CHAPTER 4: A SITUATIONAL ANALYSIS OF THE VAAL REGION

4.1 INTRODUCTION

This chapter serves to determine the exact LED strategy that should be implemented within the Vaal Triangle. An investigation into the current demographic profile of the Vaal Triangle will be conducted. The current population, race, gender, age, education and income distribution within the region will be discussed. An analysis of the Vaal labour force will be conducted and the structural composition of the Vaal economy will be analysed.

4.2 BACKGROUND

The Vaal area comprises the Emfuleni, Midvaal and Metsimaholo municipalities situated in the in the southern part of Gauteng and the northern part of the Free State respectively.

The Emfuleni Municipal Area (EMA) is one of three local municipalities comprising the Sedibeng District Municipality. It is the western-most local municipality of the District, which covers the entire southern area of the Gauteng province extending along a 120 kilometres axis from east to west. It covers an area of 987.45 km². The Vaal River forms the southern boundary of the EMA and its strategic location enables the region to take advantage of possible opportunities for tourism and other projects aimed at economic development (EMA, 2007).

According to EMA (2007), the municipality is strategically located with access to a well-maintained road network, the N1 national route, linking Johannesburg and Bloemfontein, which traverses Emfuleni. The EMA has two central business districts (CBDs), namely Vereeniging and Vanderbijlpark, which forms the heartland of the former Vaal Triangle, renowned for its contribution to the iron and steel industry in South Africa

The Metsimaholo Municipal Area (MMA) is situated in the northern part of the Fezile Dabi District Municipality. The geographical size of the municipality is

estimated at 1 739 km^2. It has been envisaged that Sasolburg will play a dominant role in job creation and economic development within the Fezile Dabi District Municipality as it produces 91.96% of manufacturing products, 96.46% of water services, electricity and 100% of mining and quarrying in the region (MMA, 2009).

The new "Chem City" industrial development project is indicative of Sasolburg's intentions to diversify its industries away from noxious industries and toward light industries. This development will offer a worldwide competitive site in close proximity to inland markets and will be known as a world-class small-tonnage eco-chemical park (MMA, 2009).

The Midvaal Local Municipality's (MLM) jurisdiction occupies an area of approximately 1 780km^2. Meyerton is the main CBD within the region with residential densities declining from the CBD outwards and low income residential areas situated on the outskirts of the towns. These residential settlements then extend into agricultural holdings and farms (MLM, 2009).

Social and economic activities are concentrated within the urban areas, with very little access to such facilities within the rural areas. Midvaal is considered to have a strong tourism focus as it is located near the Vaal River and the Vaal Dam on the southern boundary of the region. Access to major road networks (the R59 and R82) also serves as a means of trade facilitation with surrounding regions (MLM, 2009).

The MMA, MLM and EMA cannot be separated by politically demarcated boundaries alone, as they form a cohesive economic unit, the components of which are intensively integrated into one another (Slabbert & Slabbert, 2002b:3). People living in Metsimaholo, Midvaal and Emfuleni are, shopping, working or searching for employment in one or the other of the municipalities, states Slabbert (2004:1). Commuting between these areas is thus prevalent, with people travelling daily between the different centres for work or recreation and, as a result, a well developed transport network exists in the Vaal, thereby linking the areas of economic activity between the three municipalities with their sources of labour, inputs and markets (Slabbert & Slabbert, 2002b:3). For this

reason unemployment, poverty and various socio-economic factors prevalent within the Vaal cannot be studied in isolation as any action that undertaken in the one municipality will undoubtedly have an effect on those living in the other two.

The Vaal economy is characterised by areas of economic activity closely surrounded by medium to high income areas with adequate business centres. Low income areas are located on the urban boundaries of the Vaal with little or no economic development present at all. These rural areas are almost totally dependent on the economic activities taking place in the high to medium income areas (Slabbert & Slabbert, 2002b:3).

4.3 DEMOGRPAHIC PROFILE OF THE VAAL

Any change in the economy of a region will have a great effect on its inhabitants in terms of employment, expenditure patterns, income and poverty levels, etc. (Slabbert & Slabbert, 2002b:3). In order for development programmes to work efficiently within a particular region, it is of great importance to determine the largest concentration of the population, as well as population specific data such as racial, gender and age distribution.

4.3.1 Population distribution within the Vaal region

According to Statistics South Africa (Stats SA, 2001) the estimated population of the Vaal was 839 039 (based on Census data).

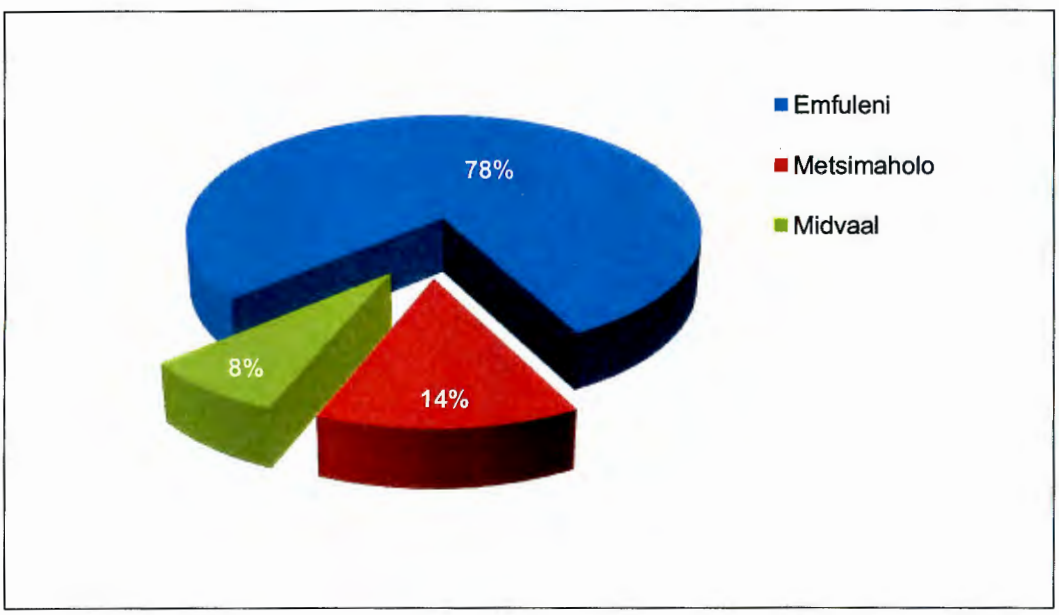
Table 4.1: Population of the Vaal (2001)

Municipal area	Population
Emfuleni	658 420
Metsimaholo	115 977
Midvaal	64 642
Total	839 039

Source: Calculations based on Census 2001 data (Stats SA, 2001)

Based on the Census 2001 estimates, Table 4.1 shows the total population numbers for the EMA, MMA and MLM respectively. Emfuleni has the largest percentage of the total Vaal population at 658 420. The population of Metsimaholo and Midvaal was estimated at 115 977 and 64 642 respectively. The percentage distribution of the population in each municipal area in the Vaal is illustrated by Figure 4.1. Midvaal has the smallest percentage of the total population at 8%, with Emfuleni housing the largest portion of the population at 78%. Metsimaholo, having a much larger share in the overall GGP of the Vaal when compared to Midvaal, has 14% of the total Vaal population.

