THE SPATIAL PATTERN OF CATCHMENT AREAS OF MUNICIPAL MARKETS IN MBEYA MUNICIPALITY, TANZANIA

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Abstract

This article reports on the spatial pattern of catchment areas of municipal markets in Mbeya Municipality, Tanzania. Consumer behaviour, as conceived in the fourth stage of the flow chart model of food products marketing in urban areas in Tanzania, informed the study. The investigation employed survey methods of data collection, statistical and cartographic techniques of data analysis and presentation.

The results show that patterns of consumer behaviour do not only create discreet and shared trade areas within the municipality but, they also create dominant nuclei of growth for urban based central functions. The internal morphology of Mbeya Municipality has been spontaneously transformed from a single nucleus urban structure, based at Maendeleo ward, to a triple nuclei structure based at Ghana, Maanga and Uyole wards. Consumer behaviour is, therefore, a very significant space forming factor in urban development.

And the flow chart model for food products marketing in the urban areas in Tanzania provides an opportunity for a theoretico-spatial analysis of the marketing of food products in Mbeya Municipality and, it may, perhaps, be adopted to undertake similar studies in other urban areas in Tanzania.

1.0 Introduction

The report on the spatial pattern of catchment areas of municipal markets in Mbeya Municipality, Tanzania was conceived out of an attempt to develop a conceptual framework for the analysis of food products marketing in the urban areas in Tanzania. Named a flow chart model for food products marketing in urban areas in Tanzania, the model has four stages [Fig. 1]. The first stage looks at the spatial structure of the supply side of food products to the towns. The second stage covers the brokers who are stationed at each gazetted town's market. The third stage covers the retail outlets in the towns. And, the fourth stage of the model covers the consumers in the urban areas.

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The first and second stages of the model were analysed in Mbeya Municipality vide a study entitled the Spatial Structure of Food Products Marketing in Mbeya Municipality, Tanzania. It basically covered the supply side at the local, regional and national scales [Banyikwa, 2001]. The third stage of the model was investigated vide a study entitled the Socio-economic Structure of Food Products Marketing in Mbeya Municipality, Tanzania. The study analysed and reported on the socio-economic profile of retailers in the retail outlets in the gazetted market in Mbeya Municipality, Tanzania [Banyikwa, 2003]. To complete the model, a third study was undertaken in Mbeya Municipality, in 2004 and it covered the fourth stage of the model. This article reports on the third study, which analysed the catchment areas of municipal markets in Mbeya Municipality, Tanzania.

2.0 Statement of the Research Problem

A rating of the municipal markets, as outlets for food products for consumers in Mbeya Municipality, Tanzania, was conducted in 2001 [Banyikwa, 2001]. Locational preferences by the brokers were resorted to in assessing the status of each of the gazetted municipal markets in the municipality. The status accorded a market outlet, by the brokers, was taken as indicative of the share of local demand for goods sold at the market. Preliminary findings indicated that none of the gazetted municipal markets commanded an unfair share of the catchments in the municipality.

Discussions on this research finding by peer groups expressed misgivings on the accuracy of the research finding. Given that the areal extents, population numbers and number of households per ward were not uniform among the thirty six wards of Mbeya Municipality [Table 1] and, given also that each ward did not have a gazetted municipal market at its geographical centre [Fig. 3], then patterns of consumer behaviour in accessing food products were bound to generate spatial patterns. A more accurate assessment of the catchment areas of the municipal markets, the fourth stage of the model, was deemed desirable. Three research questions guided this study. One, which wards patronized which market(s)? Two, are there any spatial patterns in the catchment areas of municipal markets in Mbeya Municipality? Three, what is the significance of patterns of consumer behaviour to spatial processes in Mbeya Municipality? In view of these three research questions, the determination of areal patterns in accessing food supplies by households in the thirty six wards from the fifteen gazetted municipal markets was deemed a significant research problem in its own right, apart from it completing the spectrum of the flow chart model of food products marketing in the urban areas in Tanzania.

3.0 Conceptual Framework

The conceptual framework of this study is a flow chart of food products marketing in the urban areas in Tanzania. The model has four structural stages [Fig. 1]. Figure one

shows that the four structural stages are linearly interconnected. Stage one shows the supply side of the flow chart. The supply side has three main sources namely, the area comprising the urban area itself, the administrative region within which the urban area is located and, the entire country and beyond.

Stage two comprises the brokers. Brokers are businessmen/women who are stationed in the municipal markets and these receive the bulk of the food commodities supplied to an urban area. The brokers act as control agents of the dynamics of supply and demand of food products within an urban area. Given the operations of an open market situation in Tanzania, the brokers play a unique role in organising the flow of food products from the suppliers to the retailers. The third stage is the retail outlets. Three main retail outlets are suggested namely, the established retailers at the main markets, the strategically located kiosks away from the main municipal markets and, the street vendors. It is these three retail outlets which come into direct contact with consumers in an urban area. The fourth stage of the model comprises the customers of all walks of life within the urban area. The consumers form the demand side of the flow chart of food products marketing in the urban areas in Tanzania. It is suggested by the structural stages of figure 1 that the food products marketing activities in urban areas in Tanzania are not amorphous. The linear arrangement of the structural stages of figure one suggests that the marketing of food products in urban areas in Tanzania obeys the laws of economic rationality.

