SPATIAL ASPECTS OF IMPORT SUBSTITUTION: THE CASE STUDY OF THE TEXTILE AND CLOTHING INDUSTRY IN LIVINGSTONE, ZAMBIA

BY

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DEDICATION

To my mother and late father

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DECLARATION

I, Hampwaye, G. declare that this dissertation has been composed by me and that the work recorded is my own. All quotations have been distinguished by quotation marks. The sources of all materials used have been specifically acknowledged and the dissertation has not been previously submitted for a degree at this or another university.

Signature: .....

Date: 15/11/90

APPROVAL

This dissertation of **GODFREY HAMPWAYE** is approved as fulfiling part of the requirements for the award of the degree of Master of Science in Geography by the University of Zambia.

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ABSTRACT

As the policy of Import Substitution emphasises the utilisation of local raw material inputs, the strategy is expected to have spatial influence on the distribution of manufacturing industries. Since long links between supporting plants adversely affected profitability levels, manufacturing plants should be located closer to their main supplier of raw material inputs (backward linkage) and their markets (forward linkage.

Out of the total number of Textile and clothing factories in Zambia, approximately 25 per cent are located in Livingstone despite its small market relative to other towns (Harkema, 1972; C.S.O, 1983). The aims of the study therefore were to examine the spatial implications of the policy of Import Substitution pertaining to the Textile and Clothing industry and the concentration of the subsector in Livingstone.

The major objectives of the study were to determine the main source(s) of the raw material inputs for the Textile and Clothing industry in Livingstone and the major market(s) for the products of the industry. The third objective was to investigate why there is a high concentration of the industry in Livingstone.

The data were collected from 31 plants in Livingstone through the use of questionnaires and interviews. Additional information was collected from the Ministry of Commerce and Industry and the University of Zambia Library. Z-test for proportions and t-test for paired observations were employed to analyse the data.

The findings have shown that there are five sources of raw material inputs of the Textile and Clothing plants in Livingstone viz: Livingstone, Kafue, Lusaka, Ndola and outside the country. However, Livingstone has been identified to be the major source for most of the factories whereas the major market(s) for the products from the factories is outside Livingstone. The implication of the above findings is that backward linkages are more important than forward linkages as far as the Textile and Clothing plants in Livingstone are concerned.

Although historical factors are said to have been important for the initial location of the plants in Livingstone the continued expansion of the industry in the town is attributable mainly to availability of raw material inputs and semi-skilled labour in Livingstone.

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ABBREVIATIONS

C.S.O.	-	Central Statistical Office
INDP	-	Interim National Development Plan
FNDP	-	First National Development Plan
SNDP	-	Second National Development Plan
TNDP	-	Third National Development Plan
U.D.I.	-	Unilateral Declaration of Independence

CHAPTER ONE

INTRODUCTION

1.0 This dissertation comprises six chapters. In the Introduction (Chapter One), apart from the problem, aims and the background to the study, objectives, hypotheses, rationale and definition of terms are discussed. The other chapters are Literature Review (Chapter two), Methodology (Chapter three), Study Area (Chapter four), Presentation and Analysis of Results (Chapter five) and Discussions and Conclusions (Chapter six),

1.1 The Problem and Aims

The aims of this dissertation are to show the spatial implications of the Policy of Import Substitution pertaining to the Textile and Clothing Industry in Zambia and the concentration of the subsector in Livingstone.

Although some work has been done on Import Substitution in Zambia (Seidman, 1979, 1986; Seshamani, 1987), not much has been done about the spatial aspects of the strategy on a subsectoral level. However, Musampa (1986) has looked at Import Substitution of the whole manufacturing sector by analysing material linkages in terms of whether they are local or not. There is, however, need to consider the performance of individual subsectors and in this case the Textile and Clothing subsector.

Besides personal interest, the justification for the choice of the Textile and Clothing subsector lies in the fact that it is among industrial establishments which are engaged in producing consumer goods. It is from these industrial establishments which manufacture consumer commodities where the strategy of Import Substitution is expected to start (Connelisse and Others, 1981; Nixson, 1982). In addition, one of the major raw material inputs (cotton) required by the subsector can be and is locally produced in Zambia. The strategy puts great emphasis on the use of local raw material inputs.

The subsector is generally market oriented due to its sensitivity to fashion changes. This is particularly true with the Clothing category (Alexandersson, 1967). Therefore, the concentration of the industry in Livingstone where the market is relatively small and which is not the country's fashion centre deserves an explanation. Furthermore, the major Textile plant (Kafue) which was meant to supply raw material inputs to the factories is located far away from Livingstone. Although a historical factor is alleged to have been vital (Harkema, 1972), it does not explain the continued expansion of the subsector especially after U.D.I. and the establishment of Kafue Textiles. This historical

factor is the nearness of Livingstone to Rhodesia (Zimbabwe) which used to be the chief supplier of the raw material inputs (Harkema, 1972).

1.2 Background to the Study

This section is in two parts, the field of Economic Geography and Industrial Location Analysis.

1.3 Field of Economic Geography

Distribution of man's economic activities belongs to the field of Economic Geography. These activities include Mining, Agriculture, Manufacturing and provision of such services as transportation, among others (Smith, 1981). The difference between an Economic Geographer and an Economist is a matter of emphasis. For example if the theme is on capital, the former emphasises the spatial distribution of capital while the latter concentrates on capital accumulation and investment (Estall and Buchanan, 1980).

The field of Economic Geography is indeed very wide and hence this study will confine itself to only one aspect of the field called location of manufacturing industries. The concept of location is of cardinal importance in economics as it affects costs.

Depending on the location of a plant in relation to the source of raw material inputs or market, costs may be high or low (Estall and Buchanan, 1980).

1.4 Industrial Location Analysis

In this section, Weber's Classical Location Theory is discussed including its refinements and criticisms. Also included in this section is the influence of the strategy of Import Substitution on industrial organisation. This relationship as it is discussed later in the chapter forms the basis of this study.

One of the leading location theories of manufacturing industries is the classical location theory formulated by Alfred Weber in which he considered transportation costs to be the primary factor of location (Thoman and Corbin, 1974; Smith, 1981). Labour costs and economies of agglomeration were considered as secondary factors. They were seen as factors that could divert the location of a plant from the least transportation cost location to where labour costs were low or where the advantages from economies of agglomeration were high enough to offset the additional transportation costs (Thoman and Corbin, 1974; Smith, 1981).

The theory has been criticised on account of the fact that it grossly overemphasises the importance of transportation and labour costs which are presently no longer prime factors due to technological developments (Norcliffe, 1975). Norcliffe has instead suggested the availability of infrastructure, economies of scale and linkages as being of supreme importance in industrial location analysis (Norcliffe, 1975).

Contrary to the existing criticims by Norcliffe, the classical theory of location is still important especially in developing countries where technological advancement is still lagging behind. The shift from heavy to light industries although is true in developed countries has not been the case in most Third World Countries. There is to date a dependence on heavy industries which require transportation of heavy raw materials and products and hence the importance of transportation costs in industrial location.

While it is true that labour might be attracted to industrial areas, the situation is a bit different at the international level. According to the Core-Periphery Model, multinational companies are expanding to developing nations primarily to exploit cheap labour

and markets (Soja and Hadjimichalis, 1979; Peet, 1983). This simply explains the importance of labour costs in determining the location of some industries.

Other factors that have been incorporated in industrial location analysis include demand (Greenhut, 1956) and cost of land and capital (Smith, 1981). Government policy or influence is another factor which is gaining in importance in industrial location analysis (Estall and Buchanan, 1980).

Behaviorists have in addition to the above criticisms argued that the classical location theory overlooks the fact that locational decisions are not only concerned with profit maximisation. There has been a contention that most organisations are satisfisers rather than profit maximisers and that an economic man does not exist in reality (Pred, 1969; Dicken, 1971).

The strategy of Import Substitution and its influence on the organisation of industries in space are very important in this study. It must be noted that policies have geographic expressions in space and as such Import Substitution being a policy is expected to influence changes in industrial space (Soja, 1980; Smith, 1981; Massey, 1985.

The spatial implications of the policy of Import Substitution result from the policy's great emphasis on utilisation of local raw material inputs in the manufacturing sector. Long links between supporting plants adversely affect profitability levels, whereas short links have positive effects. Plants therefore, should be located closer to their main supplier of the raw material inputs (backward linkage) or their markets (forward linkage).

1.5 Objectives

The study had three major objectives, and these are:

(a) to determine the major source(s) of the raw material inputs of the Textile and Clothing industry in Livingstone;

(b) to determine the main market(s) for the products of the industry in Livingstone;

(c) to investigate why there is a high concentration of the Textile and Clothing industry in Livingstone.