Figure 4.1: The population of the Vaal region (2001)



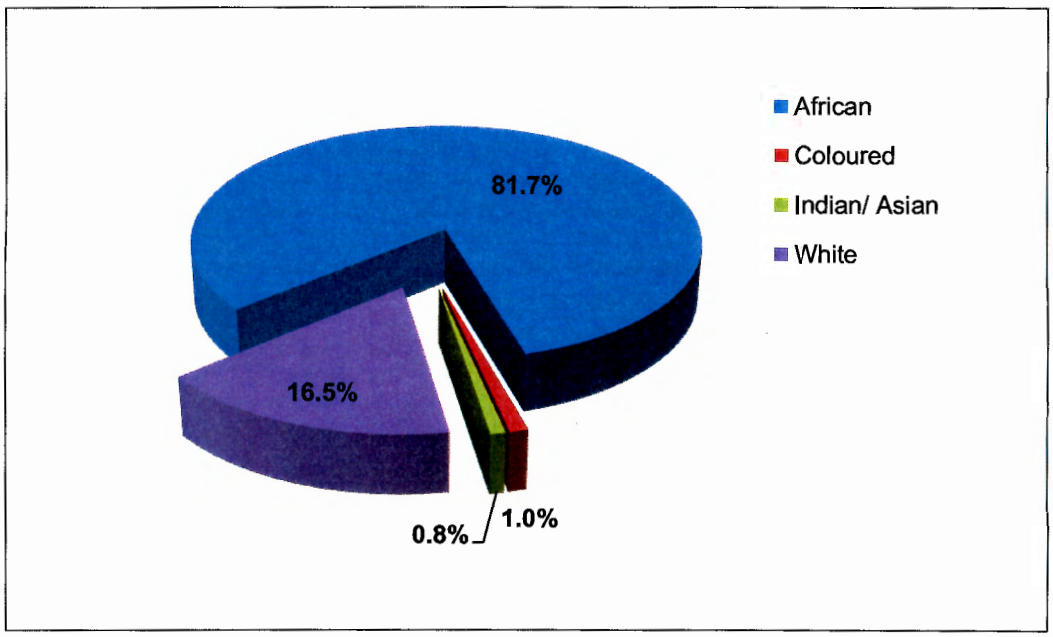
Source: Calculations based on Census 2001 data (Stats SA, 2001)

4.3.2 Racial composition of the Vaal population

According to Census 2001 estimates (Stats SA, 2001) the African population in the Vaal area is estimated at 685 495 individuals, forming 81.7% of the total population of the region with the White population (138 441) forming 16.5% of the total Vaal population. The racial group with the lowest representation figure is the Indian/Asian population, which constitutes only 0.8% of the population of the Vaal or 6 712 people, while the Coloured population forms 1% or 8 391

people of the total population. Figure 4.2 shows the total racial composition of the Vaal for the year 2001.

Figure 4.2: Racial composition of the Vaal region (2001)



Source: Calculations based on Census 2001 data (Stats SA, 2001)

Table 4.2 illustrates the total percentage of each racial group per municipal area. Emfuleni and Metsimaholo have the highest African population in the Vaal area at 84.0% and 81.1% respectively. Midvaal has the largest White population at 39.1% of the total population of the region. The racial group with the lowest representation in the study area is the South Asian population, of which only 0.2% resides in Metsimaholo.

Table 4.2: Racial composition by municipal area (2001)

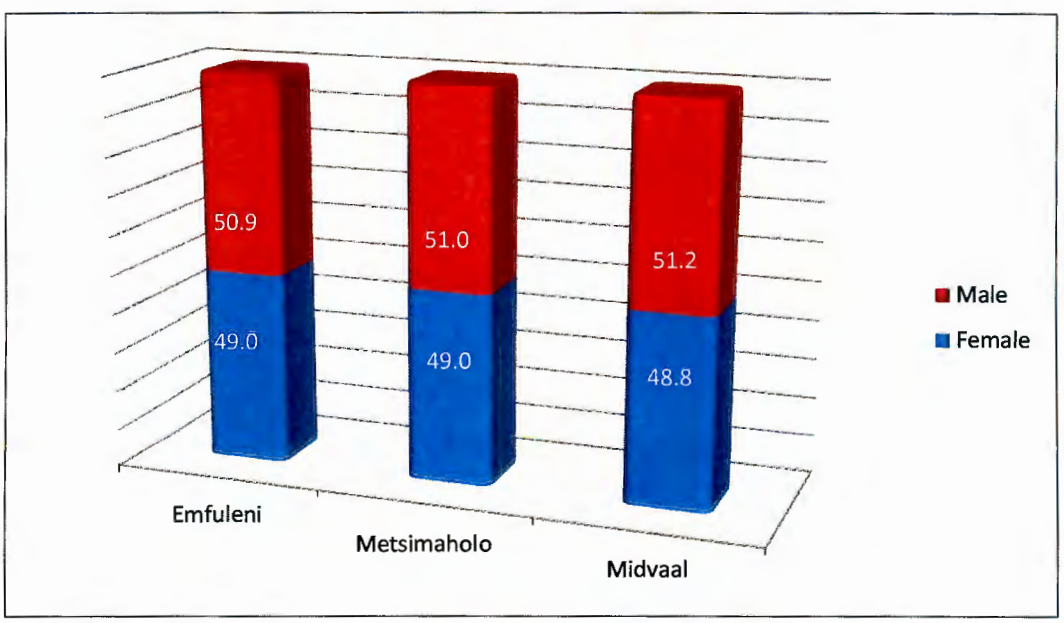
	EMA	MMA	MLM
African	84.0	81.1	59.0
White	14.0	18.3	39.1
Coloured	1.1	0.5	1.4
South Asian	0.9	0.2	0.5

Source: Calculations based on Census 2001 data (Stats SA, 2001)

4.3.3 Gender distribution per region

Based on the estimates of the Census 2001 data, of the total population of the Vaal, 51% is female, while 49% is male (Stats SA, 2001). Figure 4.3 illustrates gender distribution per municipal area. There is a clear indication of a relatively even gender distribution throughout the Vaal area, in as much as there is only a few percentage point differences between each gender in the various areas. In the Metsimaholo and Midvaal areas there is a higher concentration of males while Emfuleni has the highest concentration of females.

Figure 4.3: Gender distribution per municipal area (2001)

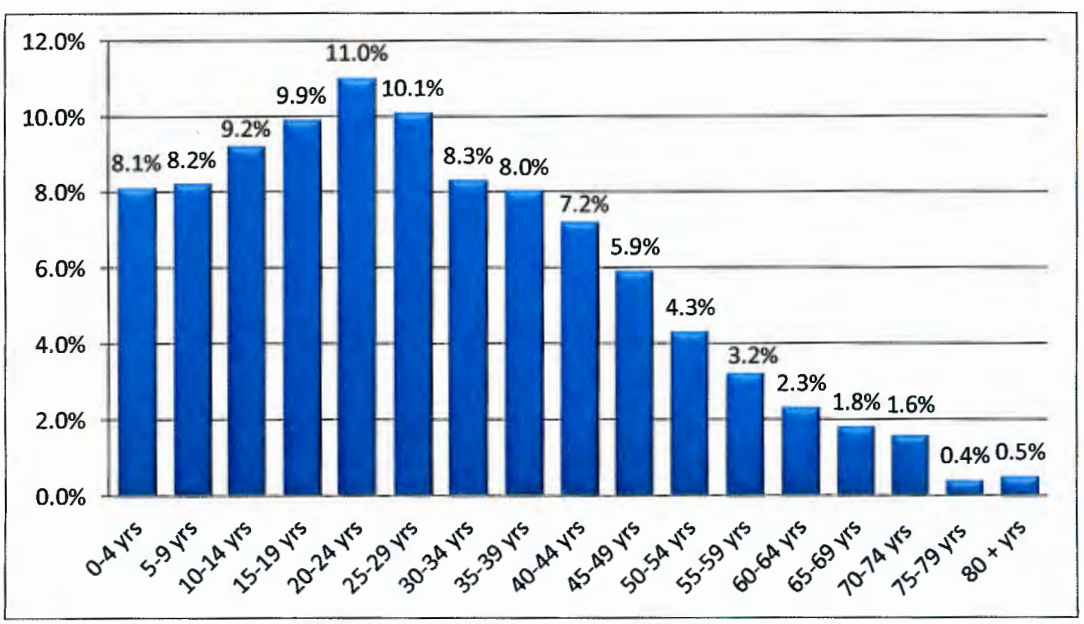


Source: Calculations based on Census 2001 data, Stats SA (2001)

4.3.4 Age distribution of the Vaal population

In general, the inhabitants of the Vaal appear to be highly concentrated over the young, adolescent and twenties age categories. As a result, strain is placed on the labour market within the Vaal as school-leavers and those recently graduated from tertiary institutions begin looking for formal employment. With the highest concentration of the population over the job-seeking ages and the current unemployment rate for the Vaal area at 53.6% (Slabbert, 2004:12), many youths within the area will probably not find gainful employment, thereby forcing them to find work in other areas, which could lead to possible re-location to these area should they indeed find employment. A large percentage of the population is also spread out over the non-economically active population (children younger than 15 and individuals older that 65), thereby placing pressure on the caregivers of children and the elderly to provide for the respective needs of the family.

