

***THE ENTERPRISE
ARCHITECTURE OF FREE STATE
TOWNS***

**FINAL REPORT
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ACRONYMS USED

BDI – Business Diversity Index

CDE – Centre for Development and Enterprise

CDS – Centre for Development Support, University of the Free State

COGTA - Department of Cooperative Government and Traditional Affairs

CPT – Central Place Theory

DETEA - Department of Economic Development, Tourism and Environmental Affairs

DM – District Municipality

DTK – Daan Toerien Konsultante

Expanded Public Works Programme - EPWP

FICA - Flanders International Cooperation Agency

GDP – Gross Domestic Product

GVA – Gross Value Added

FS – Free State

IDP - Integrated Development Plan

ILO – International Labour Organization

LED - Local Economic Development

LM – Local Municipality

NDP - National Development Plan

SME – Small and Medium Enterprises

1. INTRODUCTION

Funding provided by the Flanders International Cooperation Agency (FICA) with assistance of the International Labour Organization and the South African Treasury Department enabled the establishment in 2013 of a Small and Medium Enterprises (SME) Observatory at the University of the Free State (UFS), Bloemfontein, South Africa. A part of the project was a sub-contract between the UFS and Daan Toerien Konsultante (DTK) to undertake a study of the 2012/13 enterprise structures (here called the enterprise architectures) of all of the towns in the Free State (FS) (but with the exception of Bloemfontein, a metropolitan area).

This report draws the results together and serves as the final report for the project.

From the onset it must be realized that the FS is now the only and leading province in South Africa with access to a body of research results about the formal enterprises in a single recent year of its settlements, small and large. This provides a unique opportunity to gain deeper insight into the economic and social consequences of enterprise development in FS towns.

The logic of this report is as follows. It starts with a short literature review. Thereafter the methodologies used are discussed. This is followed by the results and discussion. Finally a final discussion and conclusions follow.

2. LITERATURE REVIEW

2.1 The role of small towns

The role of small towns (also called lower-order urban centres) in regional development constitutes an important subject of debate globally (Hinderink and Titus, 2002) and this is also true for South Africa (Donaldson and Marais, 2012). The central place theory (CPT) of Christaller, cited in Van der Merwe and Nel (1975), guided thinking about South African towns in earlier decades. For instance, Van der Merwe and Nel (1975: 101) stated that the functions, localities, spacing, hierarchies and influence zones of urban settlements are indivisibly connected in an integrated system. The functions and location of towns, it was argued, influence one another in ways that result in a specific spacing of towns, which in turn is dependent on towns' hierarchical positions in the urban hierarchy. Davies (1967) stated that CPT was, at that time, unquestionably one of the most active research fields in theoretical and applied empirical urban geography. He postulated an urban hierarchy for South Africa, which Davies and Cook (1968) reappraised for 601 urban settlements, all of which had a post office run by postal officials. Fifty five central functions, each with a weighted score were used to examine the hierarchy of the settlements.

The critical role that small urban settlements play within national urban systems and their associated developmental challenges remain in general terms a poorly researched area (Bell and Jyane, 2006). While selective small town economic and demographic growth or decline is a recognised phenomenon in developed countries (Daniels, 1989; Tonts et al., 2012), according to Nel (2005) population loss is seldom taking place across the board in developing countries. Questions are raised about events in small town economies in the developing world, not just in terms of their key economic drivers but more specifically in terms of their basic business enterprise structures.

Towards the end of the 20th century it was estimated that there were almost 500 small towns of fewer than 50 000 persons in South Africa. They accommodated about one tenth of the country's population; yet little was known, or said, in national debates in the country about the future of these places (CDE, 1996). Just over a decade later this situation has changed markedly. The South African government's Department of Cooperative Government and Traditional Affairs (COGTA) has recognised that the continued migration from rural to urban areas was fuelled not only by the pull of the cities and the loss of traditional rural and small town economic activities and centralization of functions in larger centres, but also by small towns and rural areas losing their attractiveness as social and economic settings. As a result a different approach to economic development in rural municipalities is required. Therefore, a 'Small Towns Regeneration project' was in response initiated by COGTA (Wessels, 2010). The project team was tasked with the formulation of a comprehensive, coherent and practically implementable Small Town Regeneration Strategy for South Africa. The strategy was expected to add practical value to the initiatives and interventions already undertaken by various role-players and stakeholders in their attempts to regenerate and rejuvenate the economic development of small towns in order to meet the South African Government's strategic goals of economic growth and poverty reduction (Wessels 2010, National Planning Commission 2012).

The National Development Plan (NDP) (National Planning Commission 2012) states that many small towns and rural areas, as elsewhere in the world [e.g. Australia, Collits (2000)], have stagnated or declined as agriculture and mining have gone through structural changes, while others have developed dramatically as other and new economic activities have increased. A renewed emphasis is placed on the developmental role of small towns in rural areas as job creation centres. Plans for rural towns should be tailor-made according to the varying opportunities in each area and should be based on their economic potential.

The structural decline of the Karoo and its towns elicited government attention in the 1960s and 1970s. A series of studies followed (e.g. Banach 1969; Blumenfeld 1971; Cook 1971; Smit 1973; Le Clus 1974, Vrey 1974). Causes identified for the decline were: (i) a reduction in the

number of whites in many towns as a result of outmigration and low birth rates (Le Clus 1974; Vrey 1974), (ii) a reduction of people living on farms (Vrey 1974) and an increase in the non-white populations of towns as a result of the outmigration from farms (Banach 1969), (iii) a reduction in wool prices in the 1950s (Vrey 1974), (iv) a paucity of jobs in Karoo towns (Banach 1969), (v) a reduction in spending power following upon the improvement of roads enabling better access to larger towns (Blumenfield 1971), and (vi) the import of products and services from elsewhere (Le Clus 1974).

In these studies the link between towns and their rural hinterlands, an issue stressed strongly in the CPT, formed an essential part of the research focus. The general applicability of CPT was, however, later questioned by Fujita et al. (2001). Nel and Hill (2008) also suggested that this link was no longer that important for a group of Eastern Cape Karoo towns. Hoogendoorn and Nel (2012) focused on the development dynamics of rural South Africa's 'post-productivist' landscapes, which include new roles for towns such as tourism and retirement centres in a post-industrial era. However, a significant interest still presently remains in town-agricultural hinterland links, but a number of other issues, including small town economic development, have come to fore (Donaldson and Marais 2010).

Despite gloomy forecasts in the 1970s (e.g. Vrey 1974) and the current economically compromised position of some of towns, the approximately 600 towns in South Africa (approximately 80 in the FS) remain key features of the urban hierarchy and perform a range of core functions (Hoogendoorn and Nel 2012). Yet, there are still a plethora of problems that confront small South African towns: (i) spatial fragmentation and racial and social division, (ii) low density sprawl and poor land-use management requiring high infrastructure investments, (iii) inadequate and after the fact planning for urban growth (more informal settlement upgrading than pro-active new developments), (iv) poor municipal management and bad service delivery; (v) weak land and housing markets, (vi) environmental degradation (often linked to poor service delivery), (vii) inadequate public transport and a predominance of car-based planning, (viii) vexed relationships between administrative and political levels and centralisation of powers around mayors, (ix) fragile local economies with high levels of unemployment and low levels of urban skills resulting in often competing parallel formal and informal economies with few integrating approaches, (x) a high level of "leakage" of purchasing power to larger centres, and therefore, weak local economic multipliers, (xi) and on-going out-migration of skilled, talented and innovative people (Nel 2005; Wessel, 2010; Hoogendoorn and Nel 2012). These problems indicate that formidable challenges confront local municipalities (LMs) and local economic development (LED) planners and implementers.

Many small towns have, however, rearticulated their role relative to the national and even the global economy since the 1970s, acquiring a range of new functions, and at times radically altered economic activities (Hoogedoorn and Nel 2012). There appears to be more up-front clarity about the problems at a small town level and South Africa has seen a dramatic rise in scholarship of small town geographies since 2000, with an eclectic mix of perspectives and a large number of empirical case studies (e.g. Nel et al. 2011; Donaldson and Marais 2012). In addition, development plans, e.g. aspects of the NDP (National Planning Commission 2012) focuses inter-alia on small towns. There can be little doubt that appropriate policy responses toward small towns are crucial, but a one-size-fits-all policy for urban areas could be problematic (Donaldson and Marai, 2012). There clearly is a need to understand and predict for South African towns their unique and often place-specific growth potential and associated enterprise (business) dynamics, i.e. the enterprise structures (architectures) and how these change over time. Predictive power is needed to assist in identifying and guiding the potential for small town regeneration (Wessels 2010; National Planning Commission 2012). This is true for South Africa as a whole but also specifically for the FS.

2.2 Assessing the growth potential of towns

Two broadly differing approaches have been developed to provide predictive insight into the economic growth potential of towns: (i) a forward looking approach, and, (ii) a backward looking approach. For example, confronted with funding limitations, Western Cape politicians required knowledge about the growth potential of towns and in response forward looking estimates for towns in the Western Cape, South Africa were carried out in 2004 (Van der Merwe et al. 2004). They measured more than 80 different characteristics of towns and, based on an integration of these, proposed a rank order of Western Cape towns. Recently Donaldson et al. (2012a) re-examined the growth potential of Western Cape towns and again drew on the integration of a number of characteristics. Donaldson et al. (2012b) reflected on generic interventions to stimulate economic growth. The basic premise of these studies is that it is possible to use statistical measures of the socio-economic status quo in a town to develop an idea of the potential for future economic growth of Western Cape towns.

Collier (2007: xii) studied the 'poor billion' of the world and remarked: 'There is a different way of getting to the answers, and it is statistical.' The backward looking approach is based on statistical assessments of previous trends (e.g. Toerien and Seaman 2010). Its basic premises are that the enterprises of a town at a particular moment in time are a reflection of a potential (or lack thereof) that existed in the past and that the enterprise dynamics also provides an indication of future prospects. It is noteworthy that Davies and Cook (1968) remarked in passing that: "it is important to note that a hierarchy practically identical in terms of the order

of places (94% absolute correspondence) was derived by simply relating the total number of functional units and the total population of each urban place graphically. This finding is interesting and perhaps important since it suggests that a complex system of scoring is unnecessary in hierarchical determinations when all central functions are considered." Unfortunately this suggestion was apparently not pursued further.

Schroeder (1991: xiii) stated: "The unifying concept underlying fractals, chaos, and power laws is self-similarity ... or invariance against changes in scale or size" and further on: "Symmetry itself is one of the most fundamental and fruitful concepts of human thought." To develop a deeper understanding of the economic structure and potential of towns, it can be argued that a key consideration is for one to gain a deeper understanding of the enterprise characteristics of towns, to identify areas of under and over-supply in firm capacity and whether there is scope for expansion in particular sub-sectors.

2.3 South African regional geography in the 2000s

Two broad strands of enquiry related to small towns in South Africa have dominated recent writings (Hoogedoorn and Nel 2012). The first focused on small town growth and development potential (e.g. Van der Merwe et al. 2004; Marais 2006; Donaldson et al. 2012a), particularly LED (e.g. Nel 2005; Nel and Rogerson 2007; Xuza 2007; Rogerson 2008; Halseth and Meiklejohn 2009; Rogerson 2011). The second strand focuses on various new rural and small town activities relative to debates on post-productivist landscapes (Donaldson and Marais 2012; Hoogedoorn and Nel 2012). Post-productive theory argues that as rural economies lose their traditional agricultural mainstays, there is a search for alternate economic activities, including consumptive uses such as tourism (Hoogedoorn and Nel 2012) as evidenced by a number of recent tourism-related studies (e.g. Ferreira 2007; Rogerson 2007; Halseth and Meiklejohn 2009).

South Africa has seen a dramatic rise in scholarship on small town geographies since 2000 and a large number of empirical case studies form part of this (Donaldson and Marais 2012). For instance studies of the towns of Alicedale (Gibb and Nel 2007), Clarens (CDS 2010), Fouriesburg (Halseth and Meiklejohn 2009), Graaff-Reinet (Spocter 2012), New Bethesda (Ingle 2012), Philippolis (Van Niekerk and Marais 2008), Prince Albert (Toerien 2012c), Richmond (Donaldson and Vermeulen (2012), Victoria West (Van Rooy and Marais 2012), and Beaufort West (Van Rooyen 2012) have been undertaken.

An additional strand of investigation originated from ideas about the similarities between economic wealth and biological wealth (Beinhocker 2006), who posited that these characteristics are thermodynamically similar phenomena. Both are systems of low entropy,

patterns of order that evolved over time under constraint of fitness functions (Beinhocker 2006). Like each living organism, each individual enterprise is also in a constant competition for survival and only the fittest survive. It follows that enterprise survivors at any point in time determine the enterprise structures of towns (i.e. patterns of order sensu Beinhocker 2006), which reflect the driving forces and other factors impacting upon them (Toerien and Seaman 2010).

The investigations of Toerien and Seaman have followed two broad themes: Firstly they explored the interface between natural ecology and regional geography. Toerien and Seaman (2010) concluded on the basis of norms set for natural ecosystems that towns are ‘enterprise ecosystems’ and using this approach Toerien and Seaman (2011) examined the enterprise structure similarities/differences of towns in water-rich and water-poor areas in South Africa. Toerien and Seaman (2012b) showed that (natural) island biogeography theory also applies to enterprise development in South African towns. Based on the similarities between natural species and enterprises and an application of the Species Equilibrium Model of MacArthur and Wilson (1967), the authors suggested that towns in the Karoo can conceptually be viewed as ‘enterprise islands’ that rose out of a ‘sea of farms’ and in which entrepreneurs who successfully crossed the ‘sea of farms’ could establish enterprises according to ‘available entrepreneurial spaces’. Importantly, the Species Equilibrium Model predicts that species lists will vary in composition even after equilibrium is reached because some species may become extinct or emigrate (Schoener 2010). At the same time immigration of species still occurs and consequently there would be a turnover of species. This prediction was shown also to be true for enterprises in a set of Karoo towns (Toerien and Seaman 2012b). Overall, the application of the Species Equilibrium Model has added an additional way to model enterprise dynamics in South African towns.