1.6 Hypotheses

The data collected from the field were used to test the following hypotheses:

(i) The proportion of the plants which depend on the

supplies of raw material inputs from within Livingstone is greater than the proportion which gets its supplies from outside Livingstone.

(ii) The proportion of plants that sell their products outside Livingstone is higher than the proportion of plants that have their market within Livingstone only.

1.7 Rationale

The findings of the study are important in two main ways. In the first instance, an understanding of the factors of location is crucial for industrial planning purposes. Therefore, industrial planners will benefit considerably from this study. Secondly, it is hoped that the findings will be beneficial in that they will contribute to literature on Textile and Clothing Industry.

1.8 Definition of terms

(i) Plant (Factory) a single industrial unit (Smith, 1981).

(ii) Industry a number of plants involved in the same manufacturing activity (Smith, 1981).

(iii) Textile Manufacture of textiles involves the following activities:

(a) spinning, weaving and finishing textiles;

(b) manufacture of made-up textile goods which include bedsheets, pillow cases, blankets, curtains, bedspreads, etc. and

(c) knitting mills (C.S.O, 1975).

(iv) Clothing Industry — engaged in the manufacture of garments or weaving apparel with the exception of footwear (C.S.O, 1975).

(v) Location — It shall be considered as an area or town but not a site or region (Estall and Buchanan, 1980).

CHAPTER TWO

LITERATURE REVIEW

2.0 This chapter looks at the policy of Import substitution in some developing countries and the location of the Textile and Clothing Industry during the Industrial Revolution. The second part of this chapter discusses the strategy of Import Substitution and the distribution of the Textile and Clothing Industry in Zambia.

2.1 The Policy of Import Substitution in Third World Countries

Many developing nations particularly in Latin America, Africa and Asia have embarked on Import Substitution as a strategy for economic development (Nixson, 1982). This strategy implies local production of goods which were previously imported to satisfy local demand (Nixson, 1982; Musampa, 1986). There is a great need also to state from the outset that the policy emphasises utilisation of local raw material inputs. In Latin America, however, the strategy was primarily initiated as a response to the disruption caused by wars and international depression which made it very hard to secure foreign exchange for imports and in some cases imports themselves were hardly available (Hirschman, 1971 ; Nixson, 1982). Later, the strategy came to be

seen as a deliberate development policy in most countries as opposed to being a reactive response as initially adopted by most Latin American countries.

Import Substitution as a development strategy aims at among other things an increase in Gross Domestic Product, creation of employment opportunities, lessening balance-of-payments constraints and expansion of the manufacturing sector (Seshamani, 1987). In most countries of the Third World and in Africa in particular, however, the type of industrialisation which has resulted is characterised by high level import-intensity, capital-intensive technology and low level capacity utilisation. Other characteristics are minimal degree of diversification of exports and local production of consumer goods for the elite group mainly (Nixson, 1982; Seshamani, 1987). However, in relative terms the strategy seems to have been successful in Brazil although later in the 1960s, the opportunities for the strategy were reduced (Bergsman and Candal, 1969).

2.2 The Textile and Clothing Industry

The Textile Industry has traditionally been influenced by power and labour costs. These factors played a major role towards the attraction of the industry in the southern part of New England during the Industrial

Revolution (Alexandersson, 1967).

On the other hand, the apparel (clothing) industry is very sensitive to changes in fashions. It is argued that:

> Fashion is the key to the apparel industry, its organisation, and geographic distribution, especially to women's clothing in countries with a high standard of living (Alexandersson, 1967: 97).

The industry therefore would rather locate in a country's fashion centre which is the economic heartland. The high rent and labour costs in such a location are offset by the external economies of scale which cut down on other costs (Alexandersson, 1967).

2.3 Import Substitution in Zambia

Before the attainment of political independence in 1964, Zambia imported most of her consumer products and the contribution of the manufacturing sector was less than 7 per cent of the total Gross Domestic Product at independence (Seidman, 1979; Musampa, 1986).

Zambia's adoption of the strategy of Import Substitution was largely a result of Rhodesia's U.D.I. in 1965 (FNDP, 1966; Seidman, 1979; Seshamani and Samanta, 1985). Although there has been great emphasis on the strategy in the successive development plans, little so far has been achieved (FNDP, 1966; SNDP, 1971; TNDP, 1979; INDP, 1988). In fact President Kaunda admitted that Import Substitution has not yielded tangible results by stating that:

> There has been very little genuine Import substitution and most of the industries set up during the period are heavily dependent on imported raw materials and other essential production inputs; the technology imported has been capital intensive and least suited to the Zambian market (TNDP, 1979: iii).

However, efforts are still being made to replace imports.

The few who have written on Import Substitution in Zambia have concentrated on bringing up to the public attention the inadequacies of the policy. For example, importation of luxuries for the elite and failure to generate employment opportunities due to heavy dependency of the industries on capital-intensive

technologies have been the major issue of debate. Another weakness has been the reliance of the of the industries on imported raw material inputs (Seidman, 1979, 1986; Seshamani and Samanta, 1985; Seshamani, 1987). It has also been observed that material linkages that exist between supporting firms are non-local generally. This is an indication that the manufacturing sector still depends on imported raw material inputs (Musampa, 1986).

With reference to the Textile and Clothing Industry, the plants were very few in Zambia and most of the supplies came from Rhodesia (Zimbabwe) until after U.D.I. in 1965 (Harkema, 1972). The industrial establishments increased to 101 by 1969 from 68 in 1965 with the majority belonging to the Clothing Category (SNDP, 1971: 20).

Kafue Textiles and Kabwe Industrial Fabrics Limited were established in 1970 and the former was meant to supply the clothing factories with local raw material inputs (TNDP, 1979). On the other hand, production of cotton was encouraged being the main raw material input required by the subsector (Harkema, 1972). However, it has been contended that due to the

importation of materials of 'high quality' compared to the Zambian cotton, a weak local linkage system between agriculture and the Textile and Clothing categories has been created (Seidman, 1979).

The literature discussed above reveals that whereas the weaknesses of the policy of Import Substitution have been dwelt on, little effort has been made to explore the relationship between the policy and changes in industrial spatial organisation especially of the Textile and Clothing Industry. Suffice it to mention that the understanding of the relationship is important in determining the type of linkage system, whether local or non-local and the extent of the linkage.

2.4 The distribution of the subsector in Zambia

Generally, Zambia has been experiencing and continues to experinece inequality in industrial growth (especially the manufacturing sector) between rural and urban areas (along the old line of rail). Urban areas have been favoured more than rural areas (Kaunga, 1982; Sehsamani and Samanta, 1985). This inequality applies to the Textile and Clothing subsector also.

There is a high concentration of the Textile and Clothing Industry in the towns along the line of

rail stretching from Livingstone to the Copperbelt towns (Fig. 1) (Harkema, 1972; Seshamani, 1987). Undoubtedly, this part of the country has a larger market. However, there are disparities among the above mentioned towns as regards to the distribution of the Textile and Clothing Industry. There is an indication that approximately 25 per cent (40-50) of the total Textile and Clothing plants are situated in Livingstone despite its relatively smaller market (Harkema, 1972; C.S.O., 1983).

It has been claimed that the high concentration of the subsector in Livingstone can be explained in terms of a historical factor: that the town was the gateway to Rhodesia (now Zimbabwe) where most of the raw material inputs came from before U.D.I. in 1965 (Harkema, 1972). But the above factor does not provide a convincing explanation of the continued expansion of the industry even after U.D.I. and the establishment of Kafue Textiles. The factors which explain this concentration are given in the research findings in Chapter Five.

CHAPTER THREE

METHODOLOGY

3.0 *This chapter discusses sources of data, statistical* treatment of the data, the sample size and the problems which the researcher encountered during the research work.

3.1 Sources of data

Information relating to the study was collected from both primary and secondary sources, with the former being the major one.

(a) Primary Source

Data were collected through field work in which questionnaires were used and interviews conducted. However, most of the information was collected from questionnaires. Questionnaires were administered to and interviews conducted with either the owners of the firms or managers/ directors. The questionnaires were distributed on the basis of one plant one questionnaire, and a total of thirty-one plants were covered (see, section 3.3). This exercise lasted for about three weeks.

(b) Secondary Sources

Again, upon the completion of fieldwork, three secondary sources were consulted. These were, the Ministry of Commerce and Industry, the Central Statistical Office and the University of Zambia Library. At the ministry, the files were consulted so as to fill in the gaps which were left in some questionnaires. For example, the question of 'year of establishment' of the firm was not answered in some questionnaires. Some of the documents that were consulted at the Central Statistical Office and the University of Zambia Library include Annual Reports and Development Plans. The reason for visiting such sources was generally to collect any other information relevant to the study which may have been overlooked in the questionnaires and interviews.