Figure 4.4: Age distribution of the Vaal population (2001)



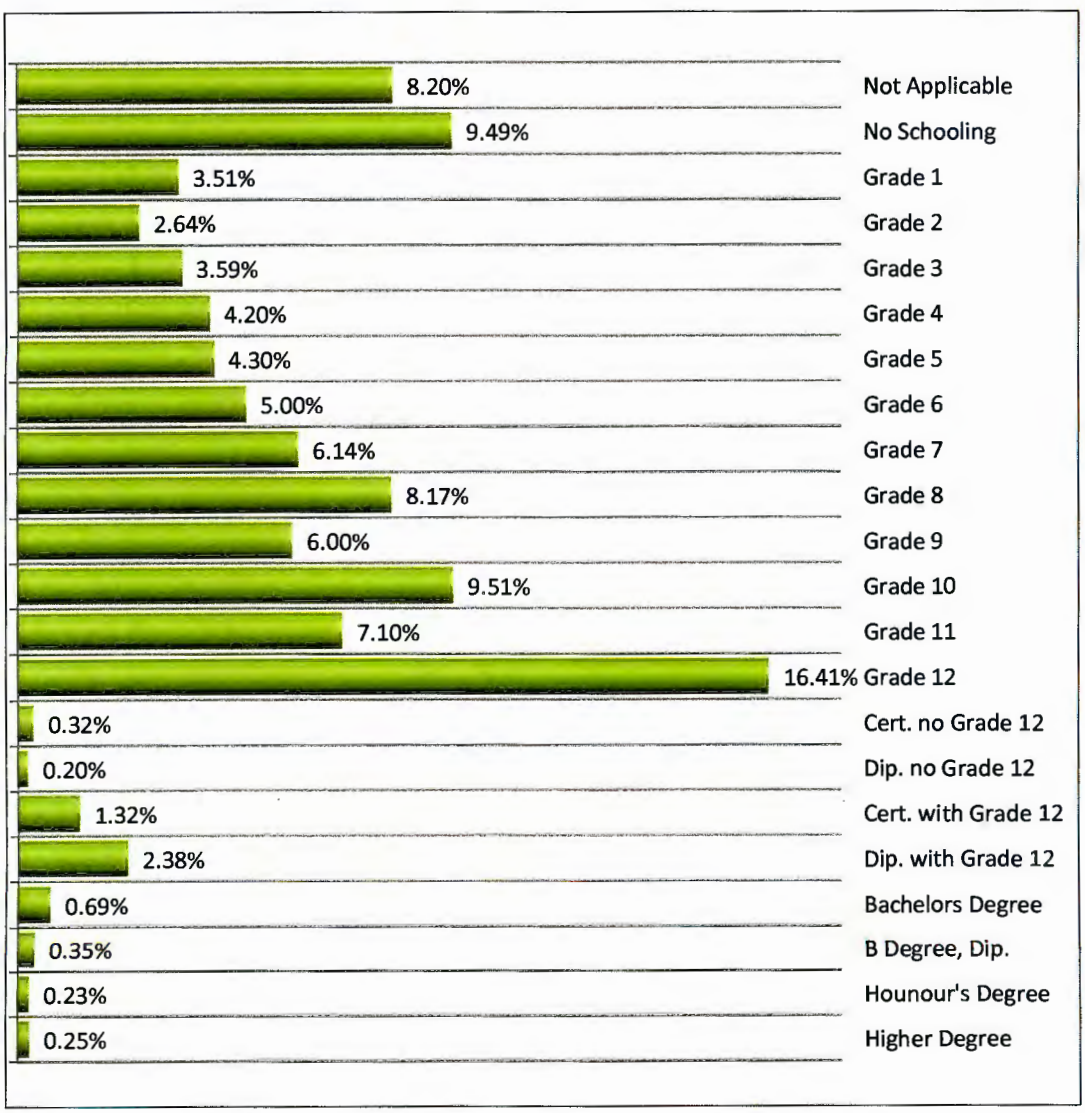
Source: Calculations based on Census 2001 data (Stats SA, 2001)

4.3.5 Educational levels within the Vaal region

The level of education attained by individuals living within the Vaal region is illustrated in Figure 4.5. Only 16.4% of the total population has a Grade 12

certificate. Less than 5% have some form of tertiary education, with 0.69% of school-leavers having a bachelor's degree and an even smaller percentage (0.48%) with a post-graduate degree. Less than 22% of the Vaal population has only reached an education level of Grade 11, with 9.49% having no formal education (primary, secondary or tertiary and includes children not of school going age) at all. This 8.20% that is noted as 'Not Applicable' in Figure 4.5 are those households who were not inclined to indicate their current level of education.

Figure 4.5: Educational levels within the Vaal (2001)

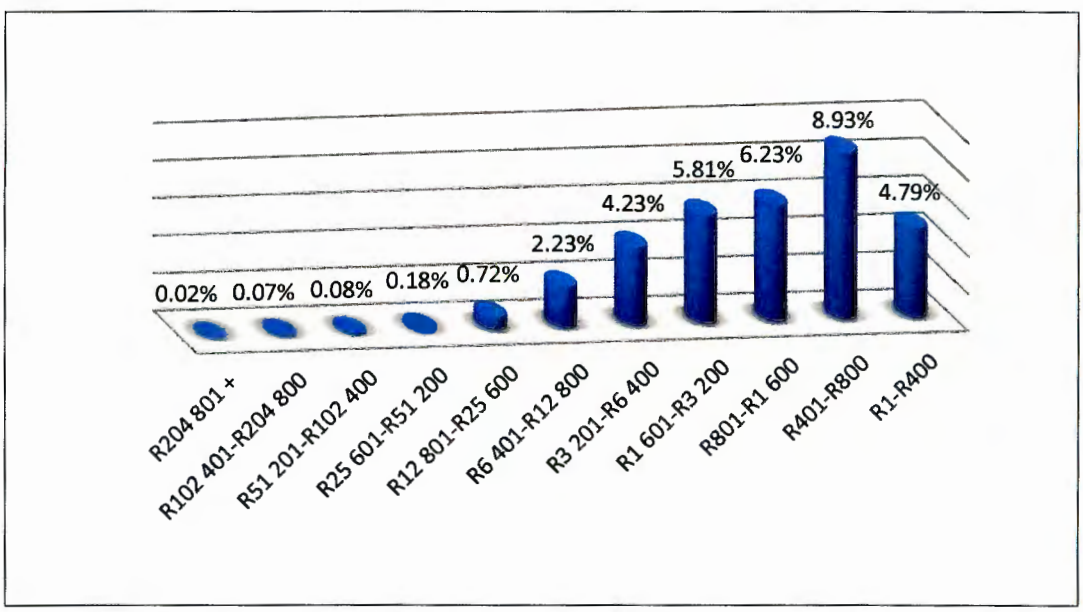


Source: Calculations based on Census 2001 data (Stats SA, 2001)

4.3.6 Levels of income within the Vaal

As shown in Figure 4.6, of the entire Vaal population only 4.23% earns between R3 201 and R6 400 per month, while less than 1% earns over R12 000 per month. On the other hand, a greater percentage (4.78%) earns only R1 to R400 per month, while almost double that amount (8.93%) earns between R401 and R800 per month. By comparing Figures 4.4 and 4.6, the percentage of the Vaal population that has no income at all, i.e. 66.72% can mostly be described as the economically non-active population or, in other words, those that are younger than 15 and older than 65, as well as housewives, the unemployed, etc.

Figure 4.6: Distribution of the population amongst the various income groups (2001)



Source: Calculation based on Census 2001 data (Stats SA, 2001)

4.3.7 Poverty in the Vaal

Todaro and Smith (2003:205) state that impoverished individuals are those who are unable to command sufficient resources to satisfy their basic human needs. These individuals are counted as the total number of the population of a region living below a specified minimum level of real income, i.e., a national poverty line. According to Slabbert (2005:21) the headcount index for the Vaal area for

2003 was 0.516, which implies that 51.6% of all households earned an income that was below the respective poverty lines of the region.

Of the poor, employed population, 12.4% was either formally or informally employed. In 2003 there was 31.8% of the poor population that was unemployed and 55.8% formed part of the dependent population, compared to 54.2% for the poor and non-poor individuals combined (Slabbert, 2005:15).