Secondly, many business sector proportionalities (i.e. statistically significant correlations between sector enterprise numbers and total enterprise numbers) were reported for a large group of South African towns (Toerien and Seaman 2012a) as well as towns of the Karoo (Toerien and Seaman 2012d). Toerien (2012a) showed that such proportionalities also occur in the tourism sector of towns of arid and semi-arid South Africa.

Over a period the following regularities were encountered and proven to be statistically significant (in other words they were real):

- Regional gross domestic product (or regional gross value added) and population numbers in towns,
- Regional gross domestic product (or regional gross value added) and personal income,

- Population numbers of towns and enterprise numbers of towns, and in the case of twelve towns in the Eastern Cape Karoo, such a relationship existed for at least a century,
- Regional gross domestic product (or regional gross value added) and the population numbers of towns ,
- The number of enterprises in towns and the number of enterprises in many of 19 different business sectors in these towns.

These studies indicated additional ways by which the enterprise dynamics of South African towns could be understood and predicted. This ability was added to by findings that there are statistically significant correlations (and hence regression equations) between economically important characteristics of South African towns (for instance GDP, total personal income and population numbers) with enterprise numbers (Toerien and Seaman 2012c). Toerien (2012b) used such regression equations to predict possible impacts of the exploitation of shale gas on the enterprise structures of Karoo towns.

An important implication of the above studies is the realisation that the systemic nature of enterprise development in towns (see Senge 1990 for a discussion of the nature of systems) **puts clear limits to what is possible with LED and/or the regeneration of towns**. The reason is found in the model proposed by Toerien and Seaman (2012c) and Toerien (2012b) in which the value added in a town and its hinterland (measured by the GDP) serves to attract or repel people and results in a specific population size, which in turn determines the size of the total enterprise structure. The needs and wants of a specific town population determine the composition of the enterprise structure of the town. The model implies that it is largely impossible to achieve better outcomes than those determined by the characteristics of the system [stated differently: ‘you simply cannot have champagne outcomes from beer systems’ (Toerien 2012b)].

There is a need to understand why these proportionalities in the enterprise structures are encountered. Two insights about the economy and development are applicable. Firstly, Markusen and Schrock (2009) referred to two developmental routes: consumer-led and export-led development. Secondly, Garelli (2006) stated that the economic system of a country is generally not homogeneous. In most cases, nations must deal with two types of coexisting economies: the economy of proximity and that of globality. The economy of proximity comprises traditional activities: crafts; social and personal services, such as doctors and teachers; administrative activities, such as government and justice; and finally, consumer-

support activities, such as after-sales service and customization. The economy of proximity provides value-added close to the end user. It is generally protectionist and expensive.

The economy of globality is composed of companies with international operations. Production need not necessarily be close to the end-user, and it benefits from the comparative advantages of markets world-wide, especially with regard to operational costs. It is generally competitive and price effective.

Toerien and Seaman (2012c) suggested the presence of two broad types of entrepreneurs in South African towns: (i) run-of-the-mill entrepreneurs that exploit business opportunities dependent on local demand, which has a limited scope but is readily 'seen' and exploited. This entrepreneurship is normally subject to fierce competition, and (ii) special entrepreneurs that 'see' business opportunities dependent on external demand that have higher perceived risks but also an unlimited scope. These opportunities cannot be readily 'seen' and their exploitation requires 'special' entrepreneurs.

The above overview illustrates that there is an increasing ability to predict the enterprise dynamics of South African towns. The project to start a SME Observatory at the University of the Free State enabled the examination of the regularities of enterprise development in the towns and municipalities in the Free State against the backdrop of the foregoing dynamics. The results should guide thinking about and planning of local economic development (LED) in the Free State as well as efforts to promote enterprise formation.

2. PURPOSE OF THE STUDY

The prime purpose of this study was to determine the enterprise architectures of the towns and villages of the FS (Bloemfontein, part of the metropolitan area of Mangaung was not included but two of the towns in its jurisdiction, Botshabelo and Thaba 'Nchu, were). Based on previous studies of South African towns and as outlined above, the particular purposes were: (i) to examine the enterprise proportionalities of FS towns in terms of numbers and composition, and, (ii) to examine their implications for LED planning and implementation. Fact sheets have been prepared earlier for each town and these have been submitted separately.

The FS is divided into four district municipalities (DMs) containing 19 different LMs (Table 1, Figure 1). The enterprise proportionalities were where appropriate examined at three levels: (i) provincial level (for the 77 towns combined), (ii) district municipality level, and, (iii) local municipality level.

Table 1: The FS towns studied in this investigation

<i>Fezile Dabi DM</i>		<i>Thabo Mofutsanyana DM</i>		<i>Lejweleputswa DM</i>		<i>Xhariep DM</i>		<i>Mangaung Metropolitan</i>		
Local Municipality	Town	Local Municipality	Town	Local Municipality	Town	Local Municipality	Town		Town	
Metsimaholo	Deneysville	Dihlabeng	Bethlehem	Matjhabeng	Allanridge	Kopanong	Bethulie	Mangaung Metro	Botshabelo	
	Kragbron		Clarens		Hennenman		Edenburg		Thaba Nchu	
	Oranjeville		Fouriesburg		Odendaalsrus		Fauresmith			
	Sasolburg		Paul Roux		Ventersburg		Gariiep Dam			
	Viljoensdrif		Rosendal		Virginia		Jagersfontein			
Moghaka	Kroonstad	Mantsopa	Excelsior	Masilonyana	Welkom	Letsemeng	Philippolis			
	Steynsrus		Hobhouse		Brandfort		Reddersburg			
	Vierfontein		Ladybrand		Soutpan		Springfontein			
	Viljoenskroon		Tweespruit		Theunissen		Trompsburg			
Mafube	Frankfort	Nketoana	Arlington	Nala	Winburg	Mohokare	Jacobsdal			
	Cornelia		Lindley				Koffiefontein			
	Tweeling		Petrus Steyn		Bothaville		Luckhoff			
	Villiers		Reitz		Wesselsbron		Petrusburg			
Ngwathe	Edenville	Phumelela	Memel	Tokologo	Boshof	Naledi	Rouxville			
	Heilbron		Vrede		Dealesville		Smithfield			
	Koppies		Warden		Hertzogville		Zastron			
	Parys	Setsoto	Clocolan	Tswelopele	Bultfontein	Naledi	Dewetsdorp			
	Vredefort		Ficksburg		Hoopstad		Wepener			
	Marquard				Van Stadensrus					
		Maluti-a-Phofung	Senekal							
			Harrismith							
			Phuthaditjaba							
			Kestell							



Figure 1. The FS towns studied. Source: Frank Sokolic

4. METHODS

4.1 Relationship between value addition and population numbers

Because some studies have previously indicated that there is a direct relationship between value addition (GDP or GVA) and the population numbers of South African towns, this relationship was also examined for the FS. However, GDP or GVA information is not readily available for FS towns. Therefore, this relationship was examined by using data obtained from Global Insight for the FS LMs.

4.2 Determination of enterprise architectures

The Enterprise Architecture approach used in this study essentially consists of three steps: (i) to identify all formal enterprises in a town, and, (ii) to classify them into 19 different business sectors (Table 2), and (iii) to count the enterprises (total as well as those in each sector). If the business sector of an enterprise could not be deduced from the name of the enterprise, Google searches were used to gain information. If it were still impossible to identify the business sector, the listing was ignored in further analyses.

This approach is based on the rapid method of Toerien and Seaman (2010). Listings were obtained from the 2012/13 telephone directory of the FS. This provided a unique dataset for the FS in the sense that it is the only South African province with an overview from the same year of all the formal enterprises in its towns.

Toerien and Seaman (2010) identified six sectors as economic drivers in rural South African towns, i.e. principal sectors that bring money into towns (corresponding to export-led activities and being dependent on the markets of globality). They pointed out that most rural towns in the Cape Colony depended on farmers to generate money and spend it in the town and, thus, the agricultural products & services sector became very important. In time some processors started adding value to local primary produce. Some entrepreneurs also realised that they could add value to materials from outside their regions. Thus some factories developed. Travellers also traversed rural areas and needed accommodation and food, and this resulted in the development of a tourism & hospitality sector. The need to build homes, businesses and

Table 2. The business sectors used for classification of enterprises

No.	Economic Drivers
1	Agricultural Products & Services Sector
2	Processing Sector
3	Factory Sector
4	Construction Sector
5	Mining Sector
6	Tourism & Hospitality Sector
	Service Sectors
7	Engineering & Technical Services Sector
8	Financial Services Sector
9	Legal Services Sector
10	Telecommunication Services Sector
11	News & Advertising Services Sector
12	Trade Services Sector
13	Vehicle Services Sector
14	General Services Sector
15	Professional Services Sector
16	Personal Services Sector
17	Health Services Sector
18	Transport & Earthworks Sector
19	Real Estate Services Sector

the like stimulated a construction industry, often dependent on investments from outside the region. The discovery of diamonds in 1866 and subsequently gold and other minerals stimulated the development of a mining sector in South Africa.

Additionally Toerien and Seaman (2010) also identified thirteen different service sectors operative in Karoo towns. These sectors are probably more important in circulating money in the towns than in bringing new money in (corresponding to customer-led development and dependence on markets of proximity).

This same approach was followed in this study.

4.3 Determination of the relationship between the population numbers of FS towns and their enterprise numbers

Previous studies of some South African towns have shown close direct relationships between population numbers and enterprise numbers. This relationship was also investigated in this study. Population numbers from the 2011 Census for the FS towns were obtained from Wikipedia (2014) and the enterprise numbers were obtained as described earlier. This data formed the input into correlation analyses for: (i) all the towns, (ii) the towns of each of the four district municipalities, and (iii) for LMs with at least four towns in their jurisdictions.

4.4 Determination of the relationship between the number of enterprises in business sectors and the total number of enterprises in FS towns.

Previous studies of South African towns have shown that the enterprise numbers of certain business sectors are closely proportional to the total enterprise numbers of these towns. The relationship between sector enterprise numbers and total enterprise numbers were, therefore, investigated for: (i) the province, (ii) the DMs, and (iii) for LMs. Correlation coefficient analyses and determination of regression equation were carried out with the aid of MS Excel software.

4.5 Business diversity of the towns of the FS province and the FS DMs

Toerien and Seaman (2014) investigated the business diversity of South African towns. To assess functional diversity they used a Business Diversity Index (BDI), which reflects (in % terms) the number of business sectors (out of 19) in which there is at least one enterprise in a town. The BDI was also used in this study to assess business diversity in FS towns.

4.6.1. Comparison of towns and regions

Determining the enterprise architecture of a single town presents no problem and was outlined in 3.2. When one, however, wants to compare the enterprise architectures of regions (be they

provinces, district municipalities, local municipalities, etc.) further issues need to be taken into account because there are several ways in which calculations can be made: (i) simply total all of the enterprises in the region for each of the 19 business sectors and then normalise the contribution of each sector as a percentage of the total (such a calculation was presented in Table 3 for the FS), (ii) use the slopes of all of the regression equations of sector enterprises (dependent variables) against total enterprises (independent variable). The least squares slope of each business sector can be calculated and be used as an estimate of the composition of the total, (iii) the composition of the ‘average town’ of a region, be it a DM or LM, can be derived from the total of all enterprises in each business sector and be expressed as a percentage of the total enterprises. However because the sizes of FS towns are very skewed (see later) the use of an average will disproportionately reflect impacts of large towns, and (iv) the composition of the ‘median town’ can be calculated from calculations of the median number of enterprises over all towns of a region and then be expressed as a percentage of the total of all medians. All of these approaches have been used in this study under what were considered to be an appropriate situation for a specific approach.

4.6.2. Comparison of towns on the basis of enterprise similarities

Clustering techniques were used to group towns with similar enterprise architectures. The similarity of enterprise architectures were obtained using Pearson correlation coefficients calculated from normalised data. The computer software package PRIMER (Plymouth Routines In Multivariate Ecological Research) obtained from PRIMER-E Ltd, Plymouth was used to examine the (dis)similarity of the enterprise assemblages of FS towns. A correlation coefficient similarity matrix of all 77 FS towns formed the input into the clustering procedure.

Cluster analyses aim to find “natural groupings” of samples such that samples within a group are generally more similar to each other than samples in different groups (Toerien and Seaman 2010). The most commonly used clustering techniques are hierarchical agglomerative methods that usually take a similarity matrix as their starting point and successively fuse the samples (towns in this study) into groups and the groups into larger clusters, starting with the highest mutual similarities and then gradually lowering the similarity level at which groups are formed. The results are usually represented in dendrograms and this was also done in this study. A complete linkage clustering option was used.

5. RESULTS AND DISCUSSION

5.1 Total enterprise numbers in FS towns

The number of formal enterprises (total as well as for sectors) recorded in the 77 towns in the Free State are summarized in Table 3. It has been shown internationally that cities and towns

follow Zipf's law: there are many more small cities than large ones (Clauset et al. 2012). The same applies to the enterprise distribution of towns in the FS (Figure 2). Fewer than one-third of FS towns have more than 130 enterprises, an issue that is discussed again later in the document.

5.2 The relationship between GVA and population numbers in FS LMs

The relationship between value addition and population numbers in the FS was examined at the local municipality (LM) level. A statistically significant relationship ($P < 0.05$, $n = 19$) was obtained for the 19 different LMs in the FS (Figure 3).