3.2 Statistical treatment of the data

The following statistical techniques were used to present and analyse the data. Tables and graphs were used to present the findings while parametric tests were employed to test the significance of the relationships or differences between variables. The types of parametric tests which were considered suitable for analysing these data are one sample Z-test

of proportions and t-test for paired observations or one sample with different measurements (Silk, 1979).

3.3. Sample Size

The original idea was to cover all the industrial establishments belonging to the Textile and Clothing subsector. The number of these plants after a rough survey was about forty-four. But unfortunately, as it is explained in section 3.4, thirty-one or 70% of the total number of the factories responded.

3.4 Problems during research work

In the first instance, research money from the sponsors was released almost four months late. This certainly contributed to the problems that followed later. For example, fieldwork was done hastily as time had already almost run out. Secondly, there were difficulties in getting information at the Ministry of Commerce and Industry. This problem emanated from the poor filing system in existence. As a result, files for some firms could not be retrieved as they may have been misplaced or lost. Another problem concerns the University of Zambia Library. The information in most cases is not up to date. Most of it is either very old or is altogether not available.

Probably, the most serious problem was the unco-operative attitude of some plant owners or managers towards the researcher. On two occasions, it was not possible to get permission to enter the premises of some plants. In some cases, those who had promised to send the questionnaires after filling them in never did. The above problems in addition to the fact that some plants were still on temporary closure during the period of fieldwork contributed to the reduction in the sample size. However, the majority of the owners of the factories were quite co-operative.

Apart from the already stated problems, almost all the respondents were not willing to release information relating to the scale of flow of raw materials and finished products. It was also not possible to get information pertaining to the relative proportions of the sources of raw materials. The respondents claimed that such data were treated with a lot of confidentiality and that they were not readily available.

CHAPTER FOUR

THE STUDY AREA

4.0 This chapter deals with the description of the area under study. It focuses on the location of the town. Additionally, the importance and the population of the town are also discussed.

4.1 Location

Livingstone is situated in the southern most part of Zambia near the Zambezi river which acts as the boundary between Zambia and Zimbabwe. In terms of absolute location, the study area is located at approximately $17\frac{5}{6}^{\circ}$ S and $25\frac{5}{6}^{\circ}$ E (see Fig. 1). The distance between Livingstone and the major markets (Lusaka and Copperbelt towns) is important in the location of the plants. For example, Lusaka which is nearer than the Copperbelt towns is approximately 400 kilometres away from Livingstone (see Fig. 1).

4.2 Importance of Livingstone

Livingstone is one of the oldest towns in Zambia, at one time having been the capital of Zambia (then Northern Rhodesia) from 1911 to 1935 (Kadzombe, Michie and Naidoo, 1973).

Apart from being the provincial capital of Southern Province, Livingstone is also the tourist capital of Zambia. This has been due to its close proximity to the Victoria Fall (locally known as Mosi-oa-tunya) which is located about eleven kilometres away. The waterfall is one of the largest in the world (Naidoo and Mumbwe, 1977). The Livingstone Museum is another important tourist attraction. The richness of the museum in Central African history and pre-history need not be over-emphasised. Other attractions include: Maramba Cultural Village where tourists are entertained through traditional dances (McGlashan, 1971) and a Game Park rich in wild life such as eland, kudu and lechwe (Naidoo and Mumbwe, 1977).

In addition to tourism, there are other economic activities which include: Textile and Clothing, Fiat Motor Assembly, Flour Milling, Cold Storage and Manufacturing of hardboards among others. Most of these industries are located in the light industrial area which lies on the western part of the Mosi-oa-tunya road (see Fig. 2). The location of the town on the main routeway to or from the south contributed in part to its importance. Due to its strategic position, the town handled most of the country's exports and imports to and from the south (Davies, 1971).

The volume of exports and imports dwindled when the route to Dar-es-Salaam was opened in 1974. Livingstone, however, is still a communication centre. Apart from the railway which passes through the town to South Africa and Mozambique via Zimbabwe, there is also a branch railway that connects Mulobezi (west) for collection of timber (see Fig. 2). The town is also a communication hub for road transport as well as air transport. Several roads from Livingstone connect other parts of the country and some neighbouring countries like Zimbabwe and Botswana. The presence of an Airport only emphasises the fact that the town is also served with air transport (see Fig. 2.).

4.3 Population

The population of the town rose from 37801 in 1963 to 49,063 and to 71,987 in 1969 and 1980 respectively (see Fig. 3). The population is characterised by a sex ratio of more males than females. According to the 1980 census of population, the ratio stood at 104.4 males per 100 females (C.S.O, 1985). such a ratio could have adverse effects on the market potential of the industry within the town as it is the female sex which is more interested in fashions.

Comparatively, Livingstone is the eighth largest town in Zambia in terms of the size of population (C.S.O., 1981). The above mentioned population increases represent high growth rates. The average annual growth rates from 1963 to 1969 were 4.4% and 3.5% between 1969 and 1980. These growth rates are higher than the national growth rates of 2.5% and 3.1% during the same two time periods respectively (C.S.O. 1981). In addition to the natural increase, the availability of employment opportunities (real or imagined) from industries principally contributed to the population growth of the town. This population expansion may also lead to an increase in the potential urban market for the Textile and Clothing Industry within Livingsone town.

CHAPTER FIVE

PRESENTATION AND ANALYSIS OF RESULTS

5.0 In this chapter, data collected from the field are presented mainly in form of tables of frequencies, percentages and means for description. On the other hand, analysis of the results especially testing their significance has been done through the use of z and t-tests.

5.1 General information

The surveyed plants are in two categories, Textile and Clothing. The distinction between the two groups has already been elucidated in chapter one. The majority (74.2%) of the 31 factories which were visited belong to the Clothing category (Appendix A - Table 1).

The establishment of a few of these plants dates back to the 1930s and by 1965, approximately six (19.4%) of the visited factories were already in operation. The rest of the plants were opened during the period after 1965 (Appendix A - Table 2). This up-surge in the number of plants was prompted by the Unilateral Declaration of Independence in the then Rhodesia (now Zimbabwe) in 1965. The atmosphere, therefore, made it difficult for Zambia to import textiles from

Rhodesia as such the policy of Import Substitution was adopted to cater for the local demand.

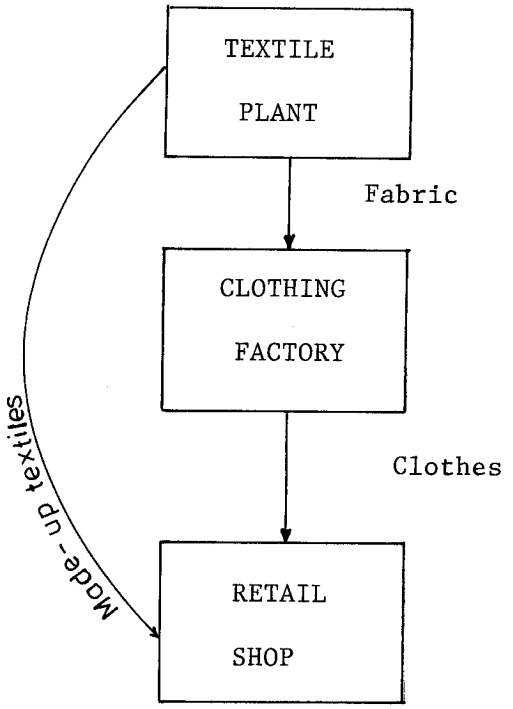
All the Textile and Clothing plants in Livingstone are privately owned by mainly Asians or Zambians of the Asian origin. The other interesting aspect about the ownerships of the plants in Livingstone is that they are owned as assemblages or constellations. In some cases, it was found that one to five plants could be under the same company. For example, Partex Industries, Robin Garments Limited, Sparrow Garments Limited, Sportex Knitting Mills and the Textile Printing Industries all belong to one company. The other example is Zambia Fashions Limited and J.R. Textiles. From the examples given above, it is apparent that one company can own both Textile and Clothing plants, very often even retail shops. The Textile plants feed the Clothing factories with fabrics which in turn supply garments to the retail shops all belonging to the same company (Fig. 4).

The Textile and Clothing Industry being one of the major industries in Livingstone employs a large number of people. Some plants belonging to this sub-sector employ as many as 400 people each but the average number of employees per factory ranges between 20 and 99 people (Appendix A - Table 3). It is also

worth noting that the study was conducted at the time when some plants had declared some of their workers redundant largely due to lack of raw materials.

The research findings also revealed that a much greater proportion of the factories (93.5%) are heavily dependent on local raw material inputs. While those plants which mainly rely on imported raw materials consitute an insignificant proportion (6.5%) (Appendix A - Table 4).