Sen (1999:92) states that should the definition of dependency be taken as the ratio of dependent people to those that are employed, the problem becomes acute. This ratio is calculated at 7:1 for the poor, while for the poor and non-poor combined it is 2:1. This means that within the poor population in Emfuleni, two persons would be dependent on the income of one person. Slabbert (2005:15) states that if the unemployment rate (71.8%) of the poor population is taken into account a strong correlation between poverty and unemployment in the Vaal begins to emerge.

Table 4.3 analyses the economic status of the poor population from a gender perspective. Within the poor population, more males are employed in the formal sector than females. There are more females employed in the informal sector than males. More females fall into the economically non-active and child category than males, which is the same for the non-poor. Females are thus clearly more affected by poverty than males (Slabbert, 2004:26).

Table 4.3: Economic status and gender of the poor population (2004)

Economic status	Female (%)	Male (%)
Formally employed	43	57
Informally employed	66	34
Unemployed	50	50
Economically non-active & children younger than 15 years	53	47

Source: Slabbert (2004:26)

4.4 THE VAAL LABOUR FORCE

4.4.1 Employment and unemployment: a theoretical overview

4.4.1.1 Unemployment and unemployment

Mohr (2000:79) describes the total number of people that are willing and able to work as the labour force or the economically active population (EAP). The EAP consists of workers in the formal sector plus self-employed persons and employers plus informal sector workers plus unemployed persons. Thus, the EAP includes all who are in work or unemployed. The percentage of the population that is of working age and who are economically active is known as the labour force participation rate.

According to Barker (1992:83) unemployment is a multi-dimensional concept and is defined as a situation where members of the labour force are without work and are currently seeking work or are available for work. Stats SA (2003:47) distinguishes between two definitions of unemployment, namely the official or strict definition of unemployment and the expanded definition of unemployment. The strict definition, which was formulated by the ILO, is used most often in international comparisons of unemployment in developed countries. According to the strict definition unemployed persons are those who are 15 years and older and:

- Are not in paid employment or self-employment;
- Were available for paid employment or self-employment during the seven days preceding the interview; and
- Took specific steps during the four weeks preceding the interview to find paid employment or self-employment.

Mohr (2000:88) and Barker (1992:83) state that the expanded definition is more suitable for developing countries as the various criteria for seeking employment is not always realistic in a developing country. According to the expanded definition the unemployed are persons who are 15 years and older and:

- Are not in paid employment or self-employment;

- Were available for paid employment or self-employment during the seven days preceding the interview; and
- Had the desire to work and take up employment or self-employment.

South Africa initially used the strict definition but later switched to the expanded definition due to criticism of the conservative unemployment figures that were produced. The expanded definition, however, caused the same levels of criticism only with the higher estimates now being the focus of ridicule. According to Colander and Gamber (2000:35) the unemployment rate is obtained by expressing the number of people who are unemployed as a percentage of the EAP.

4.4.1.2 Methods for the measurement of unemployment

4.4.1.2.1 The census method

The economic status of the population is determined by several questions designed for that purpose in the population census. The census method is not an entirely reliable one however, as its focus is the collection of population-specific statistics and not employment or unemployment. Slabbert and Slabbert (2002a:21) reiterate this by stating that only a limited number of questions pertaining to unemployment is included in the census (Mohr, 2000:89).

4.4.1.2.2 The registration method

According to Slabbert and Slabbert (2002b:21) the registration method provides for the unemployed to register at placement offices, which are part of the Department of Labour (DoL). Registration is compulsory to qualify for unemployment benefits. In South Africa there are certain categories excluded from the fund, i.e., civil servants, domestic workers, farm workers, casual and seasonal workers, those earning more than the ceiling income and those whose period of benefit (6 months) have run out. Many persons, therefore, have no reason to register.

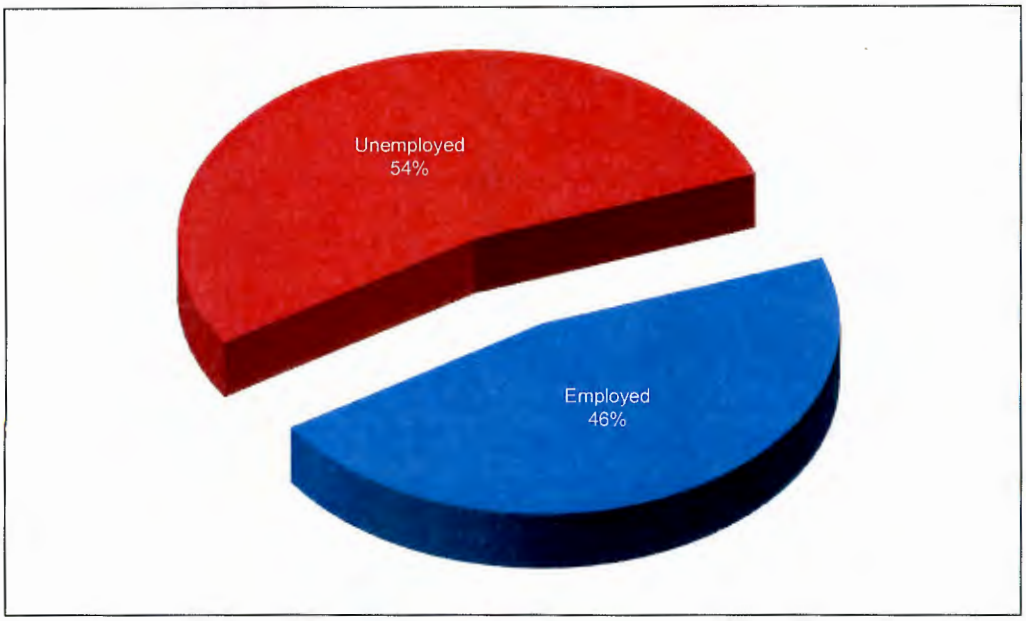
4.4.1.2.3 The sample survey method

Surveys are undertaken on a sample basis to obtain the data required to calculate unemployment rates for specific groups of people. In earlier years the Central Statistical Services (CSS) conducted surveys on a monthly basis for Africans, Coloureds and Asians. It was called the Current Population Survey (CPS). However, since the figures obtained for Africans were found to be inaccurate, their results have not been published since April 1990 (Mohr, 2000:90). In 1994, the CPS was terminated and the October Household Survey (OHS) was introduced. Stats SA has conducted the OHS since 1996. It is an annual survey, based on a probability sample of a large number of households. It covers a range of development and poverty indicators, including unemployment (official and expanded), according to the definitions of the ILO. In 2000, the OHS was replaced by the Labour Force Survey (LFS).

4.4.2 Labour profile of the Vaal

According to Slabbert (2005:11), the EAP of the Vaal for 2001 was 47.6% of the total population of the area. The unemployment rate in the Vaal was determined at 53.6% and there were, on average, 1.12 unemployed persons per household. These figures pertained to both the poor and non-poor areas within the region. Townships had a much higher incidence of unemployment (61.0%) and the number of unemployed persons per household was 1.35 (Slabbert, 2004:12). Of the 46.4% of the labour force that was employed, 9.5% was employed in the informal sector while 36.9% was employed in the formal sector. Figure 4.7 illustrates the distribution of the employed and unemployed over the Vaal population.

Figure 4.7: Employment and unemployment in the Vaal (2001)



Source: Slabbert (2004:12)

The economic structure of the Vaal region has, to a large extent, influenced the employment profile of the area (Slabbert & Slabbert, 2002a:9; Slabbert, 2005:12). The area is characterised by a definite sectoral specialisation in the following activities:

- The manufacturing of basic metals and metal products (particularly iron and steel), which account for 66.4% of all manufacturing employment opportunities; and

- Trade and services activities, particularly wholesale and retail, community and personal services, and other activities, are responsible for 77.6% of all tertiary sector employment.

