RAW MATERIAL SUPPLIERS OUTSIDE THEIR REGION

ITEM NO.	PRODUCT TYPE	EXPENSES IN [KSHS] BY TOBACCO SUPPLIERS	EXPENSES IN [KSHS] BY CANE SUPPLIERS	EXPENSES IN [KSHS] BY COTTON SUPPLIERS
1	CLOTHING	78,300	96,000	32,000
2	SCHOOL FEES	200,000	397,640	60,000
3	COOKING OIL & FATS	62,000	50,000	26,000
4	FISH	16,100	30,440	7,000
5	BEVERAGES	20,800	26,071	11,000
6	SOAP	25,000	38,400	12,000
7	BEDDINGS	18,200	49,800	10,500
8	CIGGARETTES	31,500	65,400	12,000
9	BEER	56,800	90,640	23,000
10	BREAD	69,000	132,600	18,000
11	WHEAT FLOUR	90,000	322,560	26,000
12	MAIZE FLOUR	102,000	338,640	34,000
13	MATCHBOXES	4,900	5,169	8,000
14	RICE	61,000	53,460	28,700
15	PARAFFIN	41,800	46,080	16,000
16	MEDICAL CARE	62,500	96,000	24,000
17	POWDER & TINNED MILK	39,800	23,953	6,000
18	BODY & HAIR LOTION	31,000	34,952	9,000
19	SALT	6,400	7,680	5,600
	TOTAL	1,017,100	1,915,485	380,000

APPENDIX 7 PROJECTS FINANCED BY K.I.E IN BUNGOMA DISTRICT AS AT 1995

SECTOR	REGION	COST (KShs)	REGION
AGRICULTURAL FOOD PROCESSING INDUSTRIES	Bukhayi Posho Mill	268,500	Matisi
	Tuti Posho Mill	316,250	Kibabii
	Wenani Posho Mill	155,407	Kamusinde
	Nelima Posho Mill	115,682	Tongaren
	Nabumbo Posho Mill	95,400	Sirsia
	Dawaki Posho Mill	241,200	Kuywa
	Furaha Posho Mill	87,485	Webuye
	Londa Bakery	547,200	Kanduyi
	Buffi Industry	453,607	Bungoma
AGRICULTURAL NON FOOD PROCESSING INDUSTRIES	Wesonga Tailoring Unit	136,642	Bungoma
	Mals Tailoring Unit	194,114	Kanduyi
	Dimo Tailoring Unit	222,210	Webuye
	Atieta Tailoring Unit	230,000	Bungoma
	Namaindi Garments	242,195	Bungoma
	Arum Tailoring	149,641	Webuye
	Sebstyle Garments	108,000	Bungoma
	Small Scale Saw Mill	127,600	Kanduyi
	Webuye S.S.S Mill	195,470	Webuye
NON AGRICULTURAL MANUFACTURING INDUSTRIES	Simiyu Metal fabrication	101,250	Netima
	Kanduyi welding & Battery Charging	231,645	Kanduyi
	Kamata Engineering	5,928,342	Bungoma
	Zako Jua Kali	103,356	Bungoma
	Kanduyi Metal Fabrication	150,714	Kanduyi
	Malakisi Engineering works	900,000	Bungoma
	Metal Fabrication	345,000	Bungoma
	Edible Oil Industry	496,941	Bungoma
SERVICE INDUSTRIES	Nyachuru Enterprises	526,688	Kimilili
	Bungoma Sec Bureau	343,912	Bungoma
SERVICE INDUSTRIES	Joo Enterprise	1,854,200	Kanduyi
	Webuye Photocopying Bureau	404,817	Webuye
	Kimilili Medical Clinic	1,347,305	Kimilili
	Labnostics Ltd	366,480	Bungoma
	Small Pot Cafe	265,968	Kimilili
	Quakers Cafe	469,973	Kanduyi
	Khalaba Enterprise	1,548,000	Bungoma
	Kaqera Enterprise	252,000	Kanduyi
	Bungoma Cafeteria Unit	533,071	Bungoma
	Shalom Cafe	133,560	Bungoma
	Malakisi Cafeteria Unit	308,200	Bungoma
	Zafrica Business School	106,920	Bungoma
	Mukundi Printing Press	2,279,040	Bungoma
Total			

Sectoral Lending by K.I.E in Bungoma and Mt. Elgon Districts:1989-1994

Source: K.I.E - Bungoma, 1995

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RESEARCH QUESTIONNAIRE.