Fig. 4: An illustration of the operations of some Textile and Clothing Companies



5.2 Sources of raw material inputs

This section identifies the sources of the raw material inputs for the Textile and Clothing factories in Livingstone and also establishes which one is the most important. The following sources were identified viz: Livingstone, Kafue, Lusaka, Ndola and outside the country in particular South East Asia, United Kingdom, Zimbabwe, South Africa and West Germany, as table 1 indicates. There was no restriction on the number of sources of raw materials that each respondent could indicate. This means that a plant could have one or more sources of raw material inputs.

Table 1: sources of raw materials

Source	Number of Plants	Percentage
Livingstone	22	71
Ndola	20	64
Kafue	17	55
Lusaka	03	10
Outside the country	02	06

The results show that the Livingstone source ranks number one on the list of five sources and the research hypothesis states that a larger proportion of the plants depend on the Livingstone source for their raw material inputs.

A test of significance between Livingstone and each of the other sources was carried out. To test this significance of differences between the sources, a one-sample z-test of proportions has been used. The assumptions are that the population from which the results were obtained is normally and randomly distributed. The proportion of Livingstone was comapred with the frequency of factories that rely on each of the four sources using the following formula:

$$Z = \frac{X - np}{\sqrt{npq}}$$

where

X = Frequency of factories that depend on each source

n = sample size (31)

p = Proportion for Livingstone source (0.71)

q = 1 - p = 1 - 0.71 = 0.29

The results from the test are shown in Table 2.

Table 2: Results of differences between Livingstone and the other four sources

Sources	Z-observed	Decision	Conclusion
Livingstone Kafue	- 1.98	HO Rejected	Significant Difference
Livingstone Lusaka	- 7.51	HO Rejected	Significant difference
Livingstone Ndola	- 0.79	HO No Not Rejected	Significant Difference
Livingstone Outside the country	- 7.91	HO Rejected	Significant difference

Alpha level = 0.05, one-tail test,

z critical value = -1.645

HO = Null hypothesis = No significant different between Livingstone source and each of the other four sources.

The summary of results in Table 2 statistically shows that, out of the four sources, three are significantly different (less proportions) from Livingstone and only one (Ndola) is not. Therefore, confirming the

assertion that Livingstone is the main supplier of the raw material inputs for its Textile and Clothing plants.

5.3 Major Markets

The respondents gave the following areas as the markets for their products: the whole country 29 (93.5%) and Livingstone only 2(6.5%). These figures give an indication that a greater proportion of the plants depend on the markets which are located outside the town for the sale of their products.

To test the significance of the results, a one-sample Z-test of proportions has been used with the assumptions of normality and randomness of the population.

The null hypothesis states that the proportion of plants that rely on outside markets is equal to the proportion of plants that depend on the Livingstone market alone. The alternative (research) hypothesis stipulates that a higher proportion of plants depend on outside Livingstone market. From the research findings, the outside Livingstone market is significantly more important than the Livingstone only market.

Therefore, the testing of the results in this case is not whether the difference is significant or not but is a question of how significant the difference is.

This is a one-tail test, with an alpha level of 0.05. Therefore, Z-critical value = -1.645. If Z observed is less than -1.645, the null hypothesis is rejected, but if z observed is greater, the null hypothesis is not rejected.

The formula used for the computations is as follows:

$$Z = \frac{X - np}{\sqrt{npq}}$$

where

X = Frequence of the plants that depend on the Livingstone market only (02)

n = sampe size (31)

p = proportion the outside Livingstone market (0.94)

q = 1 - p = 1 - 0.94 = 0.06

After computations, Z - observed has been found to be -20.56. Therefore, the null hypothesis is rejected and the difference between the two proportions is very significant as the Z observed value indicates. This

implies that a greater proportion of the factories rely on the outside Livingstone market.

5.4 Factors of Location

In order to establish the reasons for the concentration of the Textile and Clothing plants in Livingstone, the respondents were asked to rank seven location factors (which are considered common) from the most important to the least with reference to the locations of their factories relative to other locations. They were also free to state any other reasons that might not have been included among the seven factors viz: raw materials, market, power supply, water supply, labour supply, transportation facilities and rates.

The above mentioned ranks were later converted into scores as follows:

Rank	Score
1	7
2	6
3	5
4	4
5	3
6	2
7	1

The total number of scores were found for each factor, in addition, percentages and means were calculated. The importance of a factor depended on the magnitude of either the total score or percentage or its mean.

Table 3: Ranking of the factors of location on the basis of their total scores or percentages or means

Factor	Total Score	Percentage	Means	Rank
Raw material	195	22	6.3	1
Labour supply	156	18	5.0	2
Market	140	16	4.5	3
Power supply	122	14	3.9	4
Transportation facilities	100	11	3.2	5
Water supply	90	10	2.6	6
Rates	73	08	2.4	7

However, as regard to the dispersion of the scores (standard deviation), it is highest (1.9) with factors

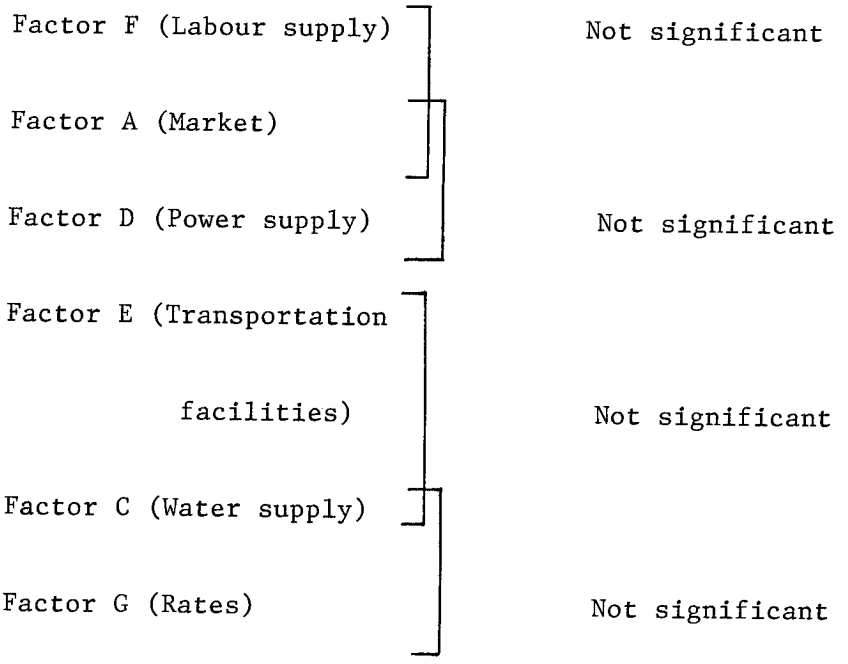
like market and water supply. Lowest variability (0.8) is associated with the factor of power supply. The rest of the factors lie in between high and low levels of dispersion.

To verify the above anlysis and to find out whether the observed differences are significant or just due to chance factors, a test of significance based on the means of the factors, a one-sample t-test for paired observations was carried out. It was assumed that the population had a normal and random distribution and the scale of measurement used was a ratio. A micro-computer was used to do the computations under a routine programme (statgraphics). The results on the significance of the differences are shown in Appendix B from which the conclusions that are in Figure 5 have been derived.

The t-test proved that some of the factors are not significantly different from each other. Such factors include labour supply and market, market and power supply, transportation facilities and water supply and rates. The factor of raw materials stands out alone, very significantly different from the rest of the factors. In other words, the concentration of the Textile and Clothing plants in Livingstone ~~of~~

is mainly explained by the factor of raw materials.

Fig. 5: Conclusions of the differences among the seven factors of location



CHAPTER SIX

DISCUSSIONS AND CONCLUSIONS

6.0 This chapter discusses the results. Particular attention is paid to proving the hypotheses with respect to the sources of the raw material inputs, major markets as well as the location factors. Finally there is a brief discussion on the implications for further research.

In discussing the research findings, it is pertinent to highlight the salient points of the main location theory, namely, Weber's Classical Theory of Location which has already been discussed in chapter one. Once more, it is important to remember that the theory puts more emphasis on the location factor of transportation costs. However, labour and economies of agglomeration are also considered as being capable of influencing the location of a plant in this theory (Thoman and Corbin, 1974; Smith, 1981). In addition to this theory, other location factors such as infrastructure and linkages (Norcliffe, 1975), cost of land and capital (Smith, 1981), demand (Greenhut, 1956) and personal factors (Greenhut, 1956; Pred, 1969; Dicken, 1971) have been included.