However, Metsimaholo LM with Sasolburg and its industrial development (see arrow, Figure 3) has a very high GVA and relatively low population. It seems to be an outlier. Repeating the analysis without Metsimaholo showed the GVA-population relationship even more clearly ($P < 0.01$, $n = 18$) (Figure 4).

Table 3. The number of formal enterprises recorded in FS towns

Sector	Number	% of total
Trade Services	2623	24.8
Health Services	988	9.3
Vehicle Services	948	9.0
Personal Services	800	7.6
Financial Services	789	7.5
Tourism & Hospitality	677	6.4
Construction Services	641	6.1
General Services	637	6.0
Agricultural Products & Services	625	5.9
Professional Services	370	3.5
Engineering & Technical Services	320	3.0
Transport & Earthworks	232	2.2
Legal Services	217	2.1
Real Estate Services	183	1.7
Factories	167	1.6
Processors	143	1.4
Mining Services	89	0.8
Telecommunication Services	83	0.8
News & Advertising Services	35	0.3
Total	10567	100

The average enterprise composition of FS towns (Table 3) is a useful benchmark for comparative purposes.

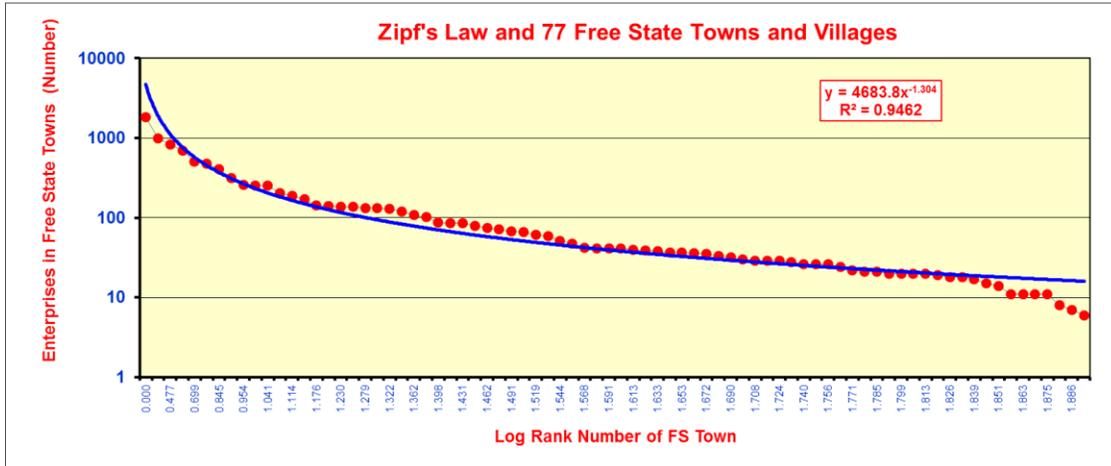


Figure 2. The distribution of the enterprise sizes of FS towns

This relationship between value addition and population is not unique in South Africa. An analysis of the GDPs and populations of South African provinces (data obtained from Wikipedia, 2014) is shown in Figure 5. The correlation coefficient is statistically highly significant ($r = 0.84$, $n = 9$).

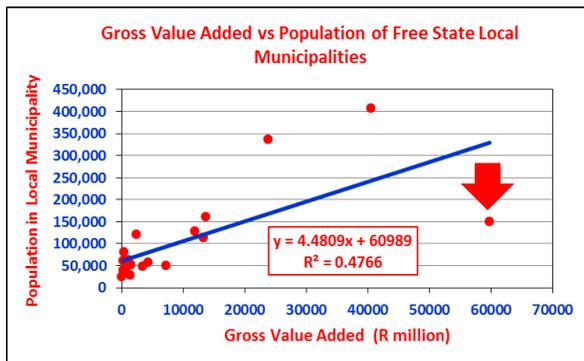
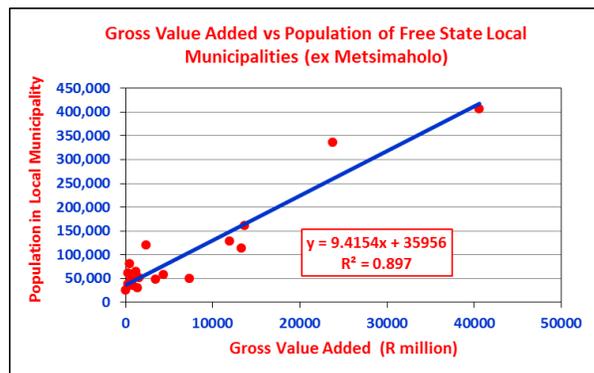


Figure 4. The GVA to population relationship of FS LMs without Metsimaholo.

Figure 3. The GVA to population relationship of FS LMs



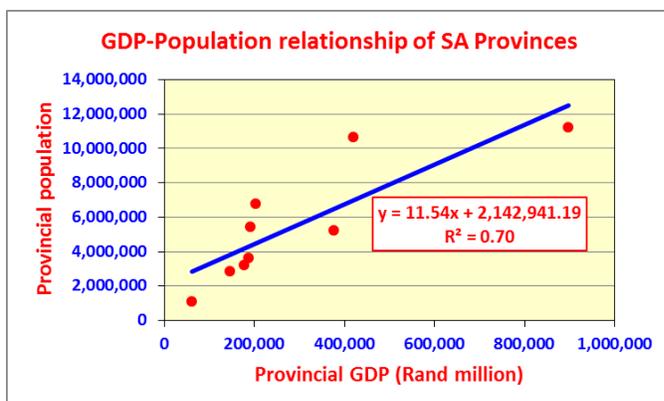


Figure 5. The GDP to population relationship of the nine provinces of South Africa.

In the Free State, like in other parts of South Africa, there is a direct and dynamic relationship between value addition and population size. If an LM or town adds more value it can 'carry' more people, and vice versa.

It is important to reflect on the dynamics involved. As explained by Toerien and Seaman (2012c) people in search of economic opportunities move to a town where they believe such an opportunity exists. As long as they are satisfied that their needs are adequately met, they will remain in the town. However, when they become dissatisfied or believe that their needs can be met more adequately elsewhere, they move to other places. When towns regress and decline economically, they will start losing people who seek economic opportunities elsewhere, or vice versa. Value addition is also in the FS the primary driver of the size of town populations.

5.3 The relationship between population numbers and enterprise numbers in the FS

Statistically significant relationships between the population and enterprise numbers of various South African towns have now been recorded a number of times (Toerien and Seaman 2012a,b,c) including a century-long relationship in towns of the Eastern Cape Karoo (Toerien 2014). The situation in the FS is:

5.3.1. Provincial level ($n = 77$ towns)

The relationship for the 77 FS towns is:

$$\text{Enterprises in town} = 0.0061 \times \text{Town population} - 7.1 \quad (1)$$

with $r = 0.82$, $n = 77$, $P < 0.01$.

There is, therefore, also a very strong relationship between the population numbers and the number of enterprises in FS towns. As reported by Toerien and Seaman (2012c) the population size of a town determines the number of enterprises that can be 'carried' in the town, or stated differently, determines the total entrepreneurial space.

5.3.2 District municipality (DM) level

The population-enterprise relationships for the four FS DMs are:

Fezile Dabi: Enterprises in town = $0.0077 \times \text{Town population} - 32.3$ (2)

with $r = 0.97$, $n = 17$, $P < 0.01$.

Lejweleputswa: Enterprises in town = $0.0085 \times \text{Town population} - 94.7$ (3)

with $r = 0.98$, $n = 17$, $P < 0.01$.

Thabo Mofutsanyana: Enterprises in town = $0.0115 \times \text{Town population} - 64.7$ (4)

with $r = 0.92$, $n = 23$, $P < 0.01$.

Xhariep: Enterprises in town = $0.0036 \times \text{Town population} + 8.3$ (5)

with $r = 0.83$, $n = 18$, $P < 0.01$.

Highly significant statistically correlations were also recorded between the population numbers and the number of enterprises in the towns of all DMs. This reflects the same relationship recorded at the provincial level but at a deeper level. The population size of a DM determines the total number of enterprises (and the total entrepreneurial space) in the DM.

The regression coefficients of the equations of the DMs varied considerably. The southern FS is clearly economically far behind the rest of the FS because it has the lowest regression coefficient, indicating that it is 'carrying' the fewest enterprises per population unit. Thabo Mofutsanyana DM with its bustling towns such as Bethlehem, Harrismith, Ficksburg, Ladybrand and Clarens (Table 1) is leading the pack and its high regression coefficient indicates that it is 'carrying' more enterprises per population unit.

5.3.3 Local municipality (LM) level

Twelve of the FS LMs have at least four towns in their jurisdictions, which was considered to be the minimum number to be used in an investigation of population-enterprise relationships at the LM level (Table 4).

The relationships for Kopanong and Masilonya LMs were the only ones (of twelve possible comparisons) that were not statistically significant at at least the $P = 0.05$ level. The relationship between population numbers and enterprise numbers that was detected at provincial level, repeated itself at DM level and mostly also at LM level. The evidence for a strong relationship between population numbers and enterprise numbers in FS towns is overwhelming and has significant implications for plans to grow local economies and to create employment.

Table 4. The relationship between population and enterprise numbers for FS local municipalities (LMs) with at least four towns in their jurisdictions

LM	Correlation coefficient	Regression coefficient	Intercept	No. of towns
Mafube	0.95**	0.0068	-28.4	4
Metsimaholo	1.00*	0.0076	-23.3	4
Moqhaka	0.99*	0.0073	-30.1	4
Ngwathe	0.97*	0.0119	-109.9	5
Matjhabeng	0.98*	0.0092	-187.8	6
Masilonyana	0.84	0.0039	9.6	4
Dihlabeng	0.99*	0.0134	-45.0	5
Mantsopa	1.00*	0.0118	-46.5	4
Nketoana	0.92**	0.0074	-35.6	4
Setsoto	1.00*	0.0075	-55.8	4
Kopanong	0.47	0.0024	16.0	9
Letsemeng	0.90**	0.0037	3.8	4

* significant at $P < 0.01$, ** significant at $P < 0.05$

5.4 Sector enterprise to total enterprise relationships of Free State towns

Regularities (proportionalities) detected as statistically significant correlations between the number of enterprises in various business sectors of towns and the total enterprises of these towns have been recorded in a number of studies of South African towns (Toerien and Seaman 2010, 2011, 2012a,b,c; Toerien 2012, 2014). The question was if this is also the case in the FS. It was examined at the provincial, DM and LM levels.

5.4.1 Provincial and district municipality (DM) level

A comparison of the correlation coefficients registered for the provincial and DM levels of total enterprises and the enterprises of 19 different business sectors is presented in Table 5. In the FS province and Fezile Dabi all sectors had statistically significant correlations. In Lejweleputswa DM the agricultural products & services sector and in Thabo Mofutsanyana the mining sector was not significantly correlated. Xhariep DM with its collection of small towns was really the odd one out. It had only statistically significant correlations in the following sectors: agricultural products & services, construction, financial services, trade services, vehicle services, general services, and real estate services. Proportionalities in enterprise structures tended to break down in this DM.

Table 5. The correlation coefficients of business sector enterprises (dependent variables) versus total enterprises (independent variable) in FS towns at provincial and district municipality (DM) levels.

Business Sectors/ Number of towns	Province	Fezile Dabi	Lejweleputswa	Thabo Mofutsanyana	Xhariep
	77	17	17	23	18
Agricultural Products & Services	0.55*	0.66*	0.27	0.85*	0.55**
Processors	0.79*	0.89*	0.88*	0.92*	0.38
Factories	0.80*	0.91*	0.99*	0.70*	-0.21
Construction Services	0.99*	0.98*	0.99*	0.98*	0.77*
Mining & Mining Services	0.78*	0.87*	0.99*	0.07	0.12
Tourism & Hospitality	0.84*	0.81*	0.99*	0.73*	0.26
Engineering & Technical Services	0.92*	0.86*	0.99*	0.95*	0.28
Financial Services	0.98*	0.96*	0.99*	0.98*	0.90*
Legal Services	0.94*	0.90*	1.00*	0.87*	0.16
Telecommunication Services	0.95*	0.94*	0.99*	0.90*	0.18
News & Advertising Services	0.94*	0.85*	0.99*	0.88*	0.00
Trade Services	0.99*	1.00*	1.00*	0.99*	0.91*
Vehicle Services	0.98*	0.97*	1.00*	0.96*	0.84*
General Services	0.99*	0.98*	1.00*	0.99*	0.47**
Professional Services	0.95*	0.96*	0.99*	0.88*	0.10
Personal Services	0.99*	0.99*	1.00*	0.97*	0.63*
Health Services	0.98*	1.00*	1.00*	0.96*	0.53**
Transport & Earthworks	0.95*	0.96*	1.00*	0.87*	0.20
Real Estate Services	0.87*	0.93*	0.92*	0.95*	0.59*

Overall the proportionalities in enterprise numbers repeated at the DM level. However, in poorer Xhariep with its many small towns, the relationship broke down somewhat.

5.4.2 Local municipality (LM) level

A comparison of the correlation coefficients between enterprises in the 19 different business sectors (dependent variables) and the total enterprises (independent variable) in towns for LMs with at least four towns in their jurisdictions is presented in Table 6. The towns of most of the LMs showed strong proportionalities for most business sectors. In general in all DMs and LMs larger towns had more enterprises of a specific kind than smaller towns. The exceptions were Kopanong (in Xhariep DM) and Nketoana (in Thabo Mofutsanyana DM), both with small and medium-sized agricultural towns.