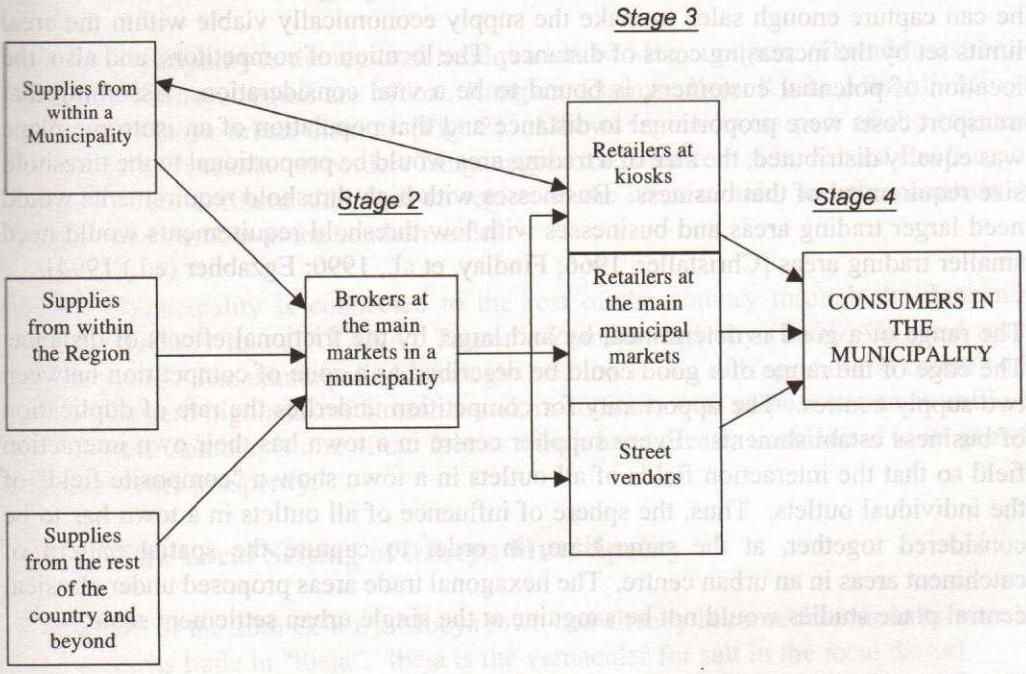

Fig. 1: A Flow Chart Model for Food Products Marketing in Urban Area in Tanzania.

The dynamics of the model are largely due to factors of supply and demand. Supply and demand involve two concepts in central functions studies namely, a threshold population size and a range of the good. While threshold population size is the minimum population which is necessary to support a function, range of the good is the maximum distance which customers are willing to cover to take advantage of a service [Losch, 1956; Berry and Garrison, 1958]. Some businesses deal in products which require a very heavy level of initial investment and for which individual demand is not frequent. In such a case, it would be necessary to attract trade from a large number of customers so that the total demand would be sufficient to meet the initial investment costs. On the other hand, some businesses deal in products which require less total investment and for which individual demand is frequent and steady. In the latter case, it would not be necessary to attract trade from a large number of customers to meet the initial investment costs. These businesses could, therefore, survive by supplying a relatively smaller number of people. The food products marketing activities in the urban settlements of Tanzania belong to the latter category.

Whereas the supplier of a product is generally located at a given point in geographical space, his customers are distributed at varying distances around him, and so, before a transaction can take place, movement has to occur. It would be expected that, where economic rationality holds, both suppliers and consumers of a product will keep this movement to a minimum. Hence the supplier's interaction field is, to a large extent, limited by the frictional effects of distance. The supplier of any product has to meet his threshold size requirements before supply can occur. He has to ensure, therefore, that he can capture enough sales to make the supply economically viable within the areal limits set by the increasing costs of distance. The location of competitors, and also, the location of potential customers, is bound to be a vital consideration. Assuming that transport costs were proportional to distance and that population of an isotropic plane was equally distributed, the size of a trading area would be proportional to the threshold size requirement of that business. Businesses with high threshold requirements would need larger trading areas and businesses with low threshold requirements would need smaller trading areas [Christaller, 1966; Findlay, et al., 1990; Egzabher (ed.),1994].

The range of a good is determined, by and large, by the frictional effects of distance. The edge of the range of a good could be described as a zone of competition between two supply centres. The opportunity for competition underlies the rate of duplication of business establishments. Every supplier centre in a town has their own interaction field so that the interaction fields of all outlets in a town show a "composite field" of the individual outlets. Thus, the sphere of influence of all outlets in a town has to be considered together, at the same time, in order to capture the spatial pattern of catchment areas in an urban centre. The hexagonal trade areas proposed under classical central place studies would not be sanguine at the single urban settlement scale.

The fields of spheres of influence of individual outlets within an urban centre may be easy to define because they involve no more than plotting, on a map, of the distribution

of customers. Once the spatial distribution of customers has been plotted, a boundary line can be drawn to show the extent of the fields. The absolute geographical limits of any outlet's interaction field, while they are important, they are, however, not very significant. The core trade area of a centre may be spatially restricted and contiguous with the centre but, the maximum trade area of the same centre may be very large and overlapping with trade areas of other centres. The recognition of discreet and shared zones of interaction intensity within the absolute interaction field for all outlets is very instructive. The different zones of interaction intensity, for different outlets, within the composite interaction field of the whole urban centre create nuclei of growth which spontaneously restructure the internal structure of an urban settlement. The behaviour patterns of customers in an urban area are, therefore, one of the very significant space forming factors of this process [Bracey, 1953; Abbott, (ed.), 1993; UN, 1993].

4.0 The Study Area

Mbeya Municipality has been selected as the study area. The choice was guided by the criterion that the municipality is an urban settlement which is located in a rich agricultural countryside. The criterion itself is derived from the condition sine-qua-non that urbanism can only emerge and thrive in societies which can produce, mobilize, manipulate and concentrate a significant social surplus product over a narrow geographical area [Banyikwa, 1988; Waugh, 1995; Rakodi, 1997].

4.1 The Broad Geographical Setting of Mbeya Municipality

Mbeya Municipality is the regional headquarters of Mbeya region. The administrative districts of Mbeya region are Mbozi, Rungwe, Chunya, Ileje, Kyela, Mbarali, Mbeya rural and Mbeya urban districts [Fig. 2]. Mbeya region forms part of the southern highlands of Tanzania. It borders Iringa region to the eastern side, Tabora and Singida regions to the northern side, Rukwa region to the western side, and the countries of Malawi and Zambia to the southern side.

Mbeya Municipality is connected to the rest of the country through the Tanzania-Zambia Railway line (TAZARA), Tanzania-Zambia Highway (TANZAM) and many district roads. The municipality's strategic location is in a rich agricultural countryside of the southern highlands of Tanzania and, its location with respect to transit traffic to Malawi and Zambia, is one of the factors which have greatly contributed to its growth and economic prosperity.

4.2 The Local Setting of Mbeya Municipality

At the turn of the 20th Century, Mbeya town had already become famous in its broader region for its trade in "Ibeja". Ibeja is the vernacular for salt in the local dialect.

