

**OVERVIEW OF SELF-EMPLOYMENT AND INFORMAL
EMPLOYMENT IN THE INFORMAL ECONOMY IN GAUTENG
PROVINCE BETWEEN 2001 AND 2013**

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**Mini-thesis presented in partial fulfilment of the requirements for the degree
Master of Philosophy in Urban and Regional Science in the Faculty of Arts
and Social Sciences at Stellenbosch University**

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March 2017

DECLARATION

By submitting this mini-thesis electronically, I, **Edward Mokwena**, declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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ABSTRACT

A social anthropologist is defined as the first person to bring the term informal sector into the academic literature. A concept was introduced to describe a part of the urban labour force which worked outside the formal market. The informal sector is almost synonymous for all categories of self-employed individuals. OECD defines self-employment as anyone who works for himself or herself but not for anyone else except under arm's length contract. Mowforth and Munt (2015), defines Self-employment as those jobs where the remuneration is directly dependent upon the profit or potential for profits derived from the goods or services produced and own consumption is considered to be part of the profits. The incumbents make the operational decisions affecting the enterprises, or delegate such decision while retaining responsibility. The following keywords were used to search for the literature: self-employment, informal economy, views on reduction approaches, informality, developing world, multicultural, economies.

OPSOMMING

'n Sosiale antropoloog is gedefinieer as die eerste persoon om die informele sektor termyn in die akademiese literatuur bring. 'N konsep is ingestel om 'n deel van die stedelike arbeidsmag wat buite die formele mark gewerk beskryf. Die informele sektor is as byna sinoniem vir alle kategorieë van selfstandige individue. OECD definieer self-indiensneming as iemand wat vir homself of haarself, maar nie vir enigiemand anders behalwe onder lengte kontrak beding. Mowforth and Munt (2015) definieer Self-indiensneming as die bane waar die vergoeding is direk afhanklik van die wins of potensiaal vir wins verkry uit die goedere of dienste wat en eie verbruik word beskou as deel van die winste wees. Die bekleërs maak die operasionele besluite wat die ondernemings, of delegeer sodanige besluit, terwyl die behoud verantwoordelikheid.

ACKNOWLEDGEMENTS

I would like to express my sincere appreciation and thanks to the following people for their assistance with my mini-thesis:

My supervisor, Ms Amanda Van Eeden for the guidance throughout the process from conceptualisation to report writing.

Mr Tirhani Lucky Maringa who made sure that my maps were presentable

Mr Ndivhuwo Gangazhe for his patience and support in clarifying me on the concepts and definitions of the SESE data and QLFS

Mr Caiphus Mashaba, my manager and Dr Thanyani Rambani for their continued support and encouragement during my studies.

My wife Ms Stella Kgalalelo Mokwena for her patience, love and support during my studies

Finally I would like to thank the management of Statistics South Africa for facilitating and funding my studies.

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CHAPTER 1 OVERVIEW OF THE STUDY

1.1 INTRODUCTION

Across the globe, young women and men are making an important contribution as productive workers, entrepreneurs, consumers, citizens, members of society and agents of change. All too often, the full potential of young people is not realized because they do not have access to productive jobs. Although they are an asset, many young people face high levels of economic and social uncertainty. A difficult transition into the world of work has long-lasting consequences not only on youth but also on their families.

The study suggests that, on the basis of the evidence and data reviewed, it is not clear that the self-employment and entrepreneurship schemes that created new jobs, nor whether these jobs are of sufficient merit to be worth creating. The available evidence promoting self-employment among young people are most beneficial when they bring together different actors and policy sectors such as the labour market, social protection, education, healthcare services (especially mental health), youth business organisations, financial institutions, individual companies and chambers of commerce also shows that policies targeted at the informal sector.

The following keywords were used to search for the literature: self-employment, informal economy, views on reduction approaches, informality, developing world, multicultural, economies. Search engines such as Google Scholar, Duckduckgo were used while databases such as EBSCO Host and Science Direct were consulted for appropriate articles. The chapter starts with a background to the problem statement, then the problem statement objectives, research design and a final conclusion is drawn.

1.2 BACKGROUND AND RATIONAL FOR STUDY

Employment has become both a political and a socio economic concept globally. According to the International Labour Organisation Mowforth and Munt (2015) the definition of employment is with reference to the economically active population that comprises all persons of either sex who furnish the supply of labour for the production of goods and services during a specific time reference period. It is

defined using either of the two measures of the economically active population; the usually active population measured in relation to a long reference period such as a year and the currently active population measured in relation to short reference period such as a week. According to International Labour Standards no 204, there is an intention to encourage members to implement processes and procedures that seek to implement transition from the informal economy to the formal economy as a desirable standard. The organisation names the rising informal economy as a challenge to the protection of workers' rights, to the fundamental principles of rights at work, social protection, decent working conditions, inclusive development and the rule of law amongst others.

1.2.1 Self-employment

OECD defines self-employment as anyone who works for himself or herself but not for anyone else except under arm's length contract. Mowforth and Munt (2015) define Self-employment as those jobs where the remuneration is directly dependent upon the profit or potential for profits derived from the goods or services produced and own consumption is considered to be part of the profits. The incumbents make