As far as proportionality in business sector enterprises are concerned, the towns of the FS proved to be no exception and this was true at three different levels: provincial, DM and LM. The proportionalities of the enterprise dynamics of FS towns were hereby further demonstrated: proportionalities between sector and total enterprises of towns observed at the provincial level were repeated lower down at DM level and even at LM level. Enterprise development in and the enterprise dynamics of FS towns do not happen haphazardly. This

finding is in step with results obtained for other South African towns and regions (e.g. Toerien & Seaman, 2012a).

5.5 Implications of the enterprise number proportionalities of FS towns

There might be an temptation to write off the observed proportionalities as interesting observations and then to ignore what they tell about entrepreneurship and enterprise development in the FS. To reduce this risk this section reflects on the implications of these proportionalities.

Firstly, the systemic nature of enterprise development must be appreciated. The results show a direct relationship between GDP and provincial populations numbers in South Africa (Figure 5) and between GVA and populations numbers in the LMs of the FS (Figures 2 and 3), which demonstrates the dynamic positive relationship between value addition (and thus available money) and population numbers: if the former increases the latter increases, and vice versa. This relationship is immutable and cannot be changed by wishful thinking. If the goals of the NDP regarding revival of rural towns (National Planning Commission 2012) were to be realised in the Free State, more value has to be added in the economies of FS towns.

Secondly, there is direct and positive relationship between population and the total number of enterprises in FS towns (equation 1), which extends to FS DMs (equations 2 – 5) and also most FS LMs (Table 4), as is the case in many other South African towns (Toerien and Seaman 2010; 2011; 2012a,b,c; Toerien 2012; 2014). When there is a larger population in a town it can ‘carry’ more enterprises, and vice versa. These relationships are also immutable and cannot be changed by wishful thinking. If the goals of the NDP regarding the increase of employment opportunities in rural towns (National Planning Commission 2012) were to be realised in the Free State, the populations of FS towns have to increase as a result of larger value addition in the local economies.

Table 6. The correlation coefficients of business sector enterprises (dependent variables) vs total enterprises (independent variable) in towns of FS local municipalities (LMs) with at least four different towns in the municipal area.

LM	Mafube	Metsimaholo	Moqhaka	Ngwathe	Masilonyana	Matjhabeng	Dihlabeng	Mantsopa	Nketoana	Kopanong	Letsemeng
No. of towns	4	4	4	5	4	6	5	4	4	9	4
DM	FD	FD	FD	FD	LE	LE	TM	TM	TM	XH	XH
Agricultural products & services	0.99*	0.86**	0.94**	0.94*	0.53	0.94*	1.00*	0.96*	0.59	0.59	0.23
Processors	0.98*	0.97*	0.99*	0.61	-0.74	0.89*	0.97*	0.87	0.67	0.51	0.53
Factory sector	0.95**	0.97*	0.91**	0.95*	0.02	0.97*	0.97*	1.00*	0.00	0.26	0.00
Construction Sector	0.98*	1.00*	0.96*	0.91**	0.90**	0.97*	0.99*	1.00*	0.93**	0.49	0.62
Mining Sector	0.00	0.98*	0.87	0.48	0.75	0.99*	-0.15	0.00	0.00	0.00	0.67
Tourism & Hospitality Services	0.92**	0.97*	0.97*	0.91**	0.77	0.97*	0.54	0.99*	0.93**	-0.61	0.62
Engineering & Technical Services	0.88**	0.99*	1.00*	0.92*	0.94**	0.97*	0.99*	0.88**	0.74	-0.23	-0.21
Financial Services	0.99*	0.99*	0.99*	0.91**	1.00*	0.98*	1.00*	0.98*	0.97*	0.58	0.89**
Legal Services	0.98*	0.99*	1.00*	0.94*	0.89**	0.99*	0.99*	0.96*	0.96*	0.21	0.21
Telecommunication Services	0.95**	0.99*	0.98*	0.87**	0.00	0.96*	0.99*	1.00*	0.00	0.17	0.00
News & Advertising Services	0.95**	0.94*	0.96*	0.98*	0.00	0.97*	0.99*	1.00*	0.00	0.00	0.00
Trading Services	0.98*	0.99*	1.00*	0.98*	0.90**	0.99*	0.99*	1.00*	0.90**	0.52	0.76
Vehicle Services	0.95**	0.99*	0.99*	0.94*	0.76	0.97*	1.00*	1.00*	0.96*	-0.10	-0.67
General Services	0.97*	0.99*	0.98*	0.93*	0.26	0.98*	0.98*	0.99*	0.87	0.61	0.24
Professional Services	0.00	0.99*	0.97*	0.91**	-0.10	0.97*	0.98*	0.92**	0.80	-0.38	0.81
Personal Services	0.98*	1.00*	0.99*	0.97*	0.94**	0.98*	0.99*	0.99*	0.99*	0.48	0.62
Health Services	0.98*	1.00*	0.99*	0.97*	0.76	0.99*	0.99*	1.00*	0.95**	0.67**	0.97*
Transport & Earthworks Services	0.99*	0.99*	0.96*	0.90**	0.74	0.98*	1.00*	1.00*	0.83	0.49	0.81
Real Estate Services	0.80	0.97*	0.94**	0.89**	0.02	0.94*	0.96*	1.00*	0.80	0.44	0.21

Thirdly, there are also direct and positive relationships between the total number of enterprises in most business sectors and the populations of FS towns, the DM towns as well as most LM towns (Tables 5 and 6). These relationships clarify the extent to which entrepreneurship in FS towns is at least in part bounded by the size of their populations. The relationships are also immutable and cannot be altered by wishful thinking.

Fourthly, these results suggest very strongly that in most business sectors there **is not a lack of entrepreneurs in FS towns**. The reason for this statement resides in the fact that the towns were independently analysed and yet strong and statistically significant proportionalities emerged in most business sectors. If entrepreneurs were lacking in these sectors, strong proportionalities would not be encountered.

The above statement flies directly in the face of some of the views about the general stimulation of entrepreneurship widely held in South Africa and also expounded in the NDP (National Planning Commission 2012). It is, therefore, necessary to focus on those sectors where these relationships are not very strong. To do this the variances that were explained by the statistical relationships between total enterprises and the enterprises of each business sector were calculated for: (i) all the towns (province), and, (ii) the four DMs. The variances were totalled across the different cases and rank numbers allocated. These are presented in Table 8.

The five business sectors that consistently had the lowest rank numbers, indicating that they did not vary closely in step with total enterprises, were agricultural products & services, mining services, tourism & hospitality services, factories and processors (Table 8). This suggests that these sectors offer export-led opportunities rather than just customer-led opportunities. This makes sense because commercial farmers usually produce more than what can be consumed locally. Mining products are usually exported elsewhere where they are processed and refined.

Tourism is mostly dependent on visitors from elsewhere who spend their money locally. Similarly factories and processors add value to external or local primary products respectively and they are normally dependent on external buyers than local buyers of their products. These sectors offer potential for 'special entrepreneurs' to expand the money flow into a local economy. In these sectors, therefore, the development of entrepreneurship could have huge impacts.

Table 8. Variances explained (%) by the regression equations between total enterprises in towns (as independent variable) and enterprises in sectors (as dependent variables) of the FS province and the DMs. Rank was determined from the total of the variances explained for a business sector.

Business sector	FS Province	Fezile Dabi	Lejwelepatswa	Thabo Mofutsanyana	Xhariep	Rank
Agricultural Products & Services	30.1	43.4	7.4	72.6	29.9	1
Mining Services	60.3	76.2	97.7	0.5	1.5	2
Tourism & Hospitality Services	70.2	66.2	97.6	53.0	6.8	3
Factories	64.5	82.7	98.8	49.2	4.3	4
Processors	62.2	79.6	77.1	84.0	14.3	5
News & Advertising Services	87.5	72.5	97.9	77.1	0.0	6
Legal Services	88.3	81.6	99.4	76.3	2.5	7
Engineering & Technical Services	84.7	73.2	98.6	89.5	7.8	8
Professional Services	90.9	91.6	98.9	77.0	0.9	9
Telecommunication Services	90.8	88.6	97.6	80.7	3.1	10
Transport & Earthworks Services	89.7	93.1	99.2	76.1	4.2	11
Real Estate Services	75.7	86.2	84.4	90.3	34.9	12
General Services	97.9	96.0	99.4	98.4	21.9	13
Health Services	96.9	99.0	99.4	92.5	27.9	14
Personal Services	97.3	98.1	99.1	94.9	39.5	15
Construction Services	97.0	95.7	99.0	97.0	59.1	16
Vehicle Services	96.3	95.0	99.5	93.0	70.1	17
Financial Services	95.7	92.0	98.5	95.7	80.4	18
Trade Services	98.5	99.1	99.8	98.8	82.9	19

The sectors with highest rank numbers (e.g. trade services, financial services, vehicle services, construction services, personal services and general services, Table 8) probably offer just customer-led rather than export-led opportunities. These sectors do not lack in ‘run-of-the-mill’ entrepreneurs and are rather limited by the number of people in their local economies and their ability to spend money locally (i.e. the size of the local economy). The development of entrepreneurship in these sectors might create a ‘musical chairs problem’ where newly-trained entrepreneurs might be set up to fail, or if they are successful, they might merely replace existing entrepreneurs.

Why is this particularly important? The study has thus far shown that: (i) value addition is needed to bring money into a local economy, (ii) the money in a local economy attracts people (or its lack repels people), (iii) the number of people in the local economy determines the number of enterprises (and their composition), and, (iv) the the number of enterprises determine to a large extent the number of enterprises in most business sectors. However, all

local economies lose money because they cannot produce all the products or deliver all the services their population needs. Each time a product is bought or a service from elsewhere is used by anybody in the local economy, money flows out of it. To maintain its status quo and/or to expand it there must be additional inflow of money that is equal to or greater than the stream of money spent on buying products/services from elsewhere. Just a circulation of money already in the local economy can never maintain the status quo. Special entrepreneurs are important to generate additional or new inflows of money. The dynamics of this process are summarized in Figure 6.

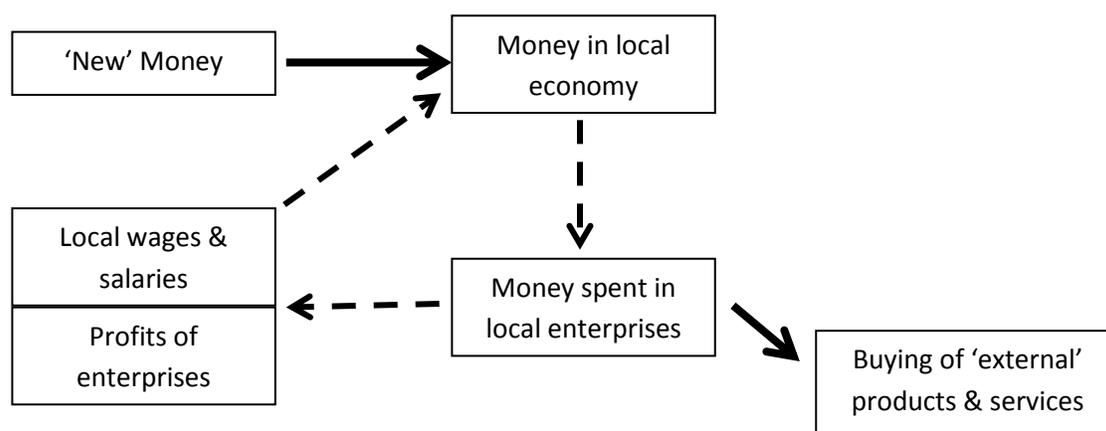


Figure 6. Schematic representation of the need for 'new' money in local economies

Special entrepreneurship is not the only way by which the money of a local economy can be replenished. Government expenditures in the form of salaries for government officials (police, government officials, teachers, etc.) and/or welfare payments also contribute. Pensions of all kinds, investments (from elsewhere or by locals), building loans, etc. also contribute to additional inflows of money. However, for longer term economic security special entrepreneurship is probably crucial.

Toerien and Seaman (2012c) proposed a systemic model of the economics of a local economy. That model can now be extended as shown in Figure 7. Both 'run-of-the-mill' and special entrepreneurs contribute to enterprise development. The former are dependent on external clients and the latter on internal clients. In addition other sources of money, e.g. government payments are important. This model once again emphasises the systemic nature of local economies and the need to take this into account in LED planning.

Systems cannot be altered at will: so enterprise numbers and structures of local economies cannot be altered if the flow of money into these economies is not increased. To achieve goals such as increased employment (also in rural towns as envisaged in the NDP) it is absolutely necessary to increase the flow of money to these towns. And this can sustainably only be done if products and/or services on offer are bought by clients from elsewhere.

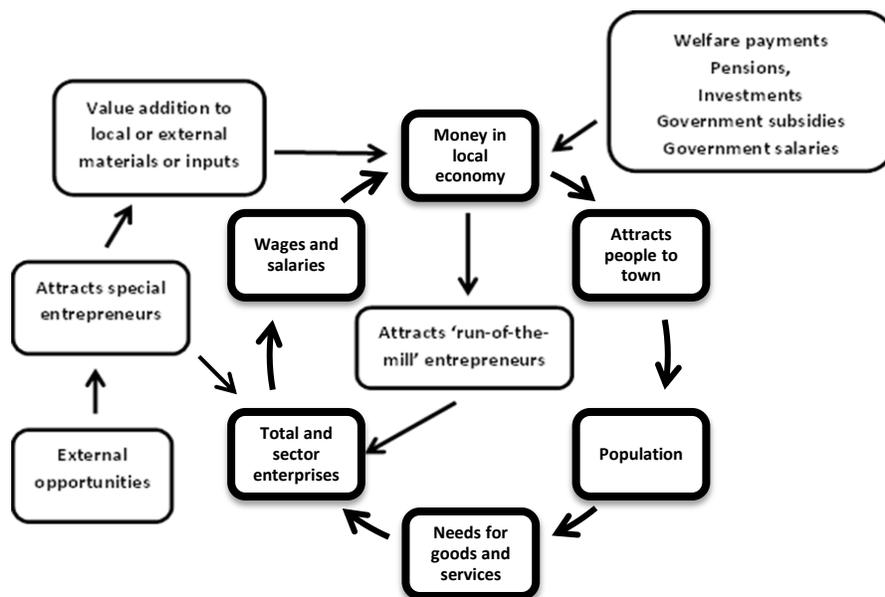


Figure 7. Extended model of the flow of money in a local economy.