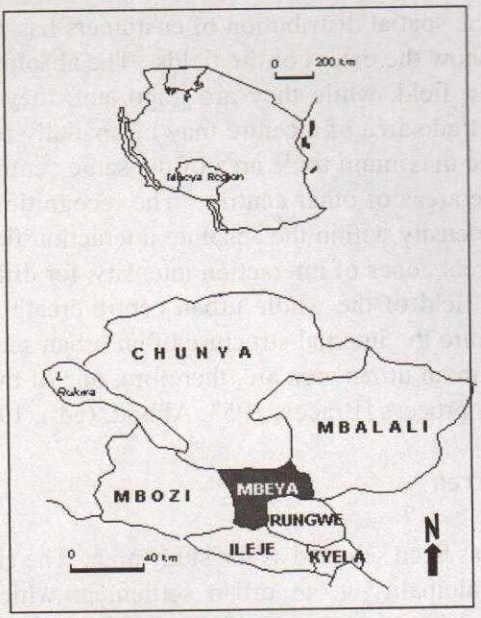

Figure 2: The Location of Mbeya Municipality in Tanzania

Because the British colonial administrators could not pronounce the word *Ibeja*, the word was corrupted to Mbeya. Henceforth, Mbeya became the official name for the urban settlement and the larger administrative region [Mbeya Municipal Council Report, 1988:2]. It is this commercial role in salt that explains the historical roots of urbanism for the urban settlement. Apart from its role as an important salt trading centre, Mbeya town was also at the cross-roads to the Lupa Gold Mining centre of Chunya, Tanzania and the economic power houses of Zambia, Zimbabwe and South Africa.

Despite its fame as an important commercial centre in the southern highlands of Tanzania and its strategic location with respect to the countries of central and southern Africa, Mbeya town was, until the early 1930s, not the main town in Mbeya region. It was not until 1935 when Mbeya town was designated a "European Settlement" that it replaced Igale town as the main town of Mbeya region. Since its designation as a "European township" in 1935, Mbeya town has seen phenomenal growth and it was accorded the municipal status in 1990 [Mbeya Municipal Council Report, 1998:2].

Mbeya Municipality is bordered by Mbeya rural district in all directions. The municipality is administratively divided into thirty six wards [Table 1]. Six wards are rural, sixteen wards are mixed and fourteen wards are urban. The municipality covers an area of 222.7 km2. Arithmetically, the mean area per ward is supposed to be 6.18 km2. But, in actual fact, the mixed wards are larger in areal extent than the rural and urban wards. Also, the mean population per ward in Mbeya Municipality is supposed

to be 7400 people.
But, in actual fact, the rural and urban wards have, each, fewer people than the municipality's mean. Table 1 shows also that there are 64197 households distributed among the thirty six wards. The mean number of households per ward at the municipality level is 1783 households. Generally, the mixed wards have, each, a larger number of households than the average at the municipality level. The data in Table 1 show that, internally, Mbeya municipality is widely differentiated. Figure 3 shows, partly, the location of municipal markets in Mbeya Municipality. It shows that there are fifteen markets which serve the thirty six wards.

The markets, and the wards in which they are located, are Airport (Mwakibete), Igawilo ((Igawilo), Ilomba ((Ilomba), Isanga (Isanga), Iyunga (Iyunga), Mabatini (Mabatini), Maendeleo and Uhindini (Maendeleo), Majengo (Majengo), Makungulu and Soweto (Ruanda), Mwanjelwa (Maanga), Nzovwe (Nzovwe), Soko Matola (Ghana) and Uyole (Uyole). Five markets are located in mixed wards and ten markets are located in urban wards.

It means that six rural wards, eleven mixed wards and five urban wards do not have an own municipal market outlet within their administrative unit. Yet, the households in these wards must also access food supplies from any of the municipal markets. An overlap of movements from the wards to the markets can, therefore, not be ruled out. Among the aspects which are illustrated in Figure 4 are the transport networks in Mbeya Municipality. Figure 4 shows that Mbeya Municipality is linked to itself, the rural district and the rest of the country via two mainmodes of transport namely, the TAZARA railway line, the TANZAM, the MBEYA-KYELA and the MBEYA-CHUNYA roads. These two modes of transport form the arteries of Mbeya Municipality. Internally, the municipality is served by numerous feeder roads (minor roads).

The feeder roads link the various wards to the main road. Since the TANZAM appears to bisect the municipality into two segments, north and south, the local roads form the crucial channels of return journeys from rural and mixed wards to the urban wards. The internal connectivity of Mbeya Municipality is still very weakly developed. For instance, there exist no collector roads in the municipality. Also, the connectivity among the ward centres doesn't exist. Instead, the local roads have evolved a shape similar to veins which are linked to the main artery! This form of transport connectivity does not efficiently serve the inter-wards movements at the municipality level. Despite this inadequacy, Mbeya Municipality is well connected to the rest of the country.

Mbeya Municipality serves as the main administrative, industrial, commercial and services centre for Mbeya region, in general, and Mbeya urban district, in particular. The municipality is the interface of activities undertaken in the rural and urban space economies of Mbeya region [Mlozi et al., 1992; Tacoli, 1998; UNCHS (HABITAT),

Table 1: Population of Mbeya Urban District, Number of Households and Areal Extent

S.N.	WARD	TYPE	TOTAL POPULATION	HOUSEHOLDS	SIZE (Km^2)
1.	Sisimba	Urban	4671	806	4.0
2.	Isanga	Urban	8619	2113	3.0
3.	Iganzo	Mixed	8044	1918	3.0
4.	Mwansekwa	Rural	1349	335	9.0
5.	Itagano	Rural	1232	296	26.0
6.	Itezi	Mixed	8200	2080	17.0
7.	Nsalaga	Mixed	8987	2343	8.0
8.	Igawilo	Mixed	10504	2840	4.5
9.	Iganjo	Mixed	5122	1216	4.5
10.	Uyole	Mixed	6229	1446	12.0
11.	Iduda	Mixed	3440	909	13.0
12.	Mwasanga	Rural	544	138	4.0
13.	Tembela	Rural	989	252	3.5
14.	Ilomba	Mixed	21128	5016	5.0
15.	Mwakibete	Mixed	13774	3295	10.0
16.	Ilemi	Mixed	16736	4009	9.0
17.	Isyesye	Mixed	2857	668	5.0
18.	Ruanda	Urban	19959	5286	1.5
19.	Iyela	Mixed	22435	5266	4.0
20.	Sinde	Urban	5526	1494	0.8
21.	Maanga	Urban	7294	2027	1.5
22.	Mbalizi road	Urban	6999	1264	1.0
23.	Forest	Urban	7209	1571	2.0
24.	Mabatini	Urban	6602	1550	1.2
25.	Nzovwe	Urban	14494	3380	6.0
26.	Kalobe	Mixed	9654	2183	4.0
27.	Iyunga	Mixed	9928	2316	13.0
28.	Iwambi	Mixed	9181	1901	9.0
29.	Itende	Rural	2715	660	8.0
30.	Iziwa	Rural	2941	773	14.0
31.	Nsoho	Mixed	1507	380	11.0
32.	Majengo	Urban	3475	930	2.0
33.	Ghana	Urban	3973	972	1.3
34.	Nonde	Urban	2142	597	0.7
35.	Itiji	Urban	4259	1074	0.7
36.	Maendeleo	Urban	3704	893	1.0
Total	**36**	**3**	**266422**	**64197**	**222.7**

Source: United Republic of Tanzania, 2002 Population and Housing Census, General Report. Government Printer, Dar es Salaam, January 2003, p.114.