6.1 Sources of raw material inputs

The research findings have revealed that the Textile and Clothing plants in Livingstone procure their raw material inputs from five sources. These sources are Livingstone, Kafue, Lusaka, Ndola and outside the country. Upon further analysis through the use of tests of significance, it can be concluded generally that the major source of raw materials for the subsector is Livingstone itself although the difference with Ndola is not significant. However, this conclusion applies more to the Clothing category and the Textile plants which are involved in manufacturing made-up textiles than the Textile plants which produce fabrics.

It is very interesting to note that Livingstone has become an important source in supplying raw material inputs to the Textile and Clothing industry in Livingstone. Changes have occurred with time in that Textile plants which produce some raw material inputs especially fabrics have established themselves in Livingstone. The establishment of these Textile plants has led to the dwindling in importance of most outside Livingstone Textile plants in supplying raw materials inputs especially to the plants in Livingstone.

The Textile plants which supply the subsector with raw material inputs in Livingstone include the following: J.R. Textiles, Townap, Textile Printing Industries, Njovu Knitting Mills Limited, Sands Textiles and Ramknit Limited, to mention but a few. This shows therefore that backward linkages are very important with regard to the location of the Textile and Clothing factories in Livingstone. This means that the plants are generally located closer to the main source of their raw material inputs.

6.2 Markets

Generally, two market areas have been identified for the products from the Textile and Clothing factories, namely, Livingstone only and the rest of the country. the latter has been found to be the major market for the products from most of the plants. These findings are in line with the assertion that Livingstone has a relatively smaller market for the products from the subsector (Harkema, 1972; C.S.O., 1983). Forward linkages therefore do not play any significant role in the location of the factories in Livingstone since the major market areas for the subsector are located farther away from the town. Looking at the location of the plants in Livingstone from a national level

perspective, the above findings do not agree with Alexandersson's argument that the apparel industry is market-oriented (Alexandersson, 1967).

6.3 Location factors

The issue of location of the Textile and Clothing plants has already been dealt with in Section 6.1. To be able to comprehend why Livingstone has a high concentration of the Textile and Clothing factories, it is important, in the first instance, to look at the location of these plants from a historical perspective. In doing so, it is logical to remember that Livingstone was one of the earliest settlements and was the capital of Zambia (then Northern Rhodesia) from 1911 to 1935 (Kadzombe, Michie and Naidoo, 1973). The town therefore attracted many people whose composition was as follows: the administrative staff who were representing the British South Africa Company, farmers and railway workers who came with the British South Africa Company and traders who were mainly whites and Indians (Phillipson, 1975). Although most of the Indians came as clerks, they later became merchants (Phillipson, 1975). It is also in order to mention as one of the interviewees at the Ministry of Commerce and Industry stated that Indians or

Asians in general are traditionally linked with the Textile Industry. Therefore, out of their struggle to survive in Livingstone, they found themselves engaged in Textile and Clothing manufacturing. The point being made here is that the plant owners may not have necessarily settled in Livingstone so that they could open Textile and Clothing factories. The fact that Asians are traditionally closely connected with Textile and Clothing manufacturing also explains why approximately 99 per cent of the subsector in Livingstone is under the ownership of the Asians.

In addition to the above historical reason, it is worth noting that before U.D.I. in 1965, most of the raw material inputs for the Textile and Clothing Industry came from Rhodesia (now Zimbabwe) and Livingstone being a gateway to the South was an ideal location (Harkema, 1972). This boils down to the fact that the plants were located in Livingstone due to the presence of the raw material inputs in the then Rhodesia (now Zimbabwe) which was very accessible from Livingstone.

With this historical background, it is now apposite to find out why the factories continued being opened in Livingstone even after U.D.I. in 1965. It is extremely important to note that U.D.I. meant that

all trade links between Rhodesia (Zimbabwe) and Zambia were severed and the route to the south was closed although the trade links have now resumed. The proximity of Livingstone to Rhodesia (Zimbabwe) therefore ceased to be an important location factor. Moreover, the factor of Livingstone being one of the oldest or earliest places to be settled is also likely to have diminished in importance as many other towns emerged which even outgrew Livingstone. For example Lusaka and Copperbelt towns. It can, however, be speculated that the established traditions in Textile and Clothing manufacturing in Livingstone have attracted new ventures.

What really has been attracting the location of the factories in Livingstone even as late as 1986? In answering this question, it is worthwhile to start by emphasising that, the location factors for the Textile and Clothing plants in Livingstone are varied. It is therefore not easy to single out one factor as being the only one although, however, the most important one can be identified. According to the research findings, proximity to the source of supply of the raw material inputs has proved to be the major location factor especially the Clothing factories and Textile plants which are involved in the manufacturing of

made-up textiles. The importance of this factor has already been dwelt on in Section 6.1 in which it has been demonstrated that the proportion of plants which obtain their raw materials from within Livingstone is greater than the proportion of factories which procure their raw material inputs from outside Livingstone. But, however, it is beyond this study to go into greater detail of explaining whether the raw materials in this case are perceived in the same manner as was the case in Weber's Classical Location Theory (Thoman and Corbin, 1974; Smith, 1981).

In the above mentioned theory, it was argued that a plant would locate near the source of raw materials in order to cut down on the transportation costs especially if the raw materials are bulky and therefore expensive to transport (Thoman and Corbin, 1974; smith, 1981). It is important to recognise the fact that the raw material inputs for the subsector may not be so heavy and expensive to transport. There is a high likelihood that the location of the plants close to their sources of raw materials is not necessarily connected to the reduction in transportation costs as propounded by Weber. But, it is important to consider linkages.

The other factor that has been found to be of importance in explaining the location of the Textile and Clothing factories in Livingstone is access to labour supply. This factor is second in importance raw materials. Some plant owners held that it is easier to open new factories in Livingstone because there already exists a reservoir of semi-skilled labourers whose labour can be utilised in the new factories. This factor is true bearing in mind that the town has a long history of this industry and as such there are many workers with the 'know-how' in Textile and Clothing manufacturing who can easily be recruited.

Labour factor was considered in Weber's Classical Location Theory as a secondary factor and it was contended that cheap labour has the ability to divert the location of a plant from the least-transportation cost location to where cheap labour is available (Thoman and Corbin, 1974; Smith, 1981). It was further argued that this could only happen if the savings from the cheap labour could offset the additional transportation costs incurred from the least-transportation cost location to a location where cheap labour exists (Thoman and Corbin, 1974; Smith 1981). There is, however, a slight difference

between the present case and the perception of Weber on the influence of labour on plant location. Whereas Weber confined the influce of labour to its cost, the Livingstone case is more of the question of availability of semi-skilled labour than the cost. It must be emphasised that labour costs are not highly differentiated across space. What is more important about labour are its quality and productivity as it has been the case with the Textile and Clothing Industry in Livingstone.

The rest of the factors are not as important as the other two already mentioned above. This is so because they apply to almost all the towns along the line of rail stretching from Livingstone to Copperbelt towns with the exception of may be rates which are higher in some towns such as Lusaka. Furthermore, it has already been argued in Section 6.2, for example, that the major market area for the subsector is outside Livingstone. This implies that, market as a factor of location for the plants in Livingstone is not important. However, considering that all the Textile and Clothing plants in Livingstone are privately owned, and that the Government has limited influence over the location of such plants, the lack of any

specific government policy aimed at influencing location may have led to the concentration of the plants in Livingstone.

The suitability of Livingstone for the location of the Textile and Clothing Industry is high taking into account the fact that most of the raw material inputs are obtained there and that the route to Zimbabwe which was once closed is now open. The above reasons are supplemented by the fact that most of the respondents maintained that they have plans of expanding their businesses within Livingstone. Moreover, only 22.6% of the respondents have established factories elsewhere so far. The above argument is a pointer towards the appropriateness of Livingstone as a location of the subsector.

In a nutshell, it can be argued that the fact that the subsector is more dependent on the local raw material inputs than imported ones is undebatable. Among the sources of the raw materials for the Textile and Clothing subsector in Livingstone that have been identified, the Livingstone source is the most important. On the other hand, the main market areas for the products from the industry are located

outside Livingstone especially areas which lie along the line of rail stretching from Livingstone to Copperbelt. These findings imply that backward linkages are more important than forward linkages, that is, the plants are located closer to the main source of their raw materials than their market and that the linkages are local. The issue of linkages therefore is very important pertaining to the Textile and Clothing Industry in Livingstone. This is in accordance with the emphasis of Norcliffe on linkages as a location factor for manufacturing industry (Norcliffe, 1975).