5.6 Business diversity of FS towns.

There is a distinct break in the BDI of FS towns (see arrows in Figure 8). Below approximately 130 enterprises, towns precipitously lose entire business sectors. Above that value most towns have at least one enterprise in virtually every business sector.

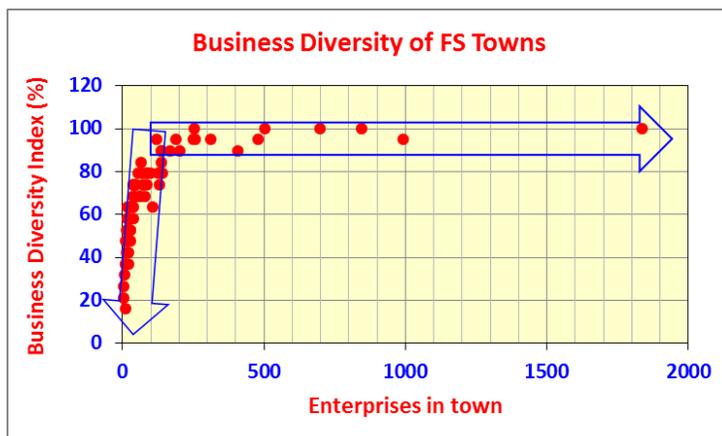


Figure 7. The Business Diversity Index of FS towns

In the biological world higher biological diversity is often associated with increased ecosystem stability. Presumably higher business diversity (as reflected in higher BDI values) indicates increased economic stability of towns. Based on this reasoning it is possible that the more than two-thirds of FS towns that have fewer than 130 enterprises (section 4.1, Figure 2), are in economic stress and operate in a zone where they cannot support all business sectors. This is not a healthy situation at all.

5.7 The enterprise architectures of FS towns

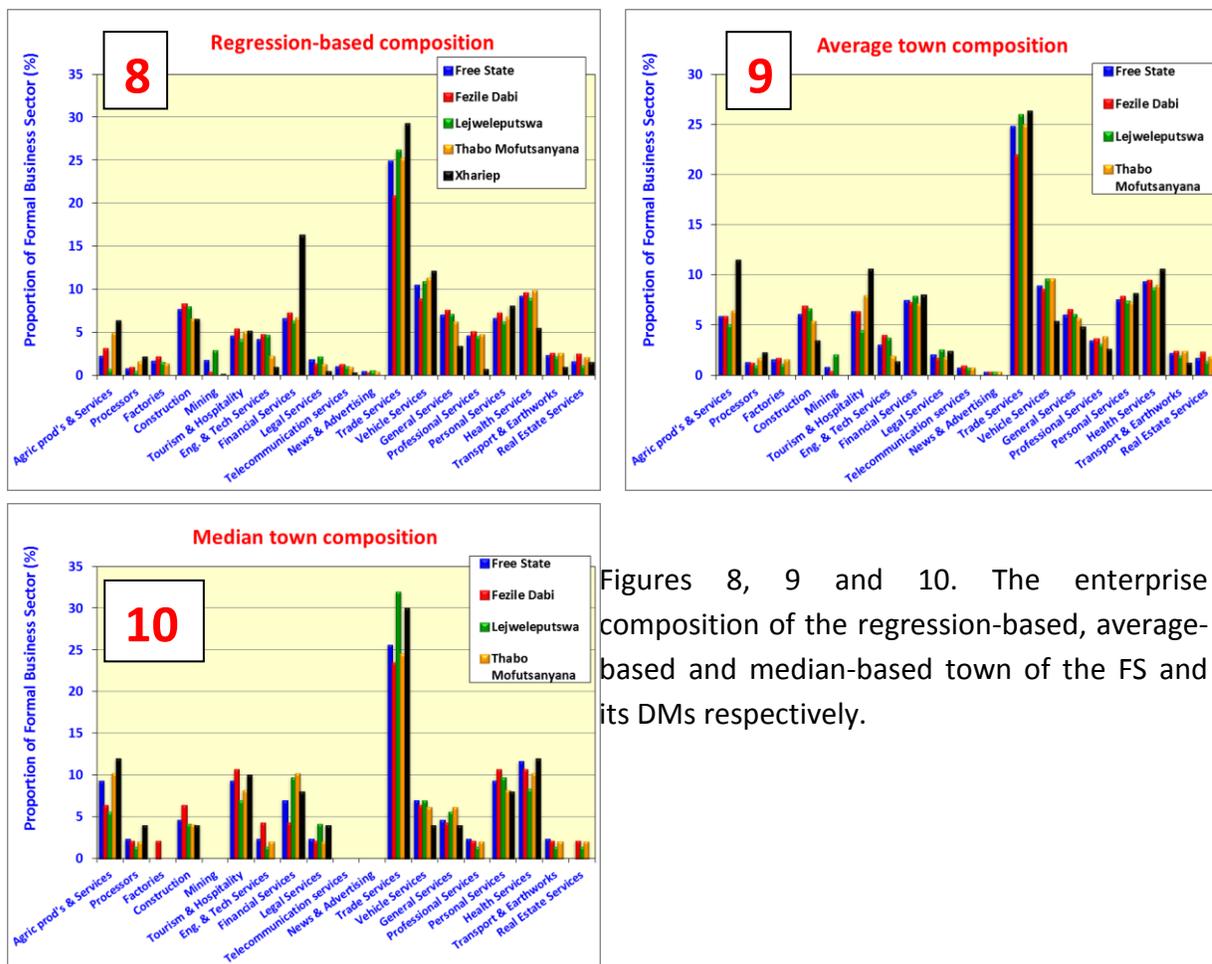
5.7.1 Comparisons of the FS and DMs

As explained earlier (see 3.6.1) there are more than one way to compare regions. Three different methods are used here to compare the FS and its DMs: (i) on the basis of the slopes of the regression equations, (ii) on the basis of 'average towns', and (iii) on the basis of 'median towns'. All three were used here (Figures 8-10).

For instance, the median town lacks certain business sectors that are present in the average and regression-based towns (compare Figures 8-10). The comparisons of the five regions, i.e. the province and the four DMs, show some differences in some sectors, but overall one does not gain an impression of major differences when 'typical' regional towns are compared. There are subtle differences between the three ways of representing the typical towns of the FS and its DMs but no major ones.

5.7.2 Comparisons of small and large FS towns

Figure 7 suggests there might be significant differences between small (< 130 enterprises) and large (>130 enterprises) towns in the FS. Therefore, a comparison was made of the average and median towns of these two groups (Table 9). Some distinct and some subtle differences were evident.



Figures 8, 9 and 10. The enterprise composition of the regression-based, average-based and median-based town of the FS and its DMs respectively.

Smaller towns depend more on enterprises focused on agricultural products & services and tourism & hospitality services. They also tend, but not in major ways, to depend more on processors, legal services providers, trade services, personal services and health services. Large towns depend more on factories, construction, mining, telecommunication services, news and advertising services, vehicle services, professional services, transport & earthworks and real estate services. This illustrates the enhanced entrepreneurial spaces of larger towns.

Table 9. A comparison of the composition (% of total enterprises) of 'average' and 'median' towns of small (< 130 enterprises) and large (>130 enterprises) FS towns. Blue marking = small towns higher, yellow marking = large towns higher, white = no discernible trend.

Sector	Average town of		Median town of	
	Small towns	Large town	Small towns	Large towns
Agric prod's & Services	11.2	4.4	10.3	6.3
Processors	2.2	1.1	3.4	1.5
Factories	0.6	1.9	0.0	1.1
Construction	4.0	6.6	3.4	4.3
Mining	0.4	1.0	0.0	0.0
Tourism & Hospitality	8.1	5.9	10.3	5.0
Eng. & Tech Services	2.1	3.3	3.4	2.4
Financial Services	8.7	7.1	6.9	8.0
Legal Services	2.6	1.9	3.4	2.8
Telecommunication services	0.2	1.0	0.0	0.9
News & Advertising	0.1	0.4	0.0	0.4
Trade Services	25.2	24.7	27.6	27.2
Vehicle Services	6.9	9.6	6.9	9.8
General Services	4.7	6.4	3.4	6.3
Professional Services	1.7	4.0	0.0	2.8
Personal Services	8.8	7.2	10.3	7.4
Health Services	9.8	9.2	10.3	8.7
Transport & Earthworks	1.5	2.4	0.0	2.4
Real Estate Services	1.3	1.9	0.0	2.6
Total	100	100	100	100

5.7.3 Comparisons of individual towns

The comparisons of regions with one another on the basis of their 'typical' towns present in 4.7.1 and 4.7.2 and the relatively small differences detected might mask significant differences that might exist between towns when compared on an individual basis. This is especially relevant when one considers that the normal practice is for LMs with multiple towns and communities, and even DMS, to develop a single LED plan. If these are major differences between towns, the efficacy of this practice would be suspect.

To illustrate the relevancy of this issue, the towns of Ngwathe LM were compared with one another (Figure 11). Substantial differences as indicated by red arrows were encountered between the towns of this LM. This illustrates clearly that 'one-size-fits-all' LED plans that ignore differences between towns might have limited potential for success.

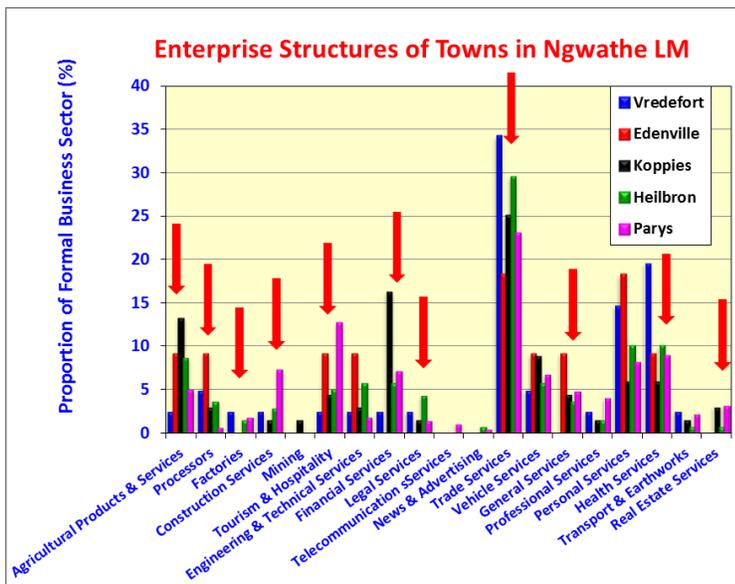
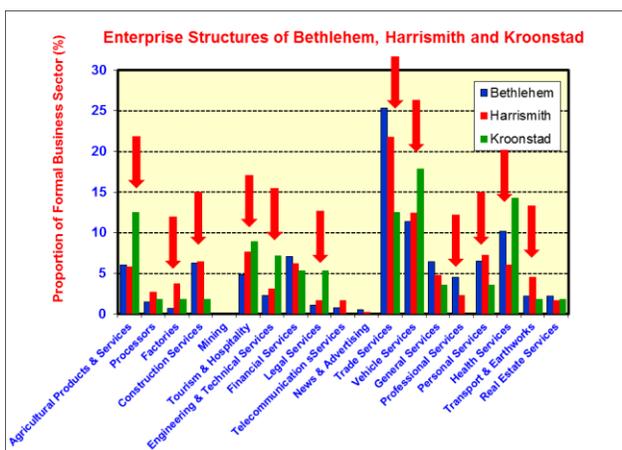
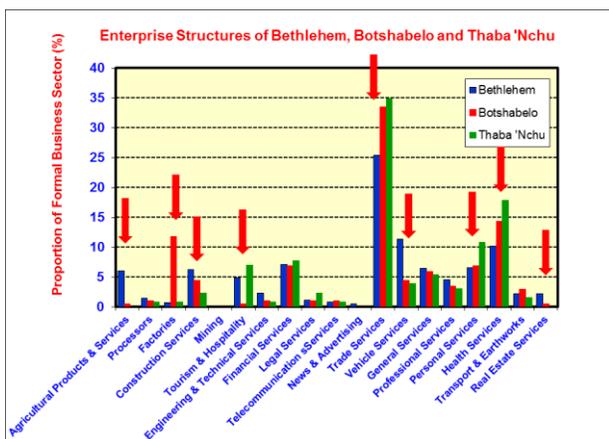


Figure 11. Comparison of the enterprise architectures of Ngwathe LM. Red arrows indicate sectors with differences between the towns.



An enterprise architecture comparison was also made between three large rural FS towns, Bethlehem, Harrismith and Kroonstad (Figure 12). Again a large number of differences (indicated by red arrows) were recorded. Large towns are not necessarily similar.

Figure 12. Comparison of the enterprise architectures of large rural FS towns



Finally, a comparison is made of the enterprise architectures of Botshabelo, Thaba 'Nchu (both affected by political decisions in the apartheid years) and Bethlehem, a large bustling rural FS town (Figure 13).

Figure 13. A comparison of the enterprise architectures of Bethlehem, Botshabelo and Thaba 'Nchu.

This comparison gives insight into the long term impacts of political and other decisions made a long time ago. Decisions taken decades ago, are still negatively impacting upon Botshabelo and Thaba 'Nchu. Present day decision makers have to consider the long-term impacts that their decisions may have.