2001]. In the interest of the conceptual framework of this study, the local setting of Mbeya Municipality provides a good opportunity for the analysis of the fourth stage of the model.

5.0 Methods of Data Collection

Four methods were used in the collection of data. They are selection of municipal markets, selection of wards which represented the catchments, cartographic measurements on topographical sheets of Mbeya Municipality and field surveys.

5.1 Selection of Municipal Markets

There are fifteen gazetted municipal markets in Mbeya Municipality. Because the municipal markets provided known geographical points where all households in the wards access food supplies from, all the gazetted markets were selected and included in the study.

5.2 Selection Of Wards which Comprised the Catchment Areas

There are thirty six wards in Mbeya Municipality [Table 1]. Because the patrons of the municipal markets inhabit all the thirty six wards, all the wards were selected and included in the study.

5.3 Cartographic Measurements

A topographical map of Mbeya Municipality was obtained from the Mbeya Municipal Council and it formed the base map for this study. Onto the base map were entered the administrative divisions of the municipality. Then, telephone distances from a central location of selected twenty wards to all the markets in Mbeya Municipality were cartographically determined [Appendix II]. To estimate the reach of each market, twenty of the thirty six wards were selected. The selected wards comprised of 55.5% of all the wards in the municipality. To avoid congestion of desire lines in cartographic analysis, this sample of wards was taken to be significant [Toynne and Newby, 1977; Tiwari, 1979].

5.4 Field Surveys

A questionnaire (the research instrument) was designed to solicit views from respondents about various aspects of accessing food products from the markets. Items on the research instrument covered five food types namely, source of protein (fish,

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poultry, pulses, eggs and milk); staples (maize, round potatoes, millet, green bananas, yams and cassava); fruits (ripe bananas, pineapples, guava, pawpaws and passion); vegetables (cabbage, spinach, tomatoes, onions and carrots) and cooking fat (ghee, groundnuts and coconuts).

For each of these food types, a head of household was targeted to answer two questions. The first question inquired on how the household obtained the food products. Three answers were suggested in the questionnaire namely, purchases, production at own backyard and others. The second question had two parts: First, name of the market outlet of first preference and, second reasons for the markets preferredness. The two questions and suggested answers formed the research instrument. The research instrument was administered by research assistants to 360 heads of household in the 36 wards of Mbeya Municipality. Ten heads of household, in each ward were randomly selected from a list provided by a ward secretary and filled out the questionnaire under direct supervision by research assistants. Given that the aim of the research was to indicate the trade areas of each municipal market, the small sample sufficed.

6.0 Methods of Data Analysis

Responses from the first question were analysed using descriptive statistics and the output converted into percentages. Responses from the second question were analysed using descriptive statistics and the output processed into spatial patterns.

6.1 The Determination of Proportions of Households which Patronised Municipal Markets

To begin with a matrix was designed to accommodate data from the questionnaires. The municipal markets were plotted along the ordinate (Y-Axis) and the wards were plotted along the abscissa (X-Axis). Then, the number of households, in a ward, which cited a market as an outlet of preference (element) were entered into an appropriate cell in the matrix.

The number of elements along the column afford one an opportunity to know the number of markets which the households, in a ward, preferred. The number of elements along the row affords one an opportunity to know the number of wards which are served by a market. A summation of elements along a row shows the total number of households which patromised a particular market out of a maximum number of 360 households. The results of the summations along the rows provided the basis for calculating the percentage share which each municipal market commanded out of the whole catchment [Appendix I]. Based on elements in appendix 1, desire lines from the central location of each ward were drawn to the targeted market to generate Figure 3 (the proportion of households which patromised municipal markets).

6.2 The Determination of the Spatial Pattern of Catchment Areas of Municipal Markets in Mbeya Municipality

A catchment area of a municipal market was defined as a ward whose households sourced food products from a gazetted municipal market. The households who responded to the questionnaire were 360. Based on this sample, the spatial pattern of catchment areas of municipal markets in Mbeya Municipality was determined using computer assisted cartography [The IDRISI – G.I.S. PROGRAMME].

7.0 Research Findings

7.1 Strategies of Households in Accessing Food Products in Mbeya Municipality

Table 2 shows the coping strategies in accessing food products by households in Mbeya Municipality. The expected coping strategies were basically three namely, purchases of food products from the municipal outlets, kiosks and street vendors; production of food products at household gardens (urban agriculture) and, other sources (e.g. gifts). Table 2 shows that the coping strategies are mixed at different levels and for different products. Purchases of food products is the principal coping strategy. The proteinous food type scored 99.5 percent and the vegetables food type scored 88.5 percent on the purchases strategy.

An urbanite is a person whose main occupation is in sectors other than the primary sector. Table 2 vindicates this basic fact of the essence of urbanism that the urbanite purchases food products from the municipal outlets. However, it does not mean that purchases is the only coping strategy through which households access food products for their households. Table 2 shows that household production provides yet another coping strategy. The highest percentage (81.0 percent) was recorded for the proteinous food type and the lowest percentage point (12.5 percent) was recorded for cooking fat. Table 2 shows further that other sources forms the third coping strategy. The data in the questionnaire revealed that other sources included gifts from members of the extended family.

Table 2: Strategies of Households in accessing Food Products in Mbeya Municipality

Food Type	COPING STRATEGY		
	Purchases at outlets %	Household production %	Others %
Proteinous	99.5	81.0	5.5
Staples	96.5	74.0	4.5
Fruits	98.0	46.0	3.5
Vegetables	88.5	50.5	3.5
Cooking Fat	92.0	12.5	5.0

N= 360 households

Source: Fieldwork.

The highest percentage point for others, as a coping strategy, was scored by the proteinous food type (5.5 percent) and the lowest percentage point (3.5 percent) was scored by vegetables and fruits. It is noteworth that purchases, as a coping strategy, overshadows urban agriculture and gifts for household maintenance. This means that the support for an urban household in Mbeya Municipality is already monetised. An urban household must have sufficient financial resources to purchase food supplies for itself otherwise life becomes impossible. Because of the principal role played by purchases as a coping strategy in accessing food supplies to the households in Mbeya Municipality, further analysis of the other coping strategies was given less emphasis.