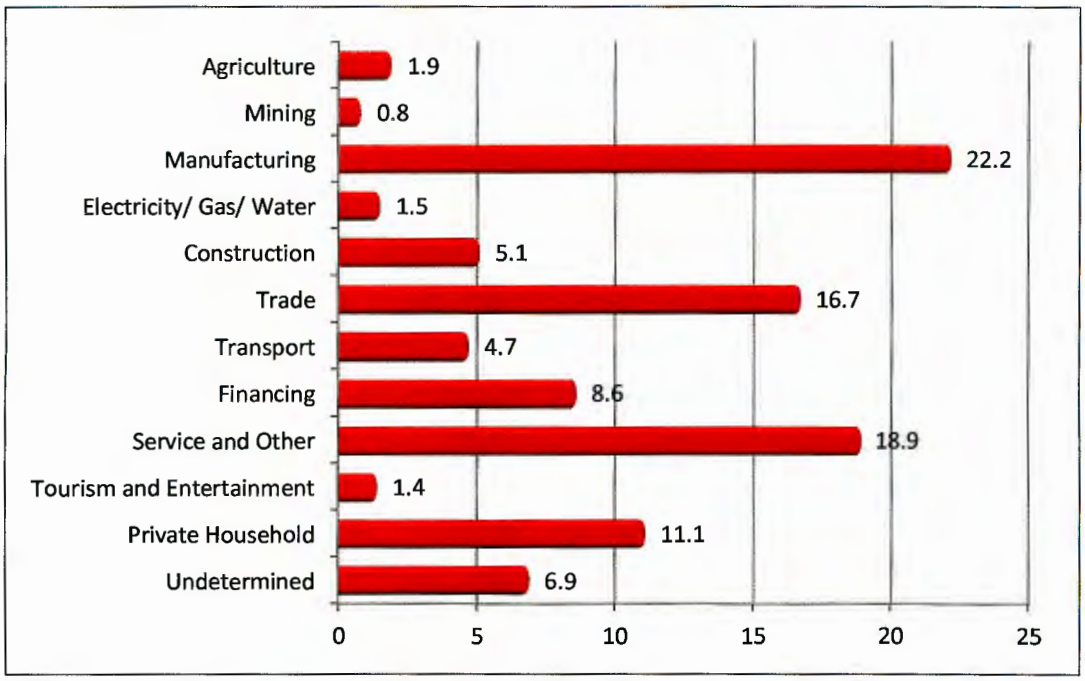
The sectoral employment profile of the Vaal is illustrated in Table 4.4 and Figure 4.8. Based on Census 2001 data, Figure 4.8 illustrates the distribution of employed individuals within the Vaal by sector of employment. A high incidence of employment occurs in the manufacturing (22.2%), trade (16.7%) and services sector (18.9%). The lowest employment figures are for the mining (0.8%), electricity/gas/water (1.5%) and tourism and entertainment (1.4%) sectors.

Table 4.4: Sectoral employment in the Vaal (2001)

Economic sector	Number employed	Percentage (%)
Agriculture	2 904	1.9
Mining	1 230	0.8
Manufacturing	34 122	22.2
Electricity/gas/water	2 367	1.5
Construction	7 812	5.1
Trade	25 717	16.7
Transport	7 277	4.7
Finance	13 228	8.6
Services & other	29 105	18.9
Tourism & entertainment	2 176	1.4
Private households	17 124	11.1
Undetermined	10 580	6.9
Total	**153 657**	**100.0**

Source: Calculations based on Census 2001 data (Stats SA, 2001)

Figure 4.8: Sectoral employment in the Vaal (2001)



Source: Calculations based on Census 2001 data, (Stats SA, 2001)

4.5 STRUCTURAL COMPOSITION OF THE VAAL ECONOMY

The structural composition of the Vaal region is set out in Table 4.5 and will be discussed in the sections that follow. A detailed description of each economic sector is given in Annexure A.

4.5.1 Sectoral analysis

4.5.1.1 Primary sector

According to the CSS (1993) the primary economic sector consists of agriculture and mining. As shown in Table 4.5, the relative contribution of agriculture to the GGP of the Vaal decreased from 1.7% in 1996 to 1.5% in 2003. The average annual growth rate from 1996 to 2003, in terms of constant prices, was 0.6%. In 2003, mining only contributed 0.2% to the GGP of the Vaal, while -13.0% negative growth was experienced by this sector from 1996 to 2003.

Table 4.5: Economic structure of the Vaal region - GGP contribution

Economic sector	1996 (R million)	%	2003 (R million)	%	% growth per annum	
					Current prices	Constant prices
Agriculture	178	1.7	309	1.5	8.7	0.6
Mining	47	0.5	36	0.2	-2.8	-13.0
Manufacturing	1 092	39.5	7 874	38.7	10.0	3.1
Electricity/Gas/Water	472	4.6	850	4.1	8.8	3.0
Construction	375	3.6	609	3.0	7.2	2.5
Trade	1 250	12.1	2 288	11.1	9.0	2.6
Transport	787	7.6	1 855	9.0	13.0	8.6
Finance	1 315	12.7	3 171	15.4	13.4	4.4
Services & other	1 830	17.7	3 045	14.8	7.5	0.5
Tourism & entertainment	-	-	447	2.2	-	-
Total	**10 347**	**100.0**	**20 594**	**100.0**	**10.3**	**3.2**

Source: Slabbert (2005:48)

4.5.1.2 Secondary sector

In the Vaal region, secondary economic activities are comprised of manufacturing activities, electricity/gas/water and construction services.

4.5.1.2.1 Manufacturing

The dominant economic activity within the Vaal is manufacturing, contributing 39.5% to the GGP in 1996 and 38.7% in 2003. As indicated in Table 4.6, the production of metal, metal products (mainly iron and steel industries) and machinery are the major manufacturing activities of the Vaal region with a contribution of 78.0% to manufacturing's overall contribution to the GGP of the Vaal. Clearly, the economic dependence on these industries is significant.

4.5.1.2.2 Construction and Electricity/Gas/Water

As indicated in Table 4.5, the GGP contribution of construction activities declined from 3.6% in 1996 to 3.0% in 2003 despite a 2.5% growth in the industry. Electricity/gas/water services contributed 4.1% in 2003 with an average growth rate of 3.0%.

4.5.1.3 Tertiary sector

Tertiary activities consist of trade; transport; financing; services; and tourism and entertainment. This sector contributed 52.5% to the GGP of the Vaal in 2003. A relative growth rate of 8.6% and 4.4% was recorded by the transport and financing sectors respectively. These sectors experienced the highest percentage growth rate of all economic activities in the Vaal during the period. The average annual nominal growth for the whole Vaal economy was 3.2% during 2003. For tourism & entertainment, only the 2003 figure was estimated as this sector contributes a relatively small amount to the GGP of the Vaal.

Table 4.6: Manufacturing activities in the Vaal (2003)

Activity	Percentage share in manufacturing's GGP contribution
Food, drink, tobacco	4.3
Textiles, clothing, footwear and wood products	2.0
Fuel, petroleum and other products	3.2
Other non-metallic mineral products	4.3
Metal, metal products and machinery	78.0
Electrical machinery & electronic appliances	2.7
Transport equipment	1.2
Furniture	4.3
Total	**100.0**

Source: Slabbert (2005:50)

4.5.2 Sectoral linkages and multipliers of the Vaal economy

As discussed in Chapter 3, many economic activities show a clear geographical concentration of economic activity. As a result, agglomeration of business and urban centres occurs (Krugman, 1991:23). Economic development in certain localities may initiate centripetal forces (forces that promote spatial concentration), which would attract capital and labour from weaker regions (Fujita *et al.*, 1999:9).

Krugman (1998:11) states that a large local market creates these backward and forward linkages. By supporting locally produced intermediate goods, giving a comparative advantage to those goods, large local markets can bring about economies of scale in their production, while lowering the cost of production for downstream producers. According to Amiti (1998:46) and Slabbert and Slabbert (2002a:79) this means that upstream or lead firms are attracted to locations where there is a high concentration of downstream or ancillary firms.

The degree of linkages has a direct impact on multiplier effects and provides an indication of agglomeration advantages that clearly indicate potential constraints to growth.

Downstream firms experience cost gains by obtaining intermediate goods at a lower cost due to the shortened production chain, increased competition between suppliers and a larger variety of possible inputs to the production process. Upstream firms make use of these backward and forward linkages to produce goods and services that create an even larger network of forward and backward linkages between customers and suppliers (Krugman, 1998:13). Tervo (1999:755) states that both forward and backward linkages make it more attractive for firms to set up in the location or to re-locate to that region. Monfort and Nicolini (2000:289) state that the concentration of economic activity may create beneficial externalities.