The historical factors are very critical in understanding in the initial location of the industry in Livingstone especially during the period before U.D.I. in 1965. These factors comprise the proximity of Livingstone to Rhodesia (Zimbabwe) which was the main source of the raw materials and fact that Livingstone was one of the oldest settlements in Zambia. Many people were attracted among whom were Indians who got engaged in the Textile and Clothing manufacturing. However, these historical factors should be taken very cautiously since most of the original plant owners are now long dead or have sold their factories to people who were not involved in the initial plant location decision

making process. Besides, these factors have also been overtaken by time. The continued expansion of the industry in Livingstone is attributable mainly to the availability of raw material inputs and semi-skilled labour in Textile and Clothing manufacturing. Lastly, it is crucial to mention that the adoption of the strategy of Import Substitution has brought about the intended local backward linkages in the Textile and Clothing Industry. The plants have developed a propensity to concentrate in the locality where the main source of the raw material inputs exists.

6.4 Implications for further research

The conclusions from this study should, however, be taken with caution as the methods of establishing the major sources of raw materials and markets for the finished products have not all been exhausted. Therefore, for purposes of further research, it would be of great interest to analyse the following:

(i) the scale of the movements of the raw materials from the sources and finished products to the markets.

(ii) the sources of raw materials and the relative proprtions involved. However, information about the above is very hard to come by as has already been mentioned in chapter three.

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APPENDIX A

Table 1: Categories of the plants

Category	Frequenc y	Percentage
Textile	8	25.8
Clothing	23	74.2
Total	31	100.00

Table 2: Years of establishment of the factories

Category	Frequency	Percentage
$\leq$ 1965	6	19.4
> 1965	25	80.6
Total	31	100.00

Table 3: Workers employed by the subsector

Number	Frequency	Percentage
< 20	3	9.7
20-49	15	48.4
50-99	10	32.3
≥ 100	3	9.7
Total	31	100.00

Table 4: Types of raw material inputs for the industry

Type	Frequency	Percentage
Local	29	93.5
Imported	2	6.5
Total	31	100.00

Table 5: Responses to the question about the expansion plans of the industry within Livingstone.

Response	Frequency	Percentage
Yes	16	51.6
No	15	48.4
Total	31	100.00

Table 6: Responses to the question about the ownership of other plants outside Livingstone

Response	Frequency	Percentage
Yes	7	22.6
No	24	77.4
Total	31	100.00

APPENDIX B

One-Sample Analysis Results

		FactorA-FactorB	
Sample Statistics:	Number of Obs.	31	
	Average	-1.77419	
	Variance	7.31398	
	Std. Deviation	2.70444	
	Median	-1	
Confidence Interval for Mean:		95 Percent	
	Sample 1	-2.76642 -0.781966	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = -3.65262	
vs Alt: LT		Sig. Level = 4.91123E-4	
at Alpha = 0.05		so reject HO.	

One-Sample Analysis Results

		FactorA-FactorC	
Sample Statistics:	Number of Obs.	31	
	Average	1.87097	
	Variance	5.11613	
	Std. Deviation	2.26189	
	Median	2	
Confidence Interval for Mean:		95 Percent	
	Sample 1	1.04111 2.70083	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = 4.6055	
vs Alt: GT		Sig. Level = 3.54022E-5	
at Alpha = 0.05		so reject HO.	

One-Sample Analysis Results

		FactorA-FactorD	
Sample Statistics:	Number of Obs.	31	
	Average	0.580645	
	Variance	4.51828	
	Std. Deviation	2.12562	
	Median	1	
Confidence Interval for Mean:		95 Percent	
	Sample 1	-0.199223 1.36051	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = 1.52092	
vs Alt: GT		Sig. Level = 0.0693761	
at Alpha = 0.05		so do not reject HO.	

One-Sample Analysis Results

		FactorA-FactorE	
Sample Statistics:	Number of Obs.	31	
	Average	1.29032	
	Variance	7.34624	
	Std. Deviation	2.71039	
	Median	2	
Confidence Interval for Mean:		95 Percent	
	Sample 1	0.295909 2.28474	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = 2.65062	
vs Alt: GT		Sig. Level = 6.35146E-3	
at Alpha = 0.05		so reject HO.	

One-Sample Analysis Results

		FactorA-FactorF	
Sample Statistics:	Number of Obs.	31	
	Average	-0.516129	
	Variance	8.52473	
	Std. Deviation	2.91971	
	Median	-1	
Confidence Interval for Mean:		95 Percent	
	Sample 1	-1.58734 0.555082	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = -0.984235	
	vs Alt: LT	Sig. Level = 0.166436	
	at Alpha = 0.05	so do not reject HO.	

One-Sample Analysis Results

		FactorA-FactorG	
Sample Statistics:	Number of Obs.	31	
	Average	2.16129	
	Variance	9.13978	
	Std. Deviation	3.02321	
	Median	2	
Confidence Interval for Mean:		95 Percent	
	Sample 1	1.05211 3.27047	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = 3.98039	
	vs Alt: GT	Sig. Level = 2.01487E-4	
	at Alpha = 0.05	so reject HO.	

One-Sample Analysis Results

		FactorB-FactorC	
Sample Statistics:	Number of Obs.	31	
	Average	3.64516	
	Variance	9.10323	
	Std. Deviation	3.01716	
	Median	5	
Confidence Interval for Mean:		95 Percent	
	Sample 1	2.5382 4.75212	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = 6.72667	
	vs Alt: GT	Sig. Level = 9.33187E-8	
	at Alpha = 0.05	so reject HO.	

One-Sample Analysis Results

		FactorB-FactorD	
Sample Statistics:	Number of Obs.	31	
	Average	2.35484	
	Variance	3.90323	
	Std. Deviation	1.97566	
	Median	3	
Confidence Interval for Mean:		95 Percent	
	Sample 1	1.62999 3.07969	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = 6.63636	
	vs Alt: GT	Sig. Level = 1.19514E-7	
	at Alpha = 0.05	so reject HO.	

One-Sample Analysis Results

		FactorB-FactorE	
Sample Statistics:	Number of Obs.	31	
	Average	3.06452	
	Variance	6.72903	
	Std. Deviation	2.59404	
	Median	4	
Confidence Interval for Mean:		95 Percent	
	Sample 1	2.11279 4.01624	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = 6.57758	
vs Alt: GT		Sig. Level = 1.40456E-7	
at Alpha = 0.05		so reject HO.	

One-Sample Analysis Results

		FactorB-FactorF	
Sample Statistics:	Number of Obs.	31	
	Average	1.25806	
	Variance	6.46452	
	Std. Deviation	2.54254	
	Median	1	
Confidence Interval for Mean:		95 Percent	
	Sample 1	0.325234 2.19089	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = 2.75496	
vs Alt: GT		Sig. Level = 4.94007E-3	
at Alpha = 0.05		so reject HO.	

One-Sample Analysis Results

		FactorB-FactorG
Sample Statistics:	Number of Obs.	31
	Average	3.93548
	Variance	5.7957
	Std. Deviation	2.40743
	Median	4
Confidence Interval for Mean:		95 Percent
	Sample 1	3.05223 4.81874 30 D.F.
Confidence Interval for Variance:		0 Percent
	Sample 1	
Hypothesis Test for HO: Mean = 0		Computed t statistic = 9.10177
	vs Alt: GT	Sig. Level = 1.95339E-10
	at Alpha = 0.05	so reject HO.

One-Sample Analysis Results

		FactorC-FactorD
Sample Statistics:	Number of Obs.	31
	Average	-1.29032
	Variance	3.54624
	Std. Deviation	1.88315
	Median	-2
Confidence Interval for Mean:		95 Percent
	Sample 1	-1.98123 -0.599417 30 D.F.
Confidence Interval for Variance:		0 Percent
	Sample 1	
Hypothesis Test for HO: Mean = 0		Computed t statistic = -3.81501
	vs Alt: LT	Sig. Level = 3.16601E-4
	at Alpha = 0.05	so reject HO.

One-Sample Analysis Results

		FactorC-FactorE	
Sample Statistics:	Number of Obs.	31	
	Average	-0.580645	
	Variance	6.45161	
	Std. Deviation	2.54	
	Median	-1	
Confidence Interval for Mean:		95 Percent	
	Sample 1	-1.51254 0.351254	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = -1.27279	
	vs Alt: LT	Sig. Level = 0.106434	
	at Alpha = 0.05	so do not reject HO.	

One-Sample Analysis Results

		FactorC-FactorF	
Sample Statistics:	Number of Obs.	31	
	Average	-2.3871	
	Variance	8.17849	
	Std. Deviation	2.85981	
	Median	-3	
Confidence Interval for Mean:		95 Percent	
	Sample 1	-3.43633 -1.33787	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = -4.64744	
	vs Alt: LT	Sig. Level = 3.14654E-5	
	at Alpha = 0.05	so reject HO.	