TOPIC:

INDUSTRIAL DEVELOPMENT PLANNING: THE CASE OF DEVELOPMENT INDUCING AND DEVELOPMENT SUPPORTING INDUSTRIES IN WESTERN KENYA.

INTRODUCTION

THIS RESEARCH IS FOR THE UNIVERSITY OF NAIROBI. IT SEEKS TO EXAMINE AND EVALUATE TWO ASPECTS OF INDUSTRIAL DEVELOPMENT PLANNING IN WESTERN PROVINCE. THESE ARE: A) GOVERNMENT INFLUENCE IN REGIONAL LOCATION OF INDUSTRIES, AND B) REGIONAL INDUSTRIAL STRUCTURE VIS A VIS I) EQUITABLE REGIONAL DEVELOPMENT, AND, II) REGIONAL RESOURCE TRANSFER. IT IS ENTIRELY FOR ACADEMIC PURPOSES. NEVERTHELESS THE FINDINGS OF THIS STUDY IF IMPLEMENTED BY ANY FIRM OR THE GOVERNMENT WILL;

- 1) HELP TO PLAN FOR EFFECTIVE DEVELOPMENT IN THE STUDY AREA
- 2) PROVIDE THE INDUSTRIAL ENTREPRENEURS WITH A WIDE AREA WITHIN WHICH THEY CAN MAKE INVESTMENTS
- 3) ASSIST THE GOVERNMENT IN MAKING POLICIES THAT BENEFIT THE REGIONS THAT PROVIDE INDUSTRIES WITH RAW MATERIAL.
- 4) PROVOKE STUDENTS OF INDUSTRIAL PLANNING AND REGIONAL DEVELOPMENT DEVELOP A GREATER INTEREST IN INDUSTRIAL RESEARCH AND DEVELOPMENT.

NOTE: ALL THE INFORMATION GIVEN WILL BE CONFIDENTIAL.

QUESTIONNAIRE PART I

CONFIDENTIAL
MANAGERS OF FINANCIAL INSTITUTIONS.

- Q1. What is the name of your institution?.....
- Q2. When did you begin your operations here?.....
1Year2 Years.....3-5Years.....Over 5 Years ago.
- Q3. Who are your main customers?.....
Farmers.....
Jua kali Operators.....
Shopkeepers.....
Industrialists.....
Others specify.....
- Q4. Who gets a bigger share of your loans (in KShs).....?.....
Farmers, KShs.....
Jua Kali, KShs.....
Shopkeepers, KShs.....
Industrialists, KShs.....
Others, KShs.....
- Q5. Do you have any loaning conditions? Yes..... No.....(Mark X where appropriate)
- Q6. If Yes, What are these conditions in terms of
Security.....
Type of investment.....
Region of investment.....
- Q7. In which way do you asses the entrepreneurs' profits?.....
Change in stocks.....
Changes in number of employees.....
Changes in output.....
Changes in input.....
Changes in overall income.....
Changes in employees income.....
- Q8. In most cases, where do the entrepreneurs re-invest their profits?.....
Bungoma District.....
Vihiga District.....
Kakamega District.....
Busia District.....
Mt. Elgon District.....
If so, what percentage?.....(Indicate the percentages beside the District)
- Q9. Among the following group of entrepreneurs Who saves most

with your institution?.....
 Farmers, KShs.....
 Jua Kali operators, KShs.....
 Shopkeepers, KShs.....
 Industrialists, KShs.....
 Others, KShs.....

Q10. Within this region, what is the existing industrial potential based on the below table?...