Botshabelo was never developed to serve an agricultural hinterland. Consequently, its agricultural products & services sector is poorly developed but its factory sector is particularly strong. Its trade services and health services sectors are also strong. Thaba 'Nchu was an agricultural town in the mid 1940s, but in the apartheid era it became part of an area set aside for the bantustan of Bophuthatswana. Today it has poorly developed agricultural products & services, construction, vehicle services and real estate services sectors. However, its tourism & hospitality, trade services and health services sectors are strong.

These examples show that individual comparisons of the enterprise architecture of FS towns help to provide insight into the enterprise dynamics of the towns. Nevertheless it is necessary to turn to additional analyses to gain further insight into these matters.

5.7.4 Similarities in the enterprise structures of FS towns

The outcome of the cluster analysis of the 77 FS towns on the basis of their enterprise architecture is shown in Figure 14. At a correlation coefficient level of 0.5, seven clusters, some small and some large, were identified. These were:

Cluster 1. Vierfontein, Oranjeville and Deneysville.

Cluster 2. Clarens, Gariiep Dam, Rosendal and Philippolis.

Cluster 3. Viljoensdrif, Luckhoff, Hertzogville, Reddersburg, Arlington, Petrusburg, Viljoenskroon, Bothaville, Bultfontein, Hoopstad and Clocolan.

Cluster 4. Dealesville, Cornelia and Villiers.

Cluster 5. Odendaalsrus, Virginia, Phuthaditjhaba, Sasolburg, Welkom, Tweespruit, Kestell, Fauresmith, Wepener, Winburg, Reitz, Heilbron, Jacobsdal, Allanridge, Tweeling, Edenburg, Steynsrus, Excelsior, Warden, Botshabelo, Vredefort and Thaba 'Nchu.

Cluster 6. Parys, Ladybrand, Kroonstad, Bethlehem, Harrismith, Ficksburg, Hennenman, Lindley, Zastron, Theunissen, Rouxville, Koppies, Wesselsbron, Frankfort, Senekal, Petrus Steyn, Vrede, Fouriesburg, Trompsburg, Boshof, Brandfort, Springfontein, Jagersfontein, Smithfield, Paul Roux and Koffiefontein.

Cluster 7. Memel, Dewetsdorp, Marquard, Bethulie, Edenville and Ventersburg.

Hobhouse and Soutpan were outliers.

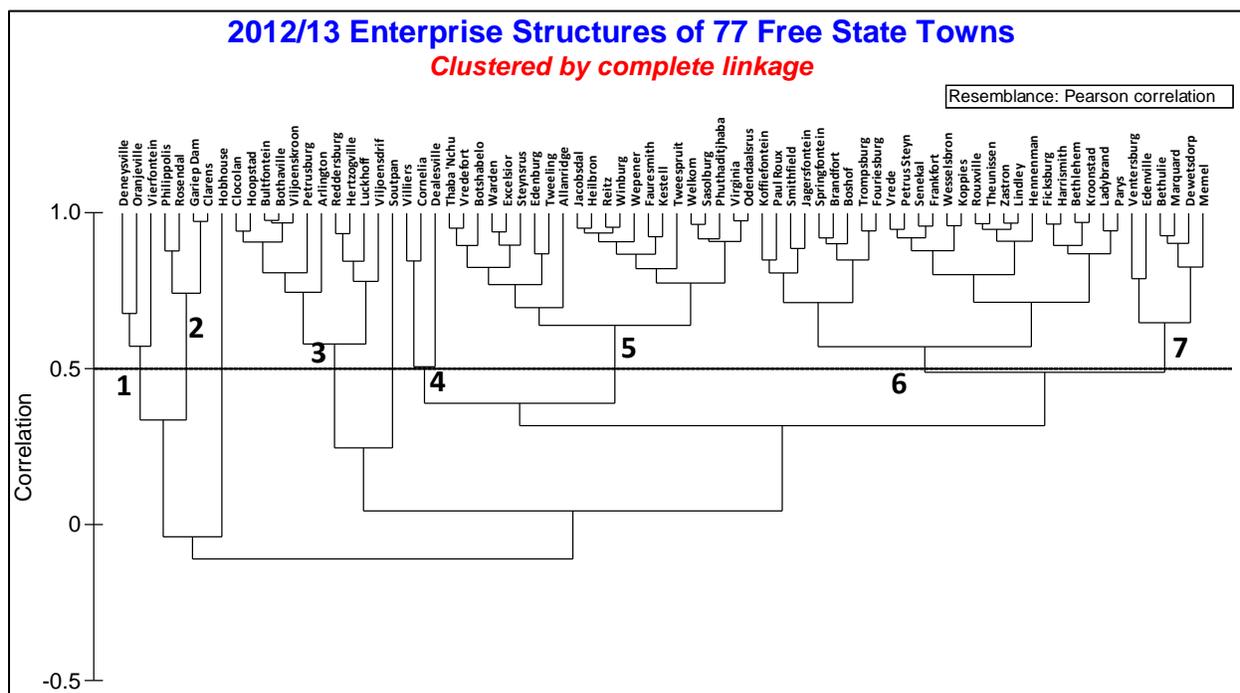


Figure 14. The seven clusters of FS towns based on their enterprise architectures

5.7.5 The drivers of enterprise differentiation in FS towns

To understand the differences between the clusters, the 'average town' of each cluster was calculated and compared (Table 10). Major differences are evident. Clusters 1 and 2, two small clusters of three and four towns respectively, have developed their tourism & hospitality sectors strongly (marked in yellow in Table 10). Cluster 1 is stronger in the construction, real estate services and personal services sectors but weaker in trade services than cluster 2 (marked in yellow in Table 10).

Clusters 3, 4 and 7, all small or reasonably small clusters, are strong in the agricultural products & services and have some processors (marked in blue in Table 10). However, they differ in the strength of their tourism & hospitality, financial services, trade services, vehicle services, personal services and health services sectors (also marked in blue in Table 10). They appear to be different variants of the 'typical FS agricultural town'.

Cluster 5 and 6, two large clusters, are weak in the agricultural products & services sector (although cluster 6 is stronger than cluster 5) (marked in green in Table 10). Cluster 5 includes FS mining towns (Odendaalsrus, Virginia, Welkom and Allardridge), an industrial town (Sasolburg), towns affected by political decisions in the apartheid years (Phuthaditjhaba, Botshabelo and

Table 10. The composition (% of total enterprises) of the average towns of the seven clusters of FS towns

Business sector	Cluster						
	1	2	3	4	5	6	7
Agricultural Products & Services	3.4	4.1	20.9	14.5	2.1	6.7	13.3
Processors	0.0	2.1	1.8	1.3	0.9	1.6	2.3
Factories	0.9	1.0	0.8	0.0	2.0	1.3	0.0
Construction	12.0	2.1	2.8	1.3	7.0	5.9	5.0
Mining	2.6	0.0	0.0	0.0	1.6	0.3	0.0
Tourism & Hospitality	17.9	38.3	4.3	6.6	4.1	7.4	8.7
Engineering & Technical Services	1.7	1.0	2.3	5.3	4.1	2.2	1.4
Financial Services	3.4	2.1	8.3	5.3	6.4	8.8	6.0
Legal Services	0.0	1.6	2.4	3.9	2.3	1.7	3.7
Telecommunication services	0.0	0.0	0.3	0.0	0.8	1.0	0.0
News & Advertising	0.9	0.0	0.3	0.0	0.3	0.4	0.0
Trade Services	17.9	22.8	22.4	14.5	27.2	23.6	19.3
Vehicle Services	5.1	1.0	9.4	18.4	8.4	10.0	5.5
General Services	5.1	6.2	5.3	6.6	6.8	5.5	5.0
Professional Services	3.4	5.7	1.1	0.0	4.7	2.8	1.4
Personal Services	8.5	2.6	7.8	3.9	7.4	7.6	13.8
Health Services	5.1	5.7	7.2	15.8	10.3	8.8	11.9
Transport & Earthworks	3.4	0.0	2.0	1.3	2.1	2.4	1.8
Real Estate Services	8.5	3.6	0.8	1.3	1.5	1.9	0.9
Total (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of towns in cluster	3	4	11	3	22	26	6

Thaba 'Nchu) but also (surprisingly) a number of agricultural towns (Tweespruit, Kestell, Fauresmith, Wepener, Winburg, Reitz, Heilbron, Jacobsdal, Tweeling, Edenburg, Steynsrus, Excelsior, Warden and Vredefort).

Cluster 6 includes large and small agricultural towns but also Parys, a tourist destination. Cluster 5 is stronger than cluster 6 in the mining, engineering & technical services, construction services, trade services and health services sectors (also marked in green in Table 10). Cluster 6 is stronger in the agricultural products & services, tourism & hospitality and financial services sectors (also marked in green in Table 10). The larger towns in clusters 5 and 6 appear to have a better balanced enterprise architecture than the smaller towns of clusters 1, 2, 3, 4 and 7 because they do not have business sectors without representatives.

An advanced multivariate statistical analysis, principal component analysis, was also used to analyse the drivers of differentiation of FS towns. This analysis indicated that the most important drivers of differences in the enterprise architectures of FS towns are three sectors: agricultural products & services, tourism & hospitality and the trade sector (Figure 15).

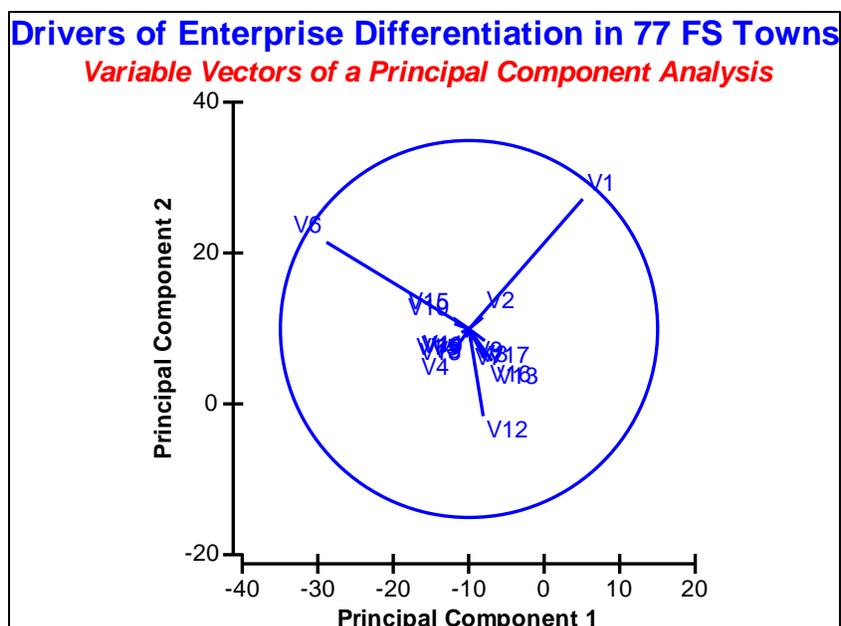


Figure 15. Variable vectors of a principal component analysis of the 2012/13 enterprise architectures of 77 Free State towns. V1 = agricultural products & services, V6 = tourism & hospitality and V12 = trade services.

The analysis presented here illustrates that the use of the enterprise architecture of FS towns is useful and multifaceted. It can be used in many different ways to provide insight into the status quo of enterprise development and dynamics in FS towns, DMs and LMS. Although it was not strictly part of the enterprise architecture analysis brief of this study, the enterprise architecture was also linked to economic and employment profiles. Because such profiles are not readily available for FS towns, data of the FS LMS was used in a brief analysis of economic and employment profiles.

5.8 The economic and employment profiles of FS LMs

Information about the economic profiles of FS DMs and LMs was obtained from Global Insight via the Department of Economic Development, Tourism and Environmental Affairs (DETEA) of the FS and subjected to analysis.

Four areas stand out as the main contributors to economic value addition in the FS: the metropolitan area of Mangaung (red oval), the gold mining area of the north-western FS (blue oval), the coal-to-fuel district of Sasolburg (green oval) and the Bethlehem-Phuthaditjhaba-Harrismith corridor (pink oval) (Figure 16).

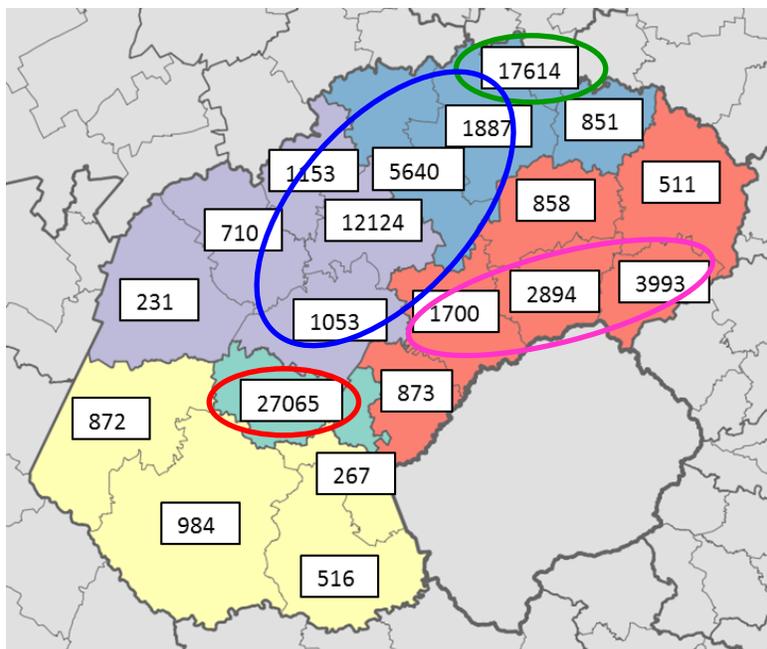


Figure 16. Gross Value Added (GVA) in 2010 in FS LMs and Mangaung (in 2005 R million).
Source: Global Insight

Do other factors play a role? The FS has a distinct rainfall gradient (large red arrow, Figure 17), which affects agricultural output. In addition, the Maluti mountains and their scenic beauty have stimulated tourism and Lesotho the neighbouring country and its buying power has affected the economies of the border towns (Figure 17). Further insight is gained when GVA profiles for the 19 LMs plus Mangaung are subjected to a clustering exercise (Figure 18). Four distinct clusters and one outlier (Metsimaholo) were identified.