According to Mohr and Fourie (2008:420) and Slabbert and Slabbert (2002a:80), multiplier analysis assesses the effect of exogenous variables on an economy, particularly with regard to investments. An increase in the final demand for goods and services leads to an increase in production, followed by an immediate increase in turnover, household income and employment opportunities. The higher the multiplier, the greater the impact on the economy will be. The effect of such changes is measured in terms of:

- Output gain or relative GGP contribution to the;
- Increased income earned by households due to increased final output; and
- The number of expected employment opportunities created.

Output multipliers are expressed in terms of the total change in the study area's economic output as a result of an increase in output of a specific sector while household income multipliers are expressed in terms of the total change in household income as a result of a change in a sector's labour expenditure. Employment multipliers are expressed in terms of the total number of employment opportunities that would result from demand changes in a specific sector (Slabbert, 2005:77).

4.5.2.1 Primary sector

4.5.2.1.1 Agriculture

The relative contribution of this sector to the GGP of Gauteng declined from 1.7% to 1.5% during 2003 (Slabbert & Slabbert, 2002a:82; Slabbert, 2005:78). The backward linkages of the agricultural sector show weak local market connections which means the sector depends on only 9.6% of locally sourced inputs. Agricultural sector dependence on local inputs would increase to 16.4% should labour be included. A total of 73.8% of the agricultural sectors inputs are imported from other provinces within South Africa or from the rest of the world.

With regard to the forward linkages, 60.2% of the agricultural output is sold to local economic sectors. Local manufacturing enterprises take up 97.9% of intermediate agricultural output. Besides purchases made by the manufacturing enterprises, agricultural production is used largely for domestic private consumption, which accounts for 52.17% of final demand, and exportation to international markets, which accounts for 44.6% of final demand (Slabbert, 2005:78).

Initiatives to expand the agricultural sector would not be effective in boosting income and employment opportunities within the Vaal region. An increase of R1 000 000 in the agricultural sector's final demand would increase (Slabbert & Slabbert, 2002a:83):

- Income earned by households by R111 000;
- The contribution to the GGP by R240 000;
- Imports by R861 000; and
- Job opportunities by an additional 8 positions throughout the Vaal economy.

4.5.2.1.2 Mining and quarrying

The mining sector's relative GGP contribution to that of the Vaal economy declined from 0.5% in 1996 to 0.2% in 2003 (Slabbert, 2005:79). The backward linkages of the mining sector are weak with 22.3% of all inputs provided by the local economy. According to Slabbert and Slabbert (2002a:84), mining

activities developed strong forward linkages with manufacturing activities in the Vaal. Most of the output is taken up by local economic sectors. The most important buyer of mining products remains the manufacturing sector with 95.2% of the total output. An increase in the final demand of the mining sector of R1 000 000 per annum would have the following effects:

- An increase in household income of approximately R108 000 throughout the economy;
- The creation of 5 potential employment opportunities within the mining sector itself;
- Increased GGP contribution amounting to R268 000; and
- An outflow of capital through imports amounting to R831 000 (Slabbert, 2005:80).

A major constraint within the mining industry is the high cost of capital with regard to the development of new mines and mining products. Very few organisations can raise the necessary capital. As a result, there should be little to no expectations for possible growth benefits being derived from this sector (Slabbert & Slabbert, 2002a:85).

4.5.2.2 Secondary sector

The secondary sector of the economy consists of three sub-sectors, namely, manufacturing, electricity/gas/water and construction.

4.5.2.2.1 Manufacturing

Given the historical sectoral development of the area, manufacturing is the economic activity that is responsible for the most employment opportunities within the Vaal region. Based on Census 2001 data, the formal employment profile of manufacturing in 2001 was 34 122 or 22.2% of all available employment opportunities in the Vaal (Stats SA, 2001). In this sector, the basic metals and metal products manufacturing activities are responsible for almost 66.4% of all the manufacturing employment opportunities (Slabbert, 2005:50). A loss of employment opportunities in the manufacturing sector will also lead to the loss of employment opportunities in other sectors of the economy.

especially those activities which form part of the downstream network for that particular product.

Due to the importance of the manufacturing sector to the economy of the Vaal, its backward linkages are significant. Of the total inputs 49.1% originates in the Vaal. This implies that a decrease in manufacturing activities would lead to a significant decrease in the demand for the output of other economic activities in the Vaal (Slabbert, 2005:81). These economic activities are for example:

- Agriculture;
- Mining;
- Services;
- Labour; and
- Other manufacturing opportunities.

According to Fujita (2003:34) the development of inter-industrial linkages, especially with the above-mentioned activities, has led to agglomeration advantages and high turnover multipliers in the industry.

Slabbert (2005:82) states that there are, however, relatively weaker forward linkages in region. The industry sells 33.5% of its total output to other economic sectors within the region. Buying sectors are mostly other manufacturing industries, construction, trade and services sectors with 82.4%, 5.8%, 4.0% and 4.2% of total intermediate output respectively. There is, however, 53.9% of total output going outside the region as exports.

The high (72.3% of the total intermediate inputs) inter-industrial linkages experienced by the manufacturing sector are regarded as an opportunity for further diversification in this sector. This implies a high potential for the development of new industrial sectors linked to existing industries, which are important markets for suppliers of intermediate products (Slabbert, 2005:82).

According to Slabbert and Slabbert (2002a:87), it is estimated that an increase in final demand of an industrial enterprise in the study area of R1 000 000 per annum, would have the following effects:

- Output will increase by R396 000 per annum;
- Household income would increase by R229 000 per annum on average;
- Imports would also increase by R813 000; and
- 5.1 employment opportunities would be created in all sectors of the Vaal economy.

4.5.2.2.2 Electricity/gas/water

The contribution of electricity/gas/water activities to the GGP of the Vaal decreased from 4.6% in 1996 to 4.1% in 2003. As illustrated in Table 4.5, the annual growth of this sector was recorded at 3.0% from 1996 to 2003. A decrease in the consumption of water and electricity in the Vaal will not only lead to a decrease in employment opportunities to provide and maintain these services, but will also lead to a decrease in employment opportunities in all sectors of the economy. This is because of the other sector's linkages to electricity and water provision (Slabbert, 2005:83).

According to Slabbert (2005:82) backward linkages are weak with only 36.7% of inputs (labour included) purchased from within the Vaal. Contrary to backward linkages, forward linkages show that 75.7% of output is consumed within the region with 45.3% of output being used by the manufacturing sector.

An increase in the total consumption of water and electricity of R1 000 000 per annum can have the following effects (Slabbert & Slabbert, 2002a:88):

- An increase of R785 000 in the GGP;
- An estimated 6.2 employment opportunities would be created; and
- Household income earned throughout the economy would increase by R404 000.

4.5.2.2.3 Construction

The construction sector is responsible for 5.1% of the total employment opportunities in the Vaal area. The relative GGP contribution of construction activities to the Vaal area decreased from 3.6% in 1996 to 3.0% in 2003. The sector's contribution to the GGP grew with 2.5% per annum (Slabbert, 2005:83).

The construction sector's potential growth and role in the economy is dependent on the performance of other economic activities and outcomes, such as (Slabbert & Slabbert, 2002a:89):

- Overall economic growth and stability;
- Demand for capital investment in property and urban development, including transportation infrastructure;
- Household investment in housing; and
- The availability of capital at affordable interest rates.

This sector has strong backward linkages as 49.2% of its total inputs (labour included) come from the local economy. The forward linkages are much weaker with only 11.3% of the total output being consumed by other local economic sectors. Of the 88.7% of output that constitutes the final demand for construction activities, 76.6% goes to fixed investment whereas 23.4% is contracted outside the study area (Slabbert & Slabbert, 2002a:90).

According to Slabbert (2005:84), construction activities have strong household income and employment multiplier-effects. An increase in final demand of about R1 000 000 can generate an additional household income of about R270 000; an increase in GGP of construction activities of about R434 000 and can generate about 7.2 jobs throughout the Vaal economy. The construction sector has limited potential to form the basis for sustained growth in the Vaal as it is dependent on productive investment which is influenced by factors exogenous to the building industry.