No.	TYPE OF INDUSTRY	TYPE OF RAW MATERIAL	SOURCE
1			
2			
3			
4			
5			

Q11. Have you ever funded industries in this region?

Yes.....No....., if yes, which ones?

Agro-based food processing, KShs.....

Agro-based non-food processing, KShs.....

Non agro-based manufacturing, KShs.....

Service industries, KShs.....

If no, what could be the reasons hindering industrial funding in the region?.....

i)

ii)

Q12. Do you have any criteria in loaning to industries in relation

to its location? Yes, No if yes, which ones...i).....

ii).....iii).....

iv).....v).....

if no, why?.....

.....

Q13. In your institutions are savings limited to this region?

Yes.....No....., if no, where else do you think they are invested?

i). within this region.....

ii) outside this region.....

if yes, why?.....

THANK YOU

QUESTIONNAIRE PART II INDUSTRIAL MANAGERS

Q1. What is the name of your institution?.....

Q2. When was your firm established?.....

Q3. What do you produce in your industry?.....

a) Consumer goods

i)..... Vol.....

ii)..... Vol.....

iii)..... Vol.....

b) Producer goods

i)..... Vol.....

ii)..... Vol.....

iii)..... Vol.....

c) Luxury goods

i)..... Vol.....

ii)..... Vol.....

iii)..... Vol.....

d) services

i).....

ii).....

Q3. What did you consider as important, reasons for establishing this firm here?.....

(Rank your reasons in order of importance in the space provided from 1 (very important) to 15 (weak influence)

using the key in the smaller table.

KEY TO RANKS

Class	Ranks Score	Explanation
A:	1 - 3	Very Strong Influence
B:	4 - 6	Strong influence
C:	7 - 10	Less Strong influence
D:	11 - 15	Weak influence

No	REASONS FOR LOCATION	RANK
i	Government influence	
ii	Influence of local politics	
iii	Presence of raw material	
iv	Availability of cheap labour	
v	Availability of water	
vi	Availability of power/fuel	
vii	Low transport costs	
viii	Proximity to other industries	
ix	Availability of capital	
x	Presence of market	
xi	Neamess to entrepreneurs home	
xii	Advantages of urban economies	
xiii	Influence of personal considerations	
xiv	Availability of land for expansion	
xv	Adequate siting facilities	

Q5. What raw materials are used in the production of these goods?

Sources and transport costs	RAW MATERIAL			
	I	II	III	IV
I				
II				
III				
IV				

Q6. How much do you produce in a month?.....(Use appropriate units)

Q7. Which ancillary industries are possible from your industrial activities?

- a).....
b).....
c).....
d).....

Q8. Of the above, which one(s) are/is developed?.....

- a).....
b).....
c).....
d).....

Q9. Who are your main consumers?.....

- a)..... Vol region.....
b)..... Vol region.....
c)..... Vol region.....
d)..... Vol region.....

Q10. By what means do you deliver your products to the market?..

Means

location

- a).....
b).....
c).....

Q11. Are/is your product(s) protected from external competition?

Yes No.....

Q12. How many people are employed in your factory?.....

- i) of these, how many are resident in the factory compound?..
ii) how many are resident in the district?.....
iii) how many are resident outside the Province?.....

Q13. Of your employees, how many are

- a) Skilled?.....
b) Semi-skilled?.....
c) Unskilled?

Q14. What is their pay range?

- a) Skilled?.....
b) Semi-skilled?.....
c) Unskilled?

Q15. Do you offer any benefits to your workers? Yes No

if yes, which category(indicate the type of benefit).....

Q16. Which are the main sources of your employees?.....

Type

Region

- a) Skilled ..
b) Semi-skilled ..
c) Un skilled ..

Q17. How much power(energy) does your factory use per hour?.....

Q18. Do you intend to expand production?....., if yes, in what ways

- Floor space
No of employees.....
Power consumption.....
Rate of production
All the above

Q19.Do you have any intentions of operating another factory apart from this?.....
Q20.Has your industry got any information on all the known and quantified (actual and potential) development resource bases in this locality in which you may invest?Yes.....No.....