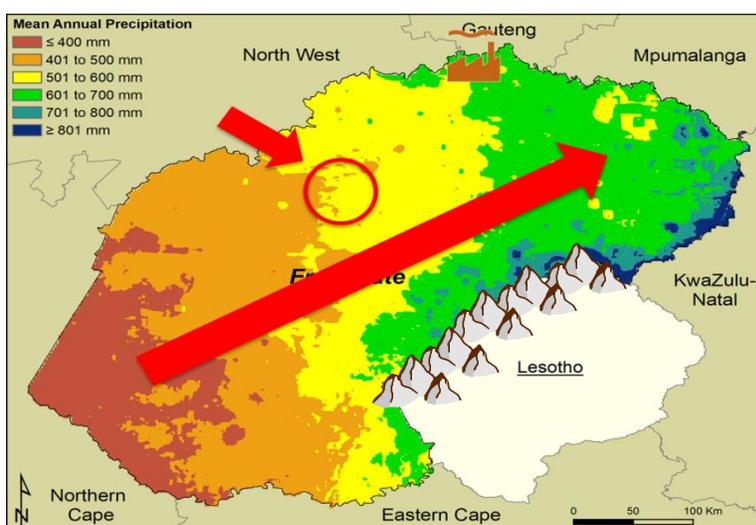


Figure 17: The rainfall gradient of the FS and the mountains on the border with Lesotho. Small red arrow and circle indicate the gold mining area and the stylised factory the coal-to-fuel industry of Sasolburg.

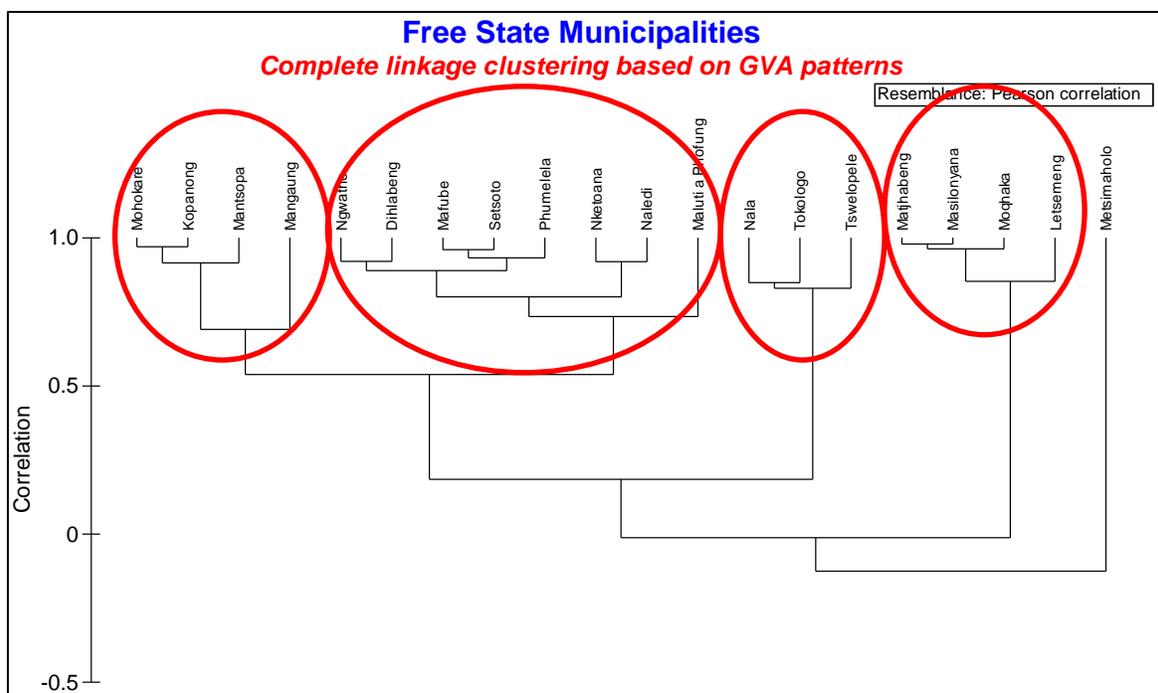


Figure 18. Clustering of the FS LMs and Manguang on the basis of their GVA profiles of 26 economic sectors. Source of basic data: Global Insight. Red ovals indicate four distinct clusters of municipalities. Metsimaholo is an outlier.

The reasons for the cluster outcome become clear when one examines the profiles for the different economic sectors. Figure 19 presents a selection of graphs to illustrate the foregoing. The LMs in the same cluster tend to have similar economic drivers.

Do economic driver similarities lead to enterprise architecture similarities? The enterprise architecture dendrogram of FS LMs (Figure 20) was compared with the GVA dendrogram of FS LMs (Figure 18). The answer is to a large extent affirmative; many of the LMs in a specific GVA cluster also appeared in the same enterprise cluster (Table 11). When the drivers of value addition are similar in FS LMs their enterprise architecture will tend to be similar, or stated differently, their entrepreneurial spaces will open up in similar fashions. This is another limiting factor that needs to be taken into account when LED plans are made.

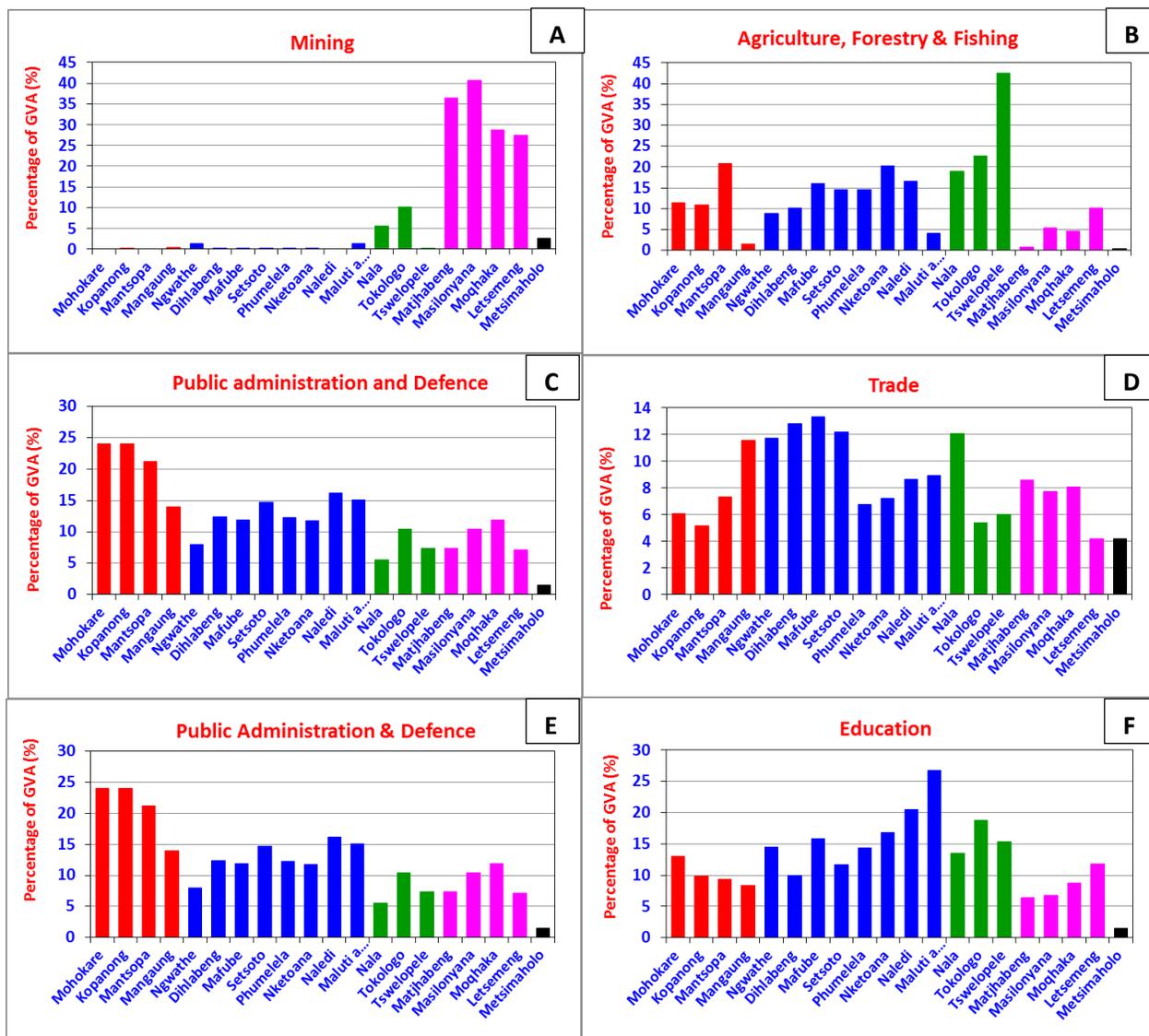


Figure 19. An illustration of the value of comparisons of the relative contribution (as % of total GVA) of different economic sectors in FS LMs and Mangaung (red bars - cluster 1; blue bars - cluster 2; green bars - cluster 3; pink bars - cluster 4; black bar - Metsimaholo). A to F represent a selection of different economic sectors.

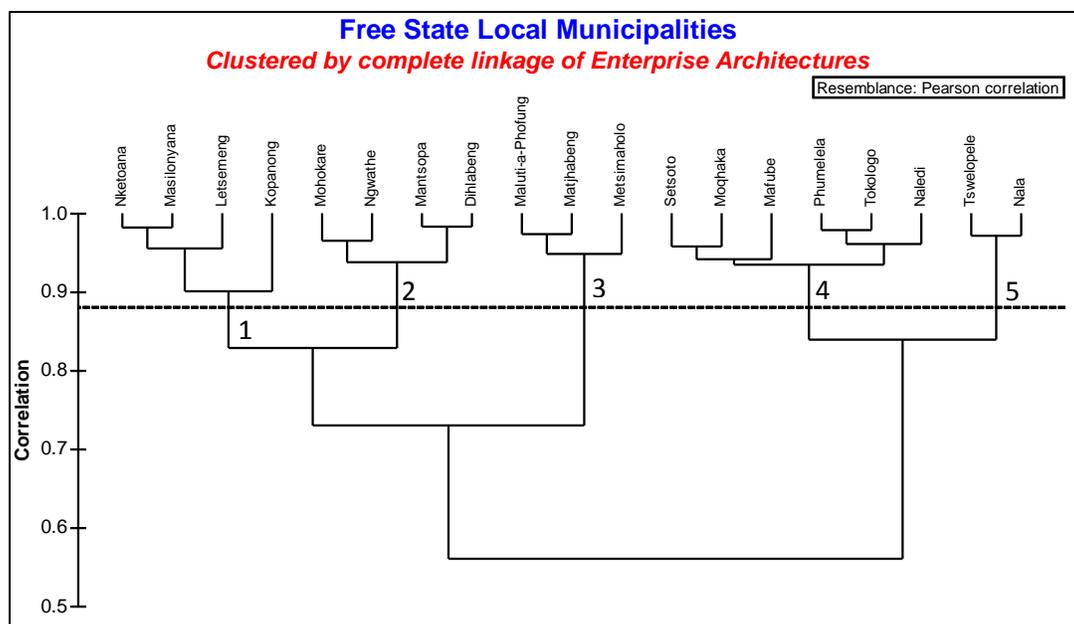


Figure 20. Clusters of FS LMs based on their enterprise architectures. Clusters are indicated by the numbers.

Table 11. A comparison of the location of LMs in GVA clusters and in enterprise clusters. Similarities are indicated by the red enclosures.

LM	GVA Cluster	Enterprise Cluster
Dihlabeng	2	2
Ngwathe	2	2
Setsoto	2	4
Mafube	2	4
Phumelela	2	4
Naledi	2	4
Nketoana	2	1
Maluti a Phofung	2	3
Kopanong	1	1
Mohokare	1	2
Mantsopa	1	2
Tokologo	3	4
Nala	3	5
Tswelopele	3	5
Masilonyana	4	1
Letsemeng	4	1
Moqhaka	4	4
Matjhabeng	4	3
Metsimaholo	Outlier	3

6. FINAL DISCUSSION AND CONCLUSIONS

At the end of World War II the FS was still a province in which town development was largely driven by agriculture and in the southern FS by some diamond mining. Rural towns and their hinterlands were closely linked as envisaged in the CPT. This was before the mining of gold in the FS started, before the rigid implementation of apartheid after 1948, before the conversion of coal to petroleum started in the 1950s in the northern FS, before the building of a large dam on the Orange River (now the Gariep Dam) in the 1960s and before the development of the Eastern FS as a tourist destination. These events irrevocably changed the economic landscape of the FS, contributed to new town development, i.e. Welkom in the FS Goldfields, Sasolburg in the northern FS, Gariep Dam on the Orange River, and influenced the enterprise architectures of its towns.

Presently the FS has some 77 towns and villages apart from the city of Bloemfontein (Table 1). In 2012/13 there were 10567 formal enterprises in these towns (not including Bloemfontein)(Table 3). Their size distribution follows Zipf's law (Figure 2). Two-thirds of FS towns have fewer than 130 enterprises, which in total amount to 2325 or 22% of all enterprises. These towns are of a size that indicates increased danger of them losing the last representatives of entire business sectors.