One-Sample Analysis Results

		FactorC-FactorG	
Sample Statistics:	Number of Obs.	31	
	Average	0.290323	
	Variance	8.94624	
	Std. Deviation	2.99103	
	Median	1	
Confidence Interval for Mean:		95 Percent	
	Sample 1	-0.807052 1.3877	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = 0.540433	
	vs Alt: GT	Sig. Level = 0.296444	
	at Alpha = 0.05	so do not reject HO.	

One-Sample Analysis Results

		FactorD-FactorE	
Sample Statistics:	Number of Obs.	31	
	Average	0.709677	
	Variance	3.8129	
	Std. Deviation	1.95267	
	Median	1	
Confidence Interval for Mean:		95 Percent	
	Sample 1	-6.73406E-3 1.42609	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = 2.02355	
	vs Alt: GT	Sig. Level = 0.0260021	
	at Alpha = 0.05	so reject HO.	

One-Sample Analysis Results

		FactorD-FactorF	
Sample Statistics:	Number of Obs.	31	
	Average	-1.09677	
	Variance	2.82366	
	Std. Deviation	1.68037	
	Median	-1	
Confidence Interval for Mean:		95 Percent	
	Sample 1	-1.71328 -0.480264	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = -3.63406	
	vs Alt: LT	Sig. Level = 5.16234E-4	
	at Alpha = 0.05	so reject HO.	

One-Sample Analysis Results

		FactorD-FactorG	
Sample Statistics:	Number of Obs.	31	
	Average	1.58065	
	Variance	2.85161	
	Std. Deviation	1.68867	
	Median	2	
Confidence Interval for Mean:		95 Percent	
	Sample 1	0.96109 2.2002	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO: Mean = 0		Computed t statistic = 5.21159	
	vs Alt: GT	Sig. Level = 6.40818E-6	
	at Alpha = 0.05	so reject HO.	

One-Sample Analysis Results

		FactorE-FactorF
Sample Statistics:	Number of Obs.	31
	Average	-1.80645
	Variance	2.36129
	Std. Deviation	1.53665
	Median	-1
Confidence Interval for Mean:		95 Percent
	Sample 1	-2.37023 -1.24267 30 D.F.
Confidence Interval for Variance:		0 Percent
	Sample 1	
Hypothesis Test for HO: Mean = 0		Computed t statistic = -6.54534
vs Alt: LT		Sig. Level = 1.53483E-7
at Alpha = 0.05		so reject HO.

One-Sample Analysis Results

		FactorE-FactorG
Sample Statistics:	Number of Obs.	31
	Average	0.870968
	Variance	2.5828
	Std. Deviation	1.60711
	Median	1
Confidence Interval for Mean:		95 Percent
	Sample 1	0.281338 1.4606 30 D.F.
Confidence Interval for Variance:		0 Percent
	Sample 1	
Hypothesis Test for HO: Mean = 0		Computed t statistic = 3.01743
vs Alt: GT		Sig. Level = 2.57922E-3
at Alpha = 0.05		so reject HO.

One-Sample Analysis Results

		FactorF-FactorG	
Sample Statistics:	Number of Obs.	31	
	Average	2.67742	
	Variance	2.22581	
	Std. Deviation	1.49191	
	Median	3	
Confidence Interval for Mean:		95 Percent	
	Sample 1	2.13005 3.22479	30 D.F.
Confidence Interval for Variance:		0 Percent	
	Sample 1		
Hypothesis Test for HO:	Mean = 0	Computed t statistic = 9.99203	
	vs Alt: GT	Sig. Level = 2.33051E-11	
	at Alpha = 0.05	so reject HO.	

APPENDIX C

THE UNIVERSITY OF ZAMBIA

SCHOOL OF NATURAL SCIENCES

GEOGRAPHY DEPARTMENT

TITLE: SPATIAL ASPECTS OF IMPORT-SUBSTITUTION: THE CASE STUDY OF THE TEXTILE AND CLOTHING INDUSTRY IN LIVINGSTONE, ZAMBIA.

QUESTIONNAIRE

PART ONE

1. Name of the plant _____
2. Year of establishment _____
3. Number of employees _____
4. Ownership (tick) (i) Parastatal _____
   (ii) Local private _____
   (iii) Foreign _____
5. Position of respondent _____

PART TWO

6. Raw material inputs used _____

_____

_____

7. Main source of raw material inputs

(a) (i) Local (tick) _____

(ii) where? _____

(b) (i) imported (tick) ---------

(ii) where? _____

8. Output(s) _____

_____

9. Main market

(a) (i) Local (tick) _____

(ii) where? _____

(b) (i) Outside the country (tick) _____

(ii) Where? _____

PART THREE

10. Which of the following historical factors led to the establishment of your plant in Livingstone (tick):

(i) Nearness to Zimbabwe (then Rhodesia) _____

(ii) size of the settler community _____

(iii) First family settlement _____

(iv) Specify any other factors _____

_____

_____

PART FOUR

11. Some of the factors which commonly influence plant location are listed below. Please rank them in order

of importance with reference to the location of your plant in Livingstone relative to other locations in the country. The most important factor should be given rank 1, second 2, third 3, fourth 4, -8.

		Rank
(a)	Proximity to the market	____
(b)	Access to raw materials	____
(c)	Water supply	____
(d)	Power supply	____
(e)	Transportation facilities	____
(f)	Labour supply	____
(g)	Rates	____
(h)	Specify others _____	

_____

_____

12. (a) What problems has your plant faced since its establishment? _____

_____

_____

(b) (i) Have these problems affected the operations of your plant in anyway (tick)?