4.5.2.3 Tertiary sector

4.5.2.3.1 Trade

The trade sector's relative contribution towards the aggregate GGP decreased from 12.1% in 1996 to 11.1% in 2003 as seen in Table 4.5. The sector's contribution to the GGP of the Vaal grew with 2.6% per annum. According to Slabbert (2005:48) the sector is responsible for 25 717 employment opportunities or 16.7% of total employment in the Vaal in 2003. According to VAALMET (1994:50) the trade sector has a relatively well-developed trade

structure and finds itself in the midst of growing local consumer markets, but it is constrained by the comparatively low affordability levels of communities that are further enhanced by high unemployment.

This sector has developed strong linkages, both forward and backward, with other sectors in the Vaal economy. This implies that the sector is dependent on the local economy for 83.2% of its inputs (labour included) and provides 88.7% of its output to other sectors of the economy (households included) (Slabbert, 2005:85). An increase in the output of trade activities will increase the input requirements of the sectors with which they are 'backwardly' linked. These sectors are for example (Slabbert, 2005:85):

- Manufacturing (20.3%);
- Financing and business services (7.0%);
- Households (31.5%); and
- Other trade activities (8.0%).

Slabbert and Slabbert (2002a:92) state that an injection of R1 000 000 in the final demand of trade business would cause the following effects:

- An increase of R867 000 in the sector's GGP;
- Household income increasing by R551 000;
- An additional 14.3 employment opportunities; and
- About R637 000 flowing outside the Vaal for imports of food, clothing, furniture, motor vehicles and tools.

4.5.2.3.2 Transport

The transport sector's GGP contribution increased from 7.6% in 1996 to 9.0% in 2003, with a growth in GGP contribution of 8.6% per annum. It was responsible for 7 277 employment opportunities (4.7%) in the Vaal economy during 2003 (Slabbert, 2005:86). The transport sector has relatively weak backward linkages (15.4%). These linkages are mainly with households for labour (12.5%) and manufacturing (1.5%). Forward linkages are also weak with only 10.5% of the total output taken up by households (private transport) and 49.3% is exported.

An injection of R1 000 000 in the final demand for transport services would cause the following effects (Slabbert, 2005:87):

- A householder income multiplier effect of R167 000;
- A GGP multiplier effect of R293 000; and
- An additional 2.8 job opportunities.

4.5.2.3.3 Financing

The financing sector consists of financial intermediation, insurance, real estate and business services such as computer and related activities, legal, accounting, auditing activities, architectural, advertising, engineering and related technical activities. The financing sectors' employment capacity in 2003 was 13 228 jobs and its relative GGP contribution increased from 12.7% in 1996 to 15.4% in 2003 (Slabbert, 2005:87). This sector grew over the last decade at an annual growth rate of 4.4%. Most of these services are located within the central business areas of the EMA, MLM and MMA (Slabbert, 2005:87).

This sector has comparatively strong inter-industrial forward linkages with especially the manufacturing sector (45.7% of total intermediate output), trade sector (19.3%) and services sector (16.3%) in the Vaal, while 52.8% of its total output is exported. Its backward linkages (16.9% of its total input comes from the local economy – labour included) are comparatively small which implies that the provision of inputs in this sector is only to a limited extent dependent on the other sectors. Slabbert and Slabbert (2002a:94) state that the employment and household income multipliers are very low compared with sectors such as manufacturing, trade and services.

4.5.2.3.4 Services

This sector includes public and personal services, which in turn include regional and local authorities, education and health services (VAALMET, 1994:54). A decrease in the contribution of the services sector towards the aggregate GGP of the Vaal from about 17.7% in 1996 to 14.8% in 2003 was experienced. An annual growth rate of 0.5% was achieved (Slabbert, 2005:88).

This sector has strong linkages with almost all other sectors of the Vaal economy, of which manufacturing is the most prominent. About 67.9% of inputs required by this sector (labour included) are provided by local economic activities, whilst more than 91% of this sector's output is taken up by the local economy of the Vaal. An increase in final demand of this sector of R1 000 000 can generate the following effects:

- An additional household income of R428 000;
- An increase in the sector's GGP of about R866 000 per annum; and
- The creation of 20 additional employment opportunities throughout the economy.

4.5.2.3.5 Tourism and entertainment

The growth potential of the tourism and entertainment sector in the Vaal is due to the extensive tourism destinations that can be found in the region, such as the Vaal Dam, the Vaal Meander, the Emerald Resort and Casino, etc. It is estimated that the tourism and entertainment sector employed 2 176 people and contributed 2.2% to the GGP of the Vaal (Slabbert, 2005:88).

Labour expenses comprise almost 40% of tourism and entertainment inputs, indicating that a growth in this sector will have a considerable effect on employment in the Vaal. This sector also has strong backward linkages with the manufacturing (37.3% of its total intermediate inputs) and services sector (29.3%). Local households receive 46.7% of the total outputs of this sector.

The sector shows strong multiplier effects. An increase in the final demand of R1 000 000 will cause the following effects:

- An increase of R640 000 in household income;
- The sector's GGP contribution would increase by R942 000;
- The creation of 14 new job opportunities throughout the economy.

4.5.2.4 Summary of linkages and multipliers

4.5.2.4.1 Summary of linkages

Table 4.7 and 4.8 provide a brief summary of the forward and backward linkages between the various economic sectors of the Vaal region.

Table 4.7: Backward linkages present within the Vaal economy

Sector	Backward linkage (labour included)	Backward linkage (labour excluded)	Labour/Total input	Import/Total input
Agriculture	16.4	9.6	6.8	73.8
Mining	22.3	19.9	2.4	69.3
Manufacturing	49.1	38.1	11.0	43.7
Electricity/gas & water	36.7	6.3	30.4	33.0
Construction	49.2	36.7	12.6	45.9
Trade	83.2	51.7	31.5	2.9
Transport	15.4	2.9	12.5	75.2
Financing	16.8	6.4	10.5	68.7
Services	67.9	46.4	21.4	6.6
Tourism	87.2	48.4	38.8	3.0

Source: Slabbert (2005:90)

An increase in the demand for tourist and entertainment services would mean a higher increase in demand for the products of the economic sectors supplying inputs to the tourism and entertainment sector. Although the trade, services and construction sectors also have high backward linkages, these sectors should not be considered as key sectors to stimulate the economy as their growth is mainly dependent on the growth of the local economy. If the economy of the Vaal grows as the result of an increase of money flowing into the region, then there will automatically be an increased demand for services, trade and construction. As the main purpose of these sectors is to 'serve' the local

economy, and as they have little potential to become more export-orientated, these sectors cannot be used to stimulate the local economy (Slabbert, 2005:91).

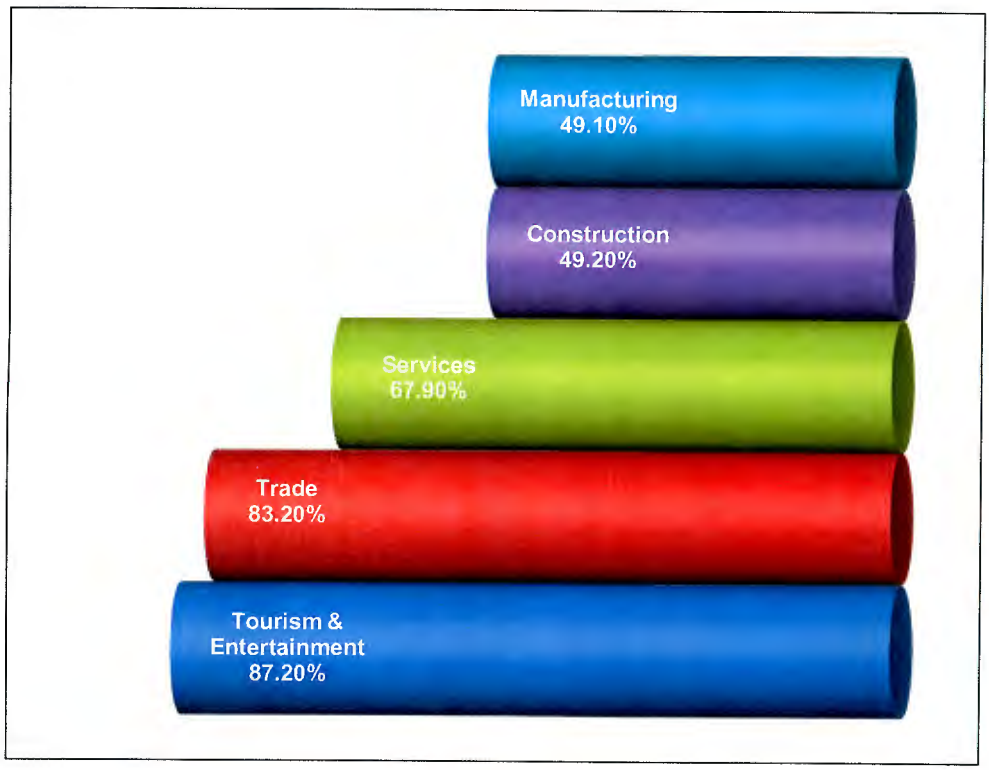
Table 4.8: Forward linkages present within the Vaal economy