This is not a healthy situation, particularly because the Free State Growth and Development Strategy (FSGDS) (Free State Government, 2013) specifically envisages the revitalisation of small towns. The strategy plans to expand tourism routes, products and product ranges in small FS towns, to create links between these towns and major corridors that run through the province and to optimise the use ICT programmes in libraries with particular focus on rural and small towns. The enterprise architecture study reported here suggests that these measures will not be sufficient to lead to the envisaged revitalisation.

The reason for this statement is that the FSGDS (Free State Government, 2013) seems to ignore the importance of the systemic relationships that have been highlighted by this study. In the FS, like in other parts of South Africa, there is a direct and dynamic relationship between value addition, population size, the number of enterprises and the distribution of enterprise types in towns. Only if an LM or town adds more economic value can it 'carry' more people and more enterprises, and will more jobs be created.

It is necessary to understand that the systemic nature of the enterprise dynamics of FS towns and LMs puts clear limits to what is possible with LED and/or the revitalisation of towns. Toerien (2012b) mentioned that 'you simply cannot have champagne outcomes from beer systems'. In other words a system will produce the outcome inherent to that system. To revitalise FS towns, their economic systems have principally to be renewed by creating the

ability to add more economic value, i.e. to produce additional products and/or services that somebody from elsewhere would be willing to buy. This would inject new money into the local economy resulting in more money to support local enterprises and to provide jobs.

This process requires entrepreneurial activity of a specific kind. Toerien and Seaman (2012c) suggested that there are two broad kinds of entrepreneurs in South African towns: run-of-the-mill and special entrepreneurs. The former exploit business opportunities dependent on local demand and is limited in scope. The latter develop business opportunities dependent on external demand which is basically unlimited in scope. These suggestions are in sync with the identification of two developmental routes, i.e. consumer-led and export-led development (Markusen and Schrock, 2009) and with the ideas of Garelli (2006) of two types of coexisting economies: the economy of proximity and that of globality.

This study has shown that enterprises dependent on special entrepreneurs do occur in FS towns. Four business sectors seem to be directly involved: (i) processors that add value to local primary materials, (ii) factories that add value to primary products sourced elsewhere, (iii) mining that delivers ores or minerals to external buyers, and (iv) the tourism and hospitality sector that offers products and/or services to tourists from elsewhere. Farming, which is normally not considered to be part of the enterprise structures of towns, DMs or LMs, normally also produce products such as grains, livestock, etc. for consumption elsewhere. Varying success of the special entrepreneurs involved in these sectors was reflected in low levels of explained variances in certain analyses (Table 8).

The agricultural products & services sector, which is especially dependent on farmers as special entrepreneurs, had the lowest level of variance explained (Table 8), indicating that this sector is vital to many towns in the FS. This study indicates that extreme caution should be exercised in the implementation of plans to change the ownership of agricultural land in order not to diminish the inflow of external money into the local economies of many FS towns. The former statement does not deny the need to redress land ownership patterns but points out that this must be done in ways that will not diminish inflows of external money into local economies that might already be under stress.

It is necessary to briefly reflect on the sectors driven by special entrepreneurs. Mining is dependent on the presence of minerals, and when present in sufficient quantities, exploitation is normally driven by big mining houses. There is, therefore, little that could be done to increase the growth of this sector in the FS unless new mineral discoveries are made. Many FS towns, also small ones, do very well out of tourism. This sector comprises 6.7% of the formal enterprises of FS towns outside Bloemfontein (Table 3) and in the cluster that houses towns such as Clarens they form 38.3% of the enterprises (Table 10). Tourism is rightly targeted in the FSGDS (Free State Government, 2013). Tourism depends on attractions and more case studies of successful FS towns, as done for Clarens by Marais et al. (2012), are needed. In addition, it

would be useful if case studies are also done of successful tourism enterprises in order to advance the understanding of how to manage this sector better.

The processing and factory sectors have not received a lot of attention in the FS (with one exception, which is discussed later). There are only 167 factories and 143 processors in the 77 FS towns studied (Table 3) and combined they represent only 3.0 % of all 2012/13 enterprises. Town cluster 5 (Table 10) had the highest factory concentration (2.0 % of total enterprises) and cluster 7 the highest concentration of processors (2.3 % of total enterprises). Yet it is ironic that the FS has one of the foremost examples of successful processing, namely the coal-to-fuel/chemicals conversions of Sasolburg that adds tremendous value to the Metsimaholo and FS economies. Although the FSGDS (Free State Government, 2013) aims to strengthen this activity, the historic lessons from this development should be gathered, perhaps in a case study. It might also be advisable to undertake additional case studies of successful processors and factories in the FS in order to extract useful development insights from them.

The final question to deal with in this report is whether the determination of enterprise architectures adds real value in dealing with the pressing challenges of poverty eradication and job creation. To answer this question information about Masilonyana LM was used. The choice of this LM was based on the fact that it has a number of towns/villages in an area with mining activities in the north close to the town of Theunissen, typical central FS agricultural towns in Winburg and Brandfort in the south and a village, Soutpan, in the southwest where salt is produced. So there is a mix of activities in the LM.

The Integrated Development Plan (IDP) (Masilonyana Local Municipality, 2012) contains some references to economic development. It mentions in passing that the LM has economic potential because of agriculture, mining, tourism, hiking , biking, etc. but little quantitative information is presented. It provides some facts on each of its towns and villages, but does not say much about the economic differences between the towns/villages, except that Theunissen has a number of mines and Soutpan has ‘tremendous economic potential’ because salt is produced there. The enterprises of the towns are not discussed at all. The economic analysis of the IDP presents graphs of the different LMs in the Lejweleputswa DM, but there is little analysis of the data.

Because of the lack of analysis this study used an analysis prepared under a separate part of the SME Observatory Project and which was contained in a fact sheet on Masilonyana LM (Figure 21). This presents a quantification of the sources of value addition and employment in this LM.

Agriculture is very important for job creation but contributes only about five % of the GVA. Gold mining contributes significantly to GVA but contributes only about 16% to employment. Households contribute just over 20% of employment: domestic work is, therefore, very important for employment. Public administration and education, both financed by public money, together contribute approximately 20% to GVA and employment. Sectors such as trade,

post and telecommunication, finance and insurance, and real estate, all contribute more to GVA than to job creation. However, they do not make great contributions..

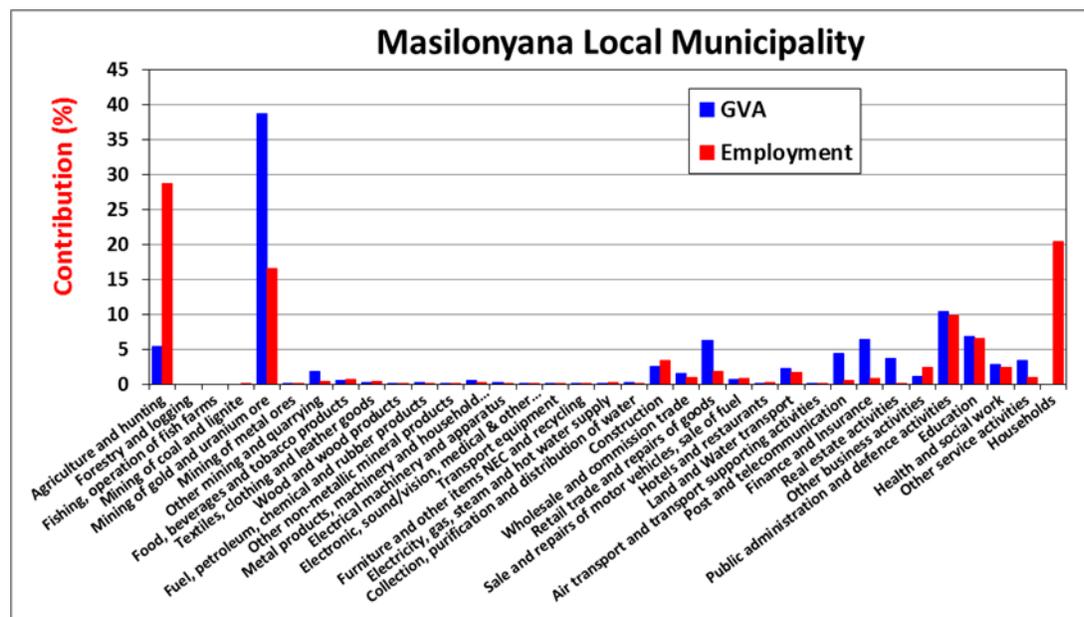


Figure 21. Economic sectors important in GVA and employment creation in Masilonyana LM

The 2012-2017 IDP of Masilonyana LM mentions an LED plan; however, the latter does not seem to be publicly available via the Internet. In addition the IDP makes reference to issues such as the need to create employment opportunities through targeted IDP and Expanded Public Works Programme (EPWP) projects. The IDP mentions that due to the fact that mines cannot absorb all unemployed people, of which the youth are in majority, more emphasis must be put on training of the unemployed to improve self-reliance and to avoid high and unrealistic dependence on grants and funding. Whilst this is laudable, it is surprising that significant sources of employment such as agriculture and households are not taken into account at all. For specific LED projects, mention is made of a brick (paving) making plant project, an EPWP potholes project and the building of a business development centre and two bakery projects in Tshepong and Makeleketla. These seem to be somewhat out of touch with the economic and job creation realities presented in Figure 21.

Can a single LED plan that does not focus on the differences between towns meet the needs of the whole Masilonyana community? To answer this the 2012/13 enterprise architectures of Theunissen, Brandfort, Winburg and Soutpan were compared (Figure 22). Distinct differences are immediately evident. Soutpan, which the IDP states has a huge potential, is very small and lacks 14 of the 19 business sectors. Its enterprise architecture is very dependent on the agricultural products & services and processing (salt production) sectors and is inherently unstable. Unfortunately it does not seem to have a huge economic potential. However, the

plan to expand salt production is laudable but more sources of external income have to be developed.

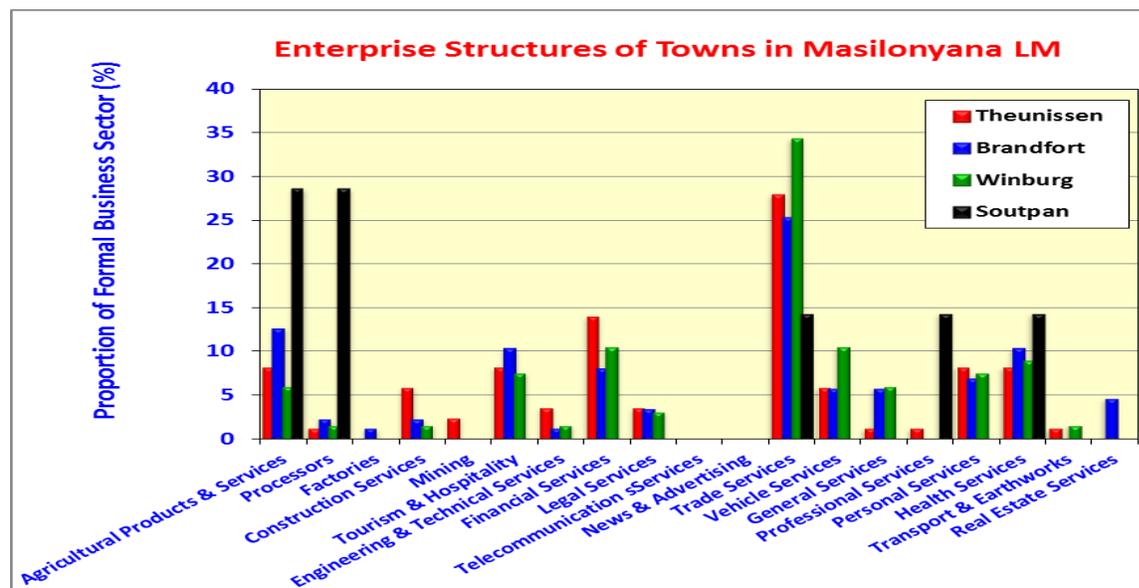


Figure 22. A comparison of the 2012/13 enterprise architectures of towns in the Masilonyana LM.

Brandfort has a stronger agricultural products & services sector than Theunissen and (surprisingly) Winburg. Theunissen has a stronger construction sector than the other two towns and this is probably due to the mines. This sector is also more important for employment than adding to GVA (Figure 21). The tourism and hospitality sector adds between five and ten % of enterprises in the three towns, with Brandfort a little stronger than the other two towns. Probably due to the mines, Theunissen has a stronger engineering & technical services sector.

In all three of the larger towns the financial services sector comprises in the order of ten % of enterprises. The IDP does not mention this sector at all although it is important for GVA but not employment (Figure 21). Legal services comprise about three % of enterprises in all three towns. Trade services form an important part of the enterprise architectures of all three towns with Winburg stronger than Theunissen and Brandfort. The trade services sector is weak in Soutpan. The vehicle services sector is strongest in Winburg, perhaps due to its strategic position on major routes to Gauteng and KZN. The general services sector is weak in Theunissen. Brandfort and Winburg lacks a professional services sector, and the personal service sector is similar in the three large towns (not in Soutpan). The health services sector is well-represented in all the towns. The transport, processing and factory sectors are weak throughout, with the exception of Soutpan where salt production is significant. Real estate services are only present in Brandfort.

The above analysis provides sufficient evidence that a single LED plan that ignores the enterprise architecture differences between the towns of Masilonyana LM, would have major

limitations. The same statement could perhaps be made about all FS LMs with multiple towns. The time has arrived that LED planning in the FS be extended to take these differences into account.

7. ACKNOWLEDGEMENTS

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