Yes _____ No _____

(ii) Explain _____

_____

_____

_____

APPENDIX D

1: LOCATION OF THE STUDY AREA

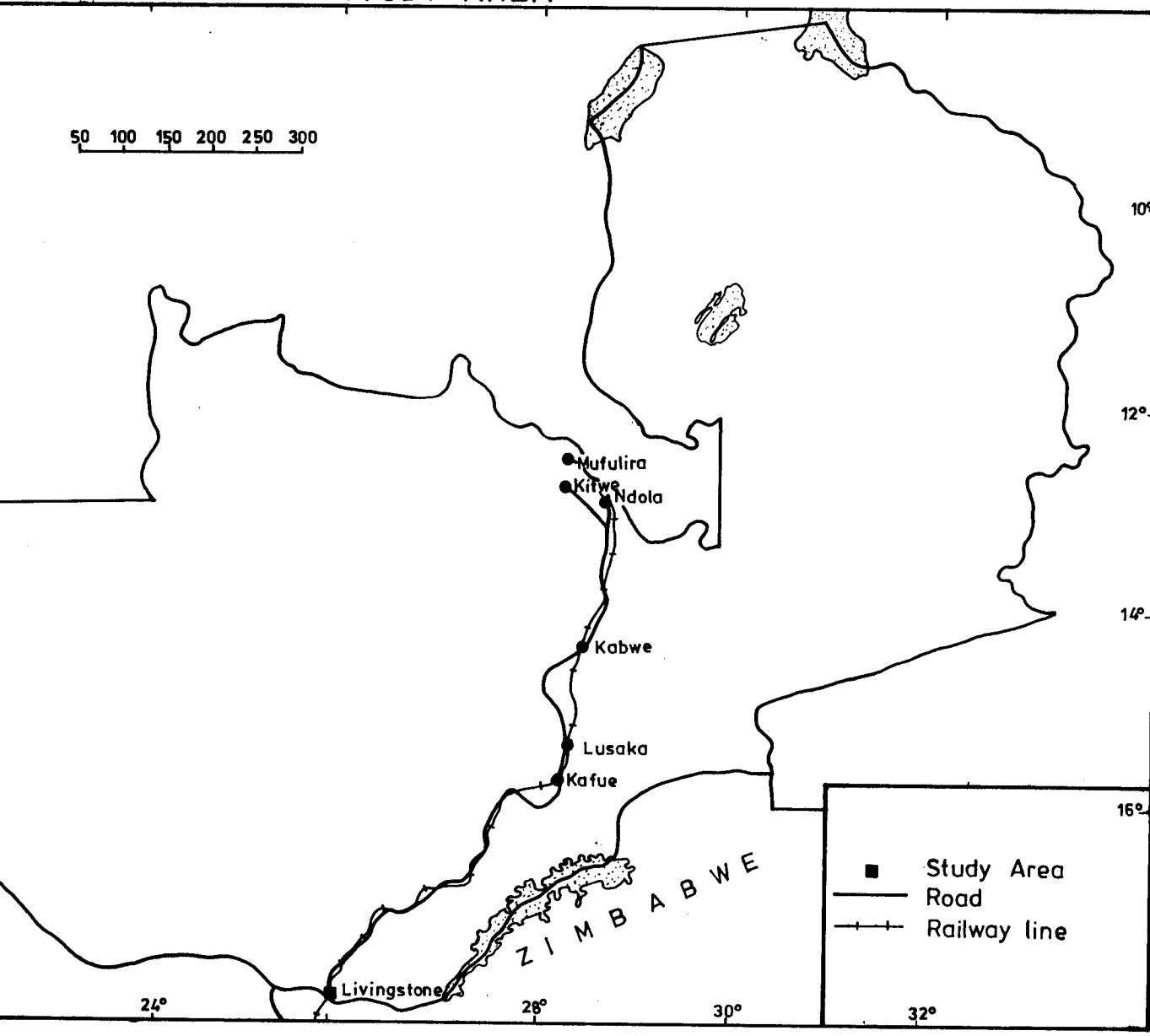
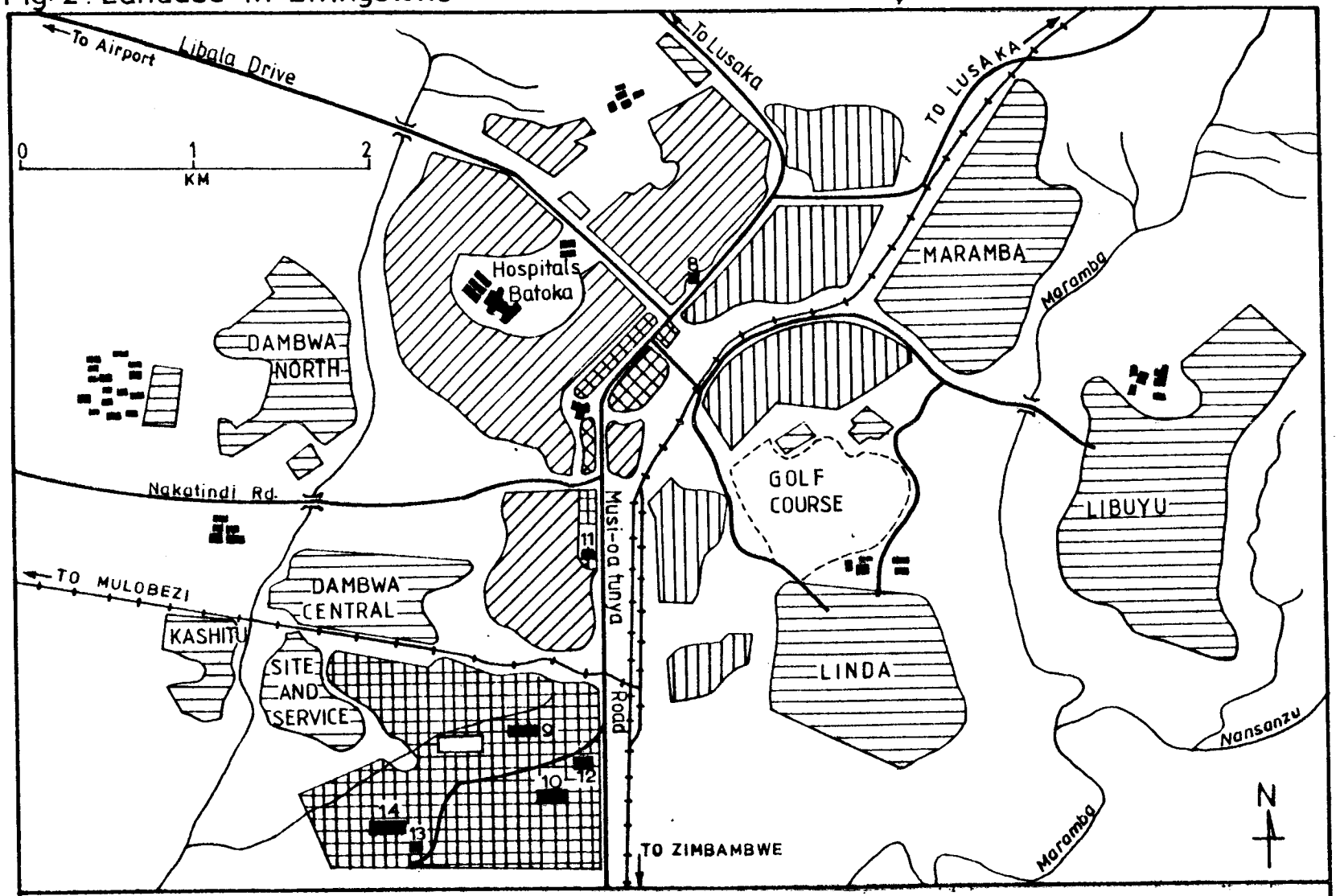


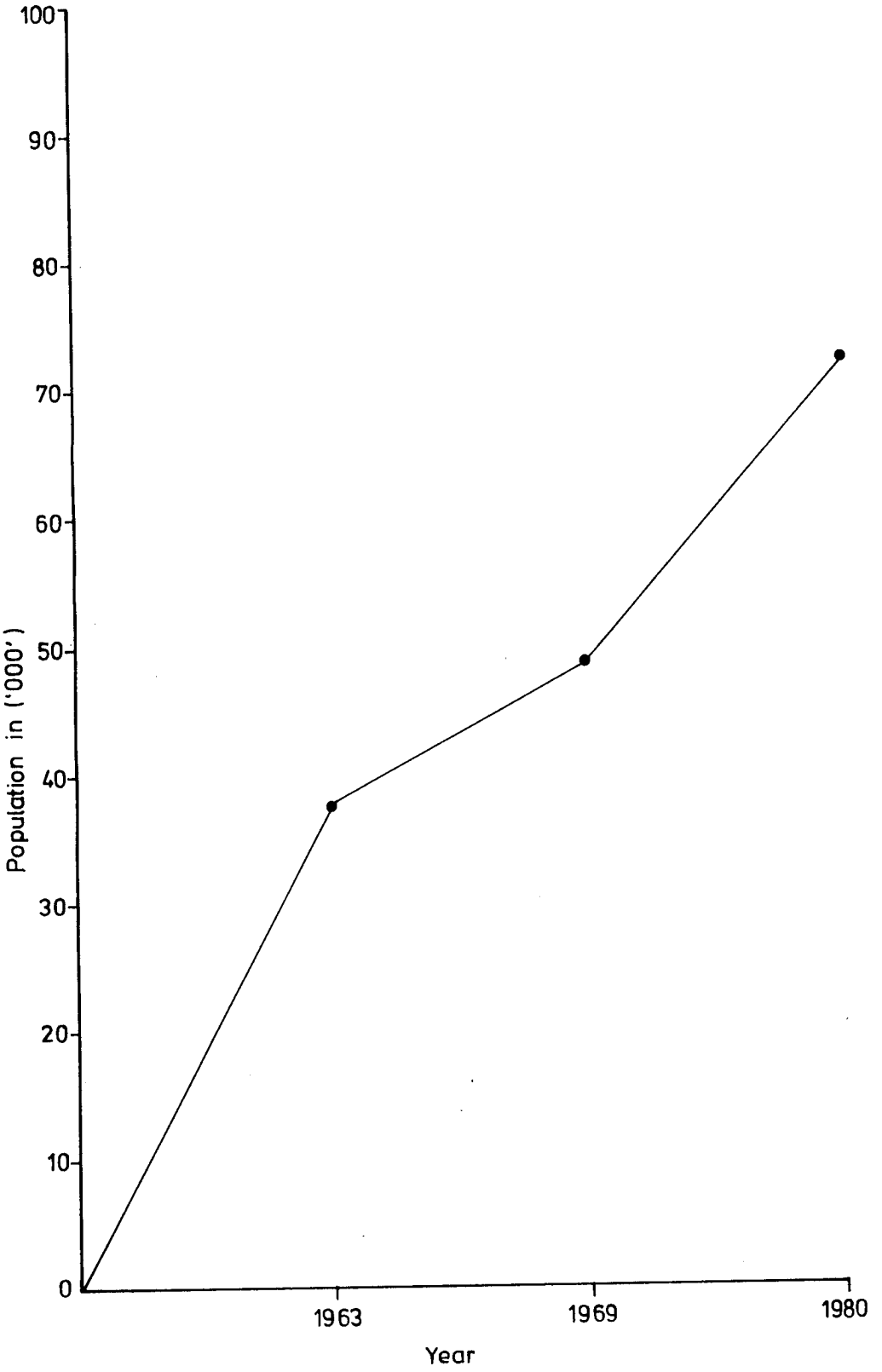
Fig. 2: Landuse in Livingstone



- Industrial Area
- Commercial Area
- Low density Residential Area
- Medium density Residential Area
- High density Residential Area
- Built up Area

9 Cold Storage Board
10 Government Stores
11 National Milling
12 Zamtex
13 Brewery

Fig. 3: Population growth of Livingstone from 1963-1980



Source : C.S.O (1981) 1980 Census of population and Housing, pp. 8-11.