Q21.What have been the problems to industrial development in this region by your firm?

Q22.Does the government offer you any incentives for operating here and in production of these Goods...Yes.....No.....
If yes (can you rank in order of those that are mostly provided to those that are least or not provided at all using the key of the smaller table below)

SCORE	CODE
1 — 3	1
4 — 6	4
7 — 9	7
10 — 12	10

INDUSTRIAL INCENTIVE CODES

CODE	TYPE OF INCENTIVE	RANK
IN01	TAX HOLIDAY	
IN02	ELECTRICITY SUPPLY	
IN03	INDUSTRIAL OILS	
IN04	WATER SUPPLY	
IN05	SEWERAGE LAYOUTS	
IN06	DIRECT LOANS	
IN07	LOAN GUARANTEES	
IN08	GOVERNMENT PURCHASES	
IN09	INDUSTRIAL SITES	
IN10	INDUTRIAL GOODS PROTECTIONISM	
IN11	PROVISION OF TECHNICSL SERVICES	
IN12	ROAD CONSTRUCTION	
IN13	RAIL CONSTRUCTION	
IN14	PROVISION OF HEALTH SERVICES	
IN15	PROVISION OF SCHOOLS	
IN16	INDUSTRIAL TRAINING FACILITIES	

Q23.Has the government assisted you in any other way apart from the reason of locating here?

Yes..... No..... if yes, in which way.....

Q24. Do you get any assistance from:

Body

Form of Assistance

- i) NGO's ? Yes.....No....., If Yes
- ii) Other industries? .Yes.....No....., If Yes
- iii) The local council? Yes.....No....., If Yes
- iv) Financial institutions?. Yes.....No....., If Yes
- v) Politicians? Yes.....No....., If Yes
- vi) Well wishers? Yes.....No....., If Yes

Q25.How is the assistance channelled to you? (Put a tick or X as appropriate)

- a) Through the central government.....
- b) Through the Provincial administration.....
- c) Through the ministries.....
- d) Directly.....

Q26.Does the local communities participate in running this industry? Yes...No..... if yes state how.....

Thank you

QUESTIONNAIRE PART III

INDUSTRIAL CROPS OUTGROWERS

Name.....
Sex

- 1.What is your marital status? single married
- If married, how big is the family?.....
- 2.How many children go to
 - a) primary school?.....
 - b) secondary school?..... Where?
 - i).In this district
 - ii) Outside this district.....
- 3. Is your occupation solely farming? (Put a tick where appropriate)
Yes.....No
- If No, what else do you do?
 - a).....

- b).....
- c).....
- d).....

From farming how much did you harvest last season?(indicate the measurement). Please indicate in the table below the size of the land and the type of crop the amount harvested.

NO	CROP	SIZE OF LAND	OUTPUT
1			
2			
3			
4			
5			

How long have you been planting these crops?

- i) less than one year.....
- ii) two years.....
- iii) three years.....
- iv) four years.....
- v) five years and more.....

Do you employ any labourers? Yes No.....

Are the workers permanent Yes.....No

How many are they.....

Where do these workers come from?.....

From within the district.....

Outside the district.....

How much do you pay them? Kshs.....

- i) <Kshs 1,000
- ii) Ksh 2,000
- iii) Kshs 3,000+

What is your average expenditure on the following per year?

ITEM	EXPENDITURE		
	WEEK	MONTH	YEAR
Clothing			
School fees within the district			
School fees outside the Province			
Cooking oil and fat			
Fish			
Beverages			
Soap			

ITEM	EXPENDITURE		
	WEEK	MONTH	YEAR
Bedding			
Cigarettes			
Beer			
Powder and tinned milk			
Bread			
Matchboxes			
Flour (Wheat)			
Flour (Maize)			
Rice			
Paraffin			
Medical care			
Dowry			
Ceremonies			
Sugar			
Meat			
Salt			
Body and hair oil			
Millet			
Vegetables			
Eggs			
Beans			
Potatoes			
Cassava			
Fruits			
Bananas			
Tomatoes			
Onions			
Chicken			
Finger millet			
Charcoal			
TOTAL			