The significance of the three retail outlets to consumers in Mbeya Municipality appears in Table 3. Table 3 shows that the three groups of retail outlets, (municipal markets, kiosks and street vendors) are valued differently by households as sources of food products. More than 70 percent of all households in Mbeya Municipality obtained their household supplies of all food types from this group of outlets. Next to this group were the kiosks. The highest percentage point for kiosks was scored by the proteinous food type (66.6 percent) and the lowest percentage point was scored by fruits (29.5 percent). Street vendors came a distant third. The highest percentage point for street vendors was scored by the proteinous food type (39.0 pecent) and the lowest percentage point was scored by cooking fat (6.0 percent). The municipal markets are by far the most significant source of food commodities in Mbeya Municipality.

Table 3: The Significance of Retail Outlets to Consumers in Mbeya Municipality

Food Type	Significance of retail outlets (%)		
	Municipal Markets	Nearby Kiosks	Street Vendors
Proteinous	74.5	66.0	39.0
Staples	80.0	47.5	15.0
Fruits	79.0	29.5	18.0
Vegetables	73.0	36.5	20.5
Cooking Fat	65.5	48.0	6.0

N = 360 housholds

Source: Fieldwork.

7.2 The Spatial Pattern Of Catchment Areas of Municipal Markets in Mbeya Municipality, Tanzania

Because desire lines of households are a precursor to the areal extents of the fields of economic activity of municipal markets, they are presented in Figure 3. And, the resulting spatial pattern of catchment areas of the gazetted municipal markets in Mbeya Municipality is illustrated in Figure 4.

7.2.1 The Desire Lines from Rural, Mixed and Urban Wards to Municipal Markets

Figure 3 shows desire lines of households from rural, mixed and urban wards to the gazetted municipal markets in Mbeya Municipality. First, it shows that desire lines of households from: Mwansekwa ward focused on Mwanjelwa and Isanga markets; Iziwa ward focused on Sokomatola, Uhindini and Mwanjelwa markets; Mwasanga ward focused on Mwanjelwa, Soweto and Sokomatola markets; Itende ward focused on Mabatini, Nzovwe, Iyunga, Mwanjelwa, Sokomatola, Majengo and Uhindini markets and, Tembela and Itagano wards focused on none of the gazetted municipal markets. Desire lines were strikingly absent from Itagano and Tembela wards. Itagano is a forest reserve and it is not significantly inhabited by people. Tembela ward is very peripherally located with respect to the mainstream gazetted municipal markets and, the residents of this ward have established an own central place by the name Simambwe. Figure 3 illustrates clearly that the other four rural wards patronized only seven of the fifteen municipal markets. Six of the patronized markets are located in urban wards and only one of the patronized markets is located in a mixed ward.

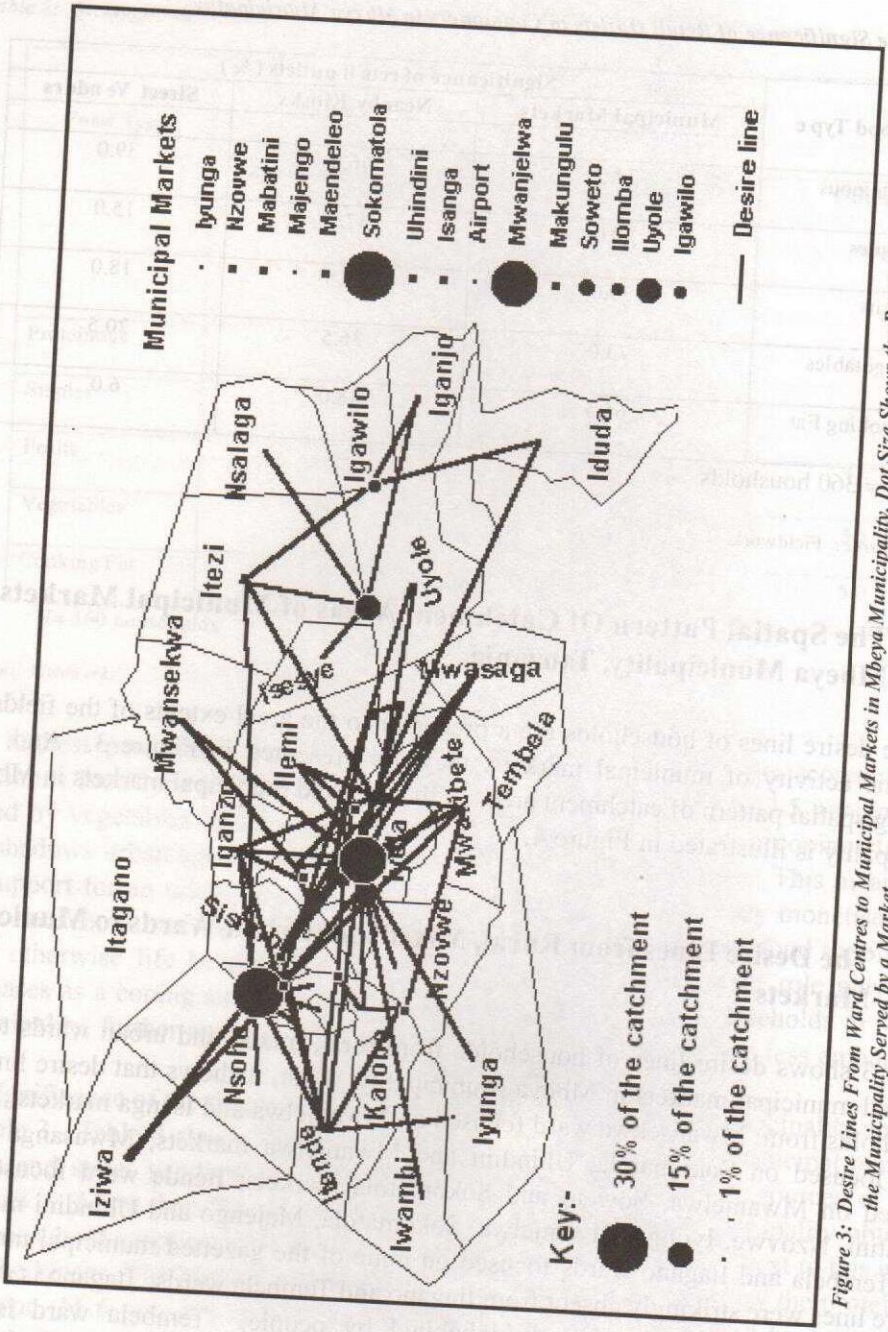

Figure 3: Desire Lines From Ward Centres to Municipal Markets in Mbeya Municipality. Dot Size Shows the Proportion of Households in the Municipality Served by a Market.

Second, Figure 3 shows that desire lines of households from: Mwakibete ward targeted Soweto, Nzovwe and Sokomatola markets; Iganzo ward targeted Isanga, Mwanjelwa and Soweto markets; Ilemi ward targeted Soweto, Makungulu and Mwanjelwa markets; Ilomba ward targeted Ilomba, Soweto and Mwanjelwa markets; Iyela ward targeted Mwanjelwa, Airport and Maendeleo markets; Iganjo ward targeted Igawilo and Uyole

markets; Uyole ward targeted Uyole market; Iduda ward targeted Uyole market and Itezi ward targeted Uyole, Soweto, Sokomatola and Igawilo markets; Igawilo ward targeted Igawilo market; Isyesye ward targeted Uyole market; Kalobe, Iyunga and Iwambi wards targeted Mwanjelwa market and, Nsoho ward targeted Sokomatola market.

Strange cases were revealed by residents of Iganzo and Iduda wards. Some residents in these two mixed wards traveled as far as Uhindini market which is 14 kilometres away from the central location of each of the wards. These customers of Uhindini market were either gainfully employed in the traditional central business district (Maendeleo ward) and found it convenient to purchase food products after office hours or they were people who engaged in multi-purpose journeys. Basically, desire lines from the mixed wards targeted twelve out of the fifteen municipal markets. Nine of these patronized markets were located in urban wards and three of the patronized municipal markets were located in mixed wards.

Third, Figure 3 reveals that Isanga ward was served by Makungulu and Mwanjelwa markets; Ruanda ward was served by Mwanjelwa, Soweto and Sokomatola markets; Sinde ward was served by Ilomba, Isanga, Makungulu, Mwanjelwa and Maendeleo markets; Maanga ward was served by Mwanjelwa, Soweto and Maendeleo markets; Mabatini ward was served by Mabatini, Nzovwe and Mwanjelwa markets; Nzovwe ward was served by Mwanjelwa market and, Majengo, Ghana, Nonde, Itiji and Maendeleo wards were served by Sokomatola market. Basically, desire lines from the urban wards were focused on nine of the fifteen gazetted markets. The nine patronized markets were all located in urban wards. The desire lines from customers in the rural, mixed and urban wards illustrate that spatial confinement is not a valid concept where access to municipal markets is concerned.

Figure 3 and Appendix II illustrate a link that exists between consumer behaviour and frictional effects of distance. They show, for instance, that the largest number of shoppers from Mwansekwa ward visited Isanga market (5.2 km.) and Mwanjelwa market (5.8 km); a large proportion of shoppers from Iziwa ward visited Sokomatola (5.5 km) and Uhindini (6.5 km.) markets; residents of Mwasanga ward sourced their food products from Soweto (4.0 km.) and Mwanjelwa (5.0 km.) markets and, priority outlets for Itende ward were Mabatini (3.3 km), Nzovwe (3.5 km.), Iyunga (2.7 km.), Sokomatola (3.5 km.), Majengo (2.9 km) and Uhindini (3.5 km) markets. The four cases cited above reveal that the maximum distance traveled by shoppers from a rural ward to a market outlet of first preference, one way, did not exceed 6.5 kilometres.

Further, Figure 3 and Appendix II show that the largest number of customers from Mwakibete ward chose Nzovwe market (5.5 km); Iganzo ward chose Isanga market (1.5 km); Ilemi ward chose Soweto market (1.7 km); Ilomba ward chose Soweto market (2.4 km); Iyela ward chose Mwanjelwa market (0.9 km); Iganjo ward chose Uyole market (5.6 km); Iduda ward chose Igawilo market (0.4 km); Nsalaga ward chose Uyole

market (5.0 km) and, Itezi ward chose Uyole (2.4 km) market as outlets of first preference. In all these instances involving mixed wards, the average distance, one way, from a ward centre to a municipal market did not significantly exceed 5.0 kilometres.

Also, Figure 3 and Appendix II show that residents of Isanga ward preferred Makungulu market (1.3 km) and Mwanjelwa market (1.6 km) and not Igawilo market which is 9.0 kilometres away. Households in Ruanda ward patronized Mwanjelwa market (0.8 km) and Soweto market (1.6 km) and not Iyunga market which is located 7.0 kilometres away.

Homesteads in Sinde ward travelled to Makungulu market (1.2 km), Mwanjelwa market (1.3 km) and Maendeleo market (2.5 km) and not Igawilo market which is located more than 11.0 kilometres away. Residents of Maanga ward chose Mwanjelwa market (1.0 km), Soweto market (2.3 km) and Maendeleo market (3.0 km) as outlets of first preference. Igawilo market (12.9 km) and Uyole market (10.2 km) were considered too distant by the residents of Maanga ward. Households of Mabatini ward opted for Mabitini market (0.5 km), Nzovwe market (1.7 km) and Mwanjelwa market (3.4 km) for their food supplies. Igawilo market which is 13.5 kilometres away was ignored. In almost all the cases involving desire lines of households in the urban wards, the average distance from a ward centre to the preferred market did not extend beyond two kilometers. It should be emphasized that over 86.0 percent of all the journeys to and from the market outlets in Mbeya Municipality are undertaken on foot.

The results of Figure 3 and Appendix II lead to one main observation. And that, customers will keep movement to a minimum, wherever possible, in accessing food products from municipal markets. The composite picture of Figure 3 leads to one main conclusion. And that, while the length and density of desire lines from some ward centres to a municipal market may look spatially restricted, the maximum field of economic activity of the same market may be very large. Hence, desire lines overlap both in length and direction of movements by the customers at the municipality level.

7.2.2 *The Spatial Pattern of Catchment Areas of Municipal Markets in Mbeya Municipality, Tanzania*

Figure 4 illustrates the spatial pattern of catchment areas of municipal markets in Mbeya Municipality. It shows three main groups of dependent areas, each based at particular market outlets. Group one catchment areas may be called the discreet catchment areas and it has four sub-groups. Each sub-group of the discreet catchment areas is hinged on only one municipal market. Group two catchment areas may be referred to as the shared spaces and it has six sub-groups. Each sub-group of the shared spaces is served by more than one municipal market. Group three catchment areas may be labeled the zones outside the orbit of municipal markets. These zones are not served by the municipal markets at all.

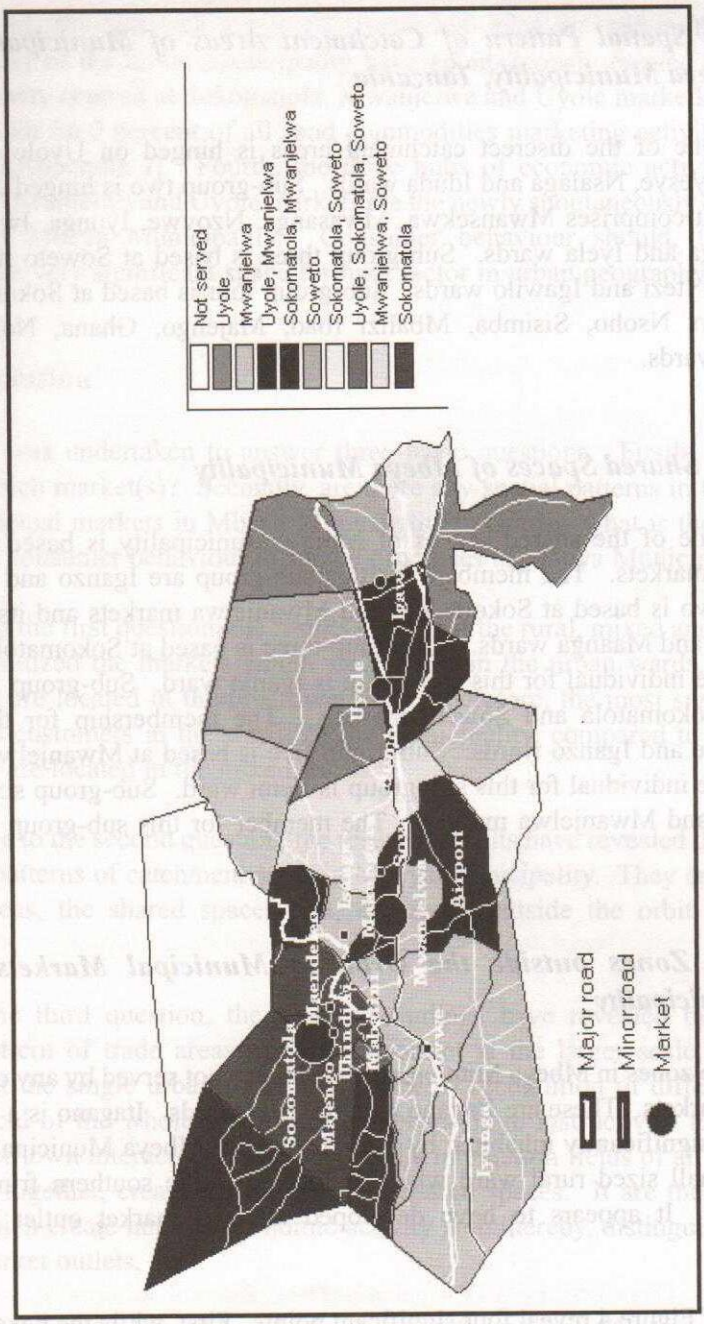

Figure 4: The catchment areas of municipal markets in Mbeya Municipality

7.2.2 *The Spatial Pattern of Catchment Areas of Municipal Markets in Mbeya Municipality, Tanzania*

Sub-group one of the discreet catchment areas is hinged on Uyole market and it comprises Isyesye, Nsalaga and Iduda wards. Sub-group two is hinged on Mwanjelwa market and it comprises Mwansekwa, Mwasanga, Nzovwe, Iyunga, Iwambi, Kalobe, Forest, Isanga and Iyela wards. Sub-group three is based at Soweto market and the members are Itezi and Igawilo wards. Sub-group four is based at Sokomatola market and it covers Nsoho, Sisimba, Mbalizi road, Majengo, Ghana, Nonde, Itiji and Maendeleo wards.

7.2.2.2 *The Shared Spaces of Mbeya Municipality*

Sub-group one of the shared spaces of Mbeya Municipality is based at Uyole and Mwanjelwa markets. The members for this sub-group are Iganzo and Uyole wards. Sub-group two is based at Sokomatola and Mwanjelwa markets and its members are Iziwa, Sinde and Maanga wards. Sub-group three is based at Sokomatola and Soweto markets. The individual for this sub-group is Iganjo ward. Sub-group four is hinged on Uyole, Sokomatola and Soweto markets. The membership for this sub-group include Uyole and Iganzo wards. Sub-group five is based at Mwanjelwa and Soweto markets. The individual for this sub-group is Ilemi ward. Sub-group six is hinged on Sokomatola and Mwanjelwa markets. The member for this sub-group is Mwakibete ward.

7.2.2.3 *The Zones outside the Orbit of Municipal Markets in Mbeya Municipality*

There are two zones in Mbeya Municipality which are not served by any of the gazetted municipal markets. These are Itagano and Tembela wards. Itagano is a forest reserve and it is not significantly inhabited by the urbanites of Mbeya Municipality. Tembela ward is a small sized rural ward which is located at the southern fringe of Mbeya Municipality. It appears to have developed an own market outlet by the name Simambwe.

The results of Figure 4 reveal four significant points. First, while the hexagonal pattern of trade areas of central functions at the larger scale may be important, they are not significant at the Mbeya Municipality level. The recognition of different zones of interaction intensity within the absolute interaction field of the whole municipality appears more instructive. Second, every supplier centre has their own interaction fields so that the interaction fields of all outlets in the municipality create a composite pattern of discreet and shared spaces. Consumer behaviour is a very significant factor of this

process. Third, the different zones of interaction intensity within the composite interaction field of the entire municipality have spontaneously created three hubs of economic activity centred at Sokomatola, Mwanjelwa and Uyole markets. These three hubs account for 86.0 percent of all food commodities marketing activities in Mbeya Municipality [Appendix I]. Fourth, the three hubs of economic activity centred at Sokomatola, Mwanjelwa and Uyole markets are the newly spontaneously created nuclei of growth of Mbeya Municipality. Consumer behaviour should, therefrom, be recognized as a very significant space forming factor in urban geography.

8.0 Conclusion

The research was undertaken to answer three basic questions. Firstly, which wards patronized which market(s)? Secondly, are there any spatial patterns in the catchment areas of municipal markets in Mbeya Municipality? Thirdly, what is the significance of patterns of consumer behaviour to spatial processes in Mbeya Municipality?

With regard to the first question, the results show that the rural, mixed and urban wards basically patronized the markets which are located in the urban wards. The market outlets which are located in the urban wards are, therefore, the most significant focal points for the customers in the wards of the municipality, compared to those market outlets which are located in the mixed wards.

With reference to the second question, the research results have revealed that there exist three spatial patterns of catchment areas in Mbeya Municipality. They are the discreet catchment areas, the shared spaces and, the zones outside the orbit of municipal markets.

Turning to the third question, the research findings have revealed that, while the hexagonal pattern of trade areas may be important at the larger scale, they are not informative at the single urban settlement scale. A recognition of different zones of interaction field of the whole urban centre appears more instructive. Every supplier centre has their own interactiion fields so that the interaction fields of all outlets in the municipality, together, create the discreet and shared spaces. It are these interaction intensities which create hubs of economic activity and, thereby, distinguish among the individual market outlets.

Three market outlets (Sokomatola, Mwanjelwa and Soweto) are, for instance, the most significant outlets in Mbeya Municipality. Together, they account for more than 86.0 percent of all the journeys to and from the markets. Based on these three market outlets, three nuclei of growth, centred at Ghana, Maanga and Uyole wards, have been newly and spontaneously created. The municipality has, in the process, developed four central business districts at Maendeleo, Ghana, Maanga and Uyole wards. Patterns of consumer behaviour have played a very significant role in this spatial transformation

process. They are, therefore, a very significant space forming factor in urban development.

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APPENDIX 1: THE HOUSHOLDS WHICH PATRONISED MUNICIPAL MARKETS IN MBEYA MUNICIPALITY

Wards	Mwansekwa	Itagaro	Mwasanga	Tembela	Itende	Iziwa	Iganzo	Itezi	Nsalaga	Igawilo	Iganjo	Uyole	Iduda	Ilomba	Mwakibete	Ilemi	Isyesye	Iyela	Kalobe	Iyunga	Iwambi	Nsoho
Markets																						
Airport																		3				
Igawilo								1		10	3											
Ilomba														6								
Isanga	6						2															
Iyunga					2																	
Mabatini					2																	
Maendeleo																		5				
Majengo					1																	
Makungulu																2						
Mwanjelwa	4		6		1	2	3					2		2	7	4		2	10	10	10	
Nzovwe					1																	
Soko Matola			1		2	4	2	1							2							10
Soweto			3				1	1						2	1	4						
Uhindini					1	4	2					2										
Uyole								7	10		7	6	10				10					
TOTAL	10	-	10	-	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Category	**RURAL WARDS**						**MIXED WARDS**															

APPENDIX 1 (Continued)

Wards / Markets	Sisimba	Isanga	Sinde	Maanga	Mbalizi road	Forest	Mabatini	Nzovwe	Majengo	Ghana	Nonde	Itiji	Maendeleo	Ruanda	TOTAL	PERCENT
Airport															3	0.88
Igawilo															14	4.11
Ilomba			1												7	2.05
Isanga			1												9	2.64
Iyunga															2	0.58
Mabatini							6								8	2.35
Maendeleo			2	6											13	3.82
Majengo															1	0.29
Makungulu		4	1												7	2.05
Mwanjelwa		6	5	3			2	10						4	93	27.35
Nzovwe							2								3	0.88
Soko Matola	10				10	10			10	10	10	10	10	2	104	30.58
Soweto				1										4	17	5.00
Uhindini															9	2.64
Uyole															50	14.78
TOTAL	10	10	10	10	10	10	10	10	10	10	10	10	10	10	340	100,00
Category	**URBAN WARDS**															

Source: Fieldwork

APPENDIX II: DISTANCES (KM) FROM A WARD CENTRE TO A MUNICIPAL MARKET

Wards / Markets	Mwansekwa	Iziwa	Mwasanga	Tembela	Itende	Mwakibete	Iganzo	Ilemi	Ilomba	Iyela	Iganjo	Uyole	Iduda	Nsalaga	Itezi	Isanga	Sinde	Ruanda	Maanga	Mabatini
Airport	6.3	11.8	4.0	2.3	8.2	0.5	4.5	3.5	2.6	1.4	10.2	8.1	10.0	10.0	7.4	3.6	1.7	1.5	0.7	6.0
Igawilo	7.3	18.3	7.0	7.4	16.0	8.4	10.8	9.0	6.0	9.2	2.2	2.6	4.0	3.0	2.5	9.6	11.0	9.4	12.9	13.5
Ilomba	4.5	13.0	2.0	3.6	10.2	3.5	5.5	3.0	0.7	4.3	7.3	3.6	8.5	7.0	4.3	4.3	6.5	2.7	5.5	7.8
Isanga	5.2	9.0	7.0	6.0	6.7	4.0	1.5	2.5	4.7	2.7	11.9	7.6	12.0	10.0	8.0	0.2	1.0	1.2	2.0	3.5
Iyunga	10.8	8.0	11.0	9.6	2.7	8.0	8.6	10.0	10.5	6.9	18.3	14.0	17.9	18.0	15.1	7.6	6.5	7.6	7.0	3.1
Mabatini	7.7	7.3	9.0	7.2	3.3	5.5	5.2	6.5	6.9	3.4	14.8	10.5	14.7	13.8	11.1	3.5	2.5	3.6	3.0	0.5
Maendeleo	6.5	7.0	9.0	7.9	4.2	5.1	3.3	5.0	6.5	3.9	14.6	10.0	15.1	13.0	10.3	2.4	2.5	0.7	3.0	2.2
Majengo	7.8	5.8	9.0	8.5	2.9	6.3	3.9	6.0	7.8	4.8	15.3	11.5	16.0	14.3	11.7	3.8	3.5	4.0	3.2	1.9
Makungulu	4.7	10.0	5.0	4.5	7.3	2.8	2.2	2.0	3.1	1.5	10.8	6.2	10.9	10.0	7.1	1.3	1.2	1.0	3.0	4.7
Mwanjelwa	5.8	9.9	5.0	4.7	6.2	2.9	3.2	3.2	3.8	0.9	11.7	6.4	11.8	11.0	8.2	1.6	1.3	0.8	1.0	3.4
Nzovwe	9.3	8.5	7.0	6.8	3.5	5.5	5.6	6.0	7.3	3.9	15.2	10.9	15.1	15.0	12.0	4.9	3.2	4.5	2.8	1.7
Sokomatola	7.3	5.5	10.0	7.8	3.5	6.4	14.8	5.5	7.9	9.8	14.8	11.4	16.0	14.0	11.3	3.5	2.1	3.6	2.5	2.5
Soweto	5.0	11.0	4.0	3.6	7.9	2.3	3.8	1.7	2.4	1.5	9.3	5.2	10.2	9.5	6.8	2.2	2.3	1.6	2.3	5.1
Uhindini	7.0	6.5	9.0	7.6	3.5	6.0	14.5	5.0	7.1	4.1	14.5	0.5	15.1	13.3	11.0	3.0	1.6	2.9	2.0	2.0
Uyole	5.4	16.0	3.0	4.7	13.0	5.5	7.8	5.5	1.6	6.0	5.6	2.3	6.0	5.0	2.4	6.5	10.3	5.6	10.2	10.6

Source: Fieldwork