Sector	Forward linkage	Export/Total input
Agriculture	60.2	17.7
Mining	75.1	24.9
Manufacturing	33.5	53.9
Electricity/gas & water	58.6	24.3
Construction	11.3	20.7
Trade	23.3	10.0
Transport	10.5	49.3
Financing	16.5	52.8
Services	62.0	9.0
Tourism	42.6	9.3

Source: Slabbert (2005:90)

Although the manufacturing sector does not have such high backward linkages as the tourism & entertainment, trade, services and construction sectors, it has the potential to concentrate more on export and in this way to increase its final demand, which in turn will lead to a growth of the local economy. It should also be noted that manufacturing imports 43.7% of its total input. Attention should be given to the possibility of import-substitution, in order to reduce the outflow of money out of the region (Slabbert, 2005:91). Figure 4.9 and Figure 4.9 illustrates the important backward and forward linkages that are present within the Vaal region.

Figure 4.9: Backward linkages in the Vaal



Source: Slabbert (2005:91)

Figure 4.10: Forward linkages in the Vaal

Source: Slabbert (2005:90)

4.5.2.4.2 Summary of multipliers

Table 4.9 provides a brief overview of the sectoral multipliers of the Vaal economy. It states the effect that a R1 change in the final demand of a specific sector has on the economy of the Vaal.

The tourism and entertainment, trade and services sectors have the highest employment, remuneration and GGP-income multipliers. The trade and services sectors' growth is dependent on the overall growth of the Vaal economy. However, the tourism and entertainment sector has a great potential for attracting individuals and therefore, money from outside the Vaal region (Slabbert, 2005:94). The manufacturing sector has moderate multipliers but because it is the largest economic sector in the Vaal, a small percentage

increase in the demand for the products of this sector will have a considerable effect on the economy of the Vaal as a whole.

Table 4.9: Sectoral multipliers of the Vaal economy

Economic Sector	Turnover	Income (GGP)	Imports	Labour (per R million)	Remuneration
Agriculture	1.217	0.240	0.861	7.925	0.111
Mining	1.157	0.268	0.831	4.817	0.108
Manufacturing	4.772	0.396	0.813	5.120	0.2259
Electricity/gas & water	1.325	0.785	0.586	6.191	0.404
Construction	1.198	0.434	0.813	7.127	0.270
Trade	2.073	0.867	0.637	14.296	0.551
Transport	2.147	0.293	0.860	2.818	0.167
Financing	2.072	0.331	0.806	4.206	0.150
Services	2.500	0.866	0.527	20.110	0.428
Tourism	1.202	0.942	0.645	14.033	0.640

Source: Nel (2001)

4.6 SUMMARY AND CONCLUSIONS

The Vaal region is comprised of the Emfuleni Municipal Area (EMA), The Metsimaholo Municipal Area (MMA) and the Midvaal Local Municipality's (MLM). These regions cannot be separated by political boundaries as people living in these regions are shopping, working or living in one or the other municipalities. For this reason, unemployment, poverty and developmental initiatives instituted in one locality will have a definite effect on the surrounding localities. For these initiatives to have an effect, the population must be analysed in order to determine the basic developmental needs of the community at large.

Based on Census 2001 data, it is clear that Emfuleni has the largest concentration of the Vaal population at 78%. Of the total population, 81.7% is

African and 16.5% is White with Asian (0.8%) and Coloured (1.0%) groups making up the remainder of the population. There is a relatively even gender spread between all three municipalities with the bias leaning toward the male population. Of the three municipalities, Midvaal has the highest percentage of males (51.2%), while Emfuleni and Metsimaholo hold the highest concentration of females (49.0%).

A large percentage of the Vaal population is spread over the job-seeking ages (older than 19 years). With 11.0% of the population within this age group, there is considerable strain on the local job market. At 53.5% unemployment, it is clear that the Vaal cannot accommodate all school-leavers. Of the Vaal population, 16.4% only have a Grade 12 certificate, while less than 5% have some form of tertiary education while 9.49% have no form of formal education at all. This significantly impacts the availability of skilled labour in the Vaal region.

Of the Vaal population, 8.93% earn between R401 and R800 per month. Less than 2% of the population earn amounts higher than R12 000 per month. This significantly impacts the level of poverty within the region. With the headcount of the Vaal region at 0.516 for 2003, 51.6% of all households within the Vaal earn an income which is below the respective poverty lines of the region. A higher percentage of females are unemployed (50%) or informally employed (66%) than males within the Vaal.

The sectoral composition of the Vaal region has determined the pattern of employment within the area. Due to the heavy reliance on the steel and petrochemical industries, there is little call for skills outside the realm of the manufacturing sector, which constitutes 22.2% of all employment within the region. Despite this specialisation, there is still a 54% unemployment rate within the Vaal that cannot be compensated by the 16.7% and 18.9% employment in the trade and services sector respectively.

The Vaal is heavily reliant on the secondary economic sector, particularly the production of metal and metal products, which contributes 78.0% to the overall GGP contribution of manufacturing services. The tertiary sector contributed

52.5% to the GGP of the Vaal, with transport and financing recording the highest levels of growth at 8.6% and 4.4% respectively. The average growth rate of the Vaal economy was recorded at 3.2% during 2003, which is still insufficient to decrease unemployment and poverty within the region.

Due to its heavy reliance on a particular industry, the Vaal region shows a definite concentration of economic activity that creates clear backward and forward linkages between the various sectors of the Vaal economy. Historically, upstream or lead firms would locate in areas where there is a high possibility of downstream firm relocation, which would in turn, attract even more ancillary activities to the region. In order to determine the greatest possible economic impact that a development initiative would have on a particular region, the sectoral linkages and multipliers must be analysed. The degree of linkages has a direct impact on the multiplier effects and provides clear information regarding existing developmental constraints. The higher the multiplier, the greater the impact on the economy will be. This impact is measured in terms of output gains, income and employment generation.

The linkages and multipliers of the primary sector do not highlight very promising avenues for development. As agriculture has relatively weak backward linkages, the multiplier effect of a R1 000 000 increase in demand would not create a significant change in the overall economy of the Vaal. Only 8 employment opportunities and an increased GGP contribution of R240 000 would result. The multiplier effect of an investment in mining and quarrying would result in a GGP contribution of R268 000 and 5 employment opportunities.

The secondary sector of the Vaal economy provides greater avenues for development as the backward linkages of all three subsectors (manufacturing, electricity/gas/water and construction) are much stronger than that of the primary sector. The mining sector provides the highest inter-industrial linkages (72.3% of total inputs) and provides a clear path for further growth and development. GGP contribution of the mining sector would increase by R396 000 per annum as a result of a R1 000 000 increase in demand. Construction activities have the second lowest (when compared to transport)

forward linkages at 11.3%, however, an increase of R434 000 in GGP can be attributed to construction services as a result of a R1 000 000 increase in demand.

The tertiary sector experiences some of largest changes to income, output and employment as a result of a R1 000 000 increase in demand. Trade has the highest forward and backward linkages at 83.2% and 88.7% respectively. Trade, services and tourism could create more than 14 new job opportunities as a result and each would be able to contribute over R865 000 to the Vaal GGP.

There is a definite need to take advantage of the excess capacity illustrated by the multiplier analysis of the various sectors in the Vaal. Dominant economic activities in the region should be the focus of developmental initiatives in order to overcome the high poverty and unemployment rates found within the locality. Secondary and tertiary activities, particularly manufacturing, trade and tourism require the greatest focus. The VLH would be able to combine both the services and manufacturing sectors into one specific industrial cluster, thereby ensuring the multiplier gains of both industries are experienced in the Vaal.