10. Of the following what do you own? (Tick against the item owned, or put A (for purchase After ploughing the land) or B (or purchase Before ploughing the land)

ITEM OWNED	PERIOD OWNED (A) & (B)	SOURCE OF MONEY FOR PURCHASE	APPROXIMATE INCOME
Permanent House			
Matatu			
Ox-plough			
Taxi			
Motor Vehicle			
Shop			
Bar			
Tractor			
Bicycle			
Bus			
Plot of Land			
Others			

ii) Since when did you start owning any of the above?.....

iii) Of the above things you own, what is the approximate income they bring in per day?

11. Which of the following exist(s) in your area?.....(Tick where relevant)

- a) Roads.....
- b) Piped water.....
- c) Telephone.....
- d) Electricity.....
- e) Railway.....
- f) Post-office.....

12. When were they established? (Indicate in 11 (A) for After the industry came and (B) for Before the industry came

13. How do you benefit from each of the following?.....

- a) Roads.....
- b) Railway.....
- c) Electricity.....

4 DIGIT LSLC	Industry	A	Aggregate sectoral classification using regional data	Actual Production and tendency by sample industries	Percentage operatives. by sectors :1994	Sectoral operatives :1994 (est.)
3320	Namandi Garments	10	production of school uniforms and other wearing apparel	production for local consumption	CG 100%	10
3320	Andimi Joinery	7	Manufacture of household and office furniture, & other furniture	increased production of household goods	CG 80% IG 20%	6 1
3320	Busia joinery	8	Manufacture of household and office furniture, & other furniture	increased production of household goods	CG 80% IG 20%	6 2
3320	Friends Isukha W	12	Manufacture of household and office furniture, & other furniture	increased production of household goods	CG 80% IG 20%	10 2
3140	Mudambi Furniture	10	Manufacture of household and office furniture, & other furniture	increased production of household goods	CG 80% IG 20%	8 2
3211(A)	Malakisi Leaf Centre	32	tobacco production, curing and storage	curing mainly done by farmers, centres mainly stocks	CG 5% EG 95%	2 30
3311	Nambale Ginnery	120	Cotton ginning, seed & oil	decline of industry shifting emphasis to consumer goods, some luxury goods too.	EG 75% IG 20% LG 5%	90 24 6
3411	Sembi Saw Mill	35	Timber production	increased diversification & production of IG	IG 95% CG 5%	33 2
3420	PanPaper Mills	1320	production of paper, paperboard, plywood & electricity supply	increased product range & diversification	IG 15% CG 80% LG 5%	198 1056 66
3511	Premier printers	24	printing & publishing	faster growth	IG 70% CG 30%	17 7
3691	E.A Heavy Chemicals	27	production of acids & alum	import of raw material hampering development	IG 100%	27
3691	Eshibinga Clay	30	manufacture of tiles, bricks, blocks, ceramics, vases	increasing diversification of products	IG 65% CG 30% LG 5%	19 9 2
3811	Solongo Blocks	17	manufacture of blocks, tiles, slabs etc.	increasing diversification of the industry	IG 65% CG 30% LG 5%	11 5 1
3811	Bungoma furniture house	20	fabrication of metal products, nuts, bolts ploughs, trailers, window & door frames & welding	an increasingly important industry	IG 80% CG 20%	16 4
3820	Davinder Engineering	24	fabrication of metal products, nuts, bolts ploughs, trailers, window & door frames & welding	an increasingly important industry	IG 80% CG 20%	19 5
3844	Sugar Engineering	32	production of cane crashers & rollers	potentially crucial for growth & development	IG 100%	32
3844	Kakamega General motors	12	repair & maintenance of motor vehicles	a fast growing regional service industry	IG 45% CG 20% LG 35%	6 2 4
3844	Mwaura Motors	14	repair & maintenance of motor vehicles	a fast growing regional service industry	IG 45% CG 20% LG 35%	6 3 5

See Appendix 5.0 for codes to letter symbols.

Source: Research Data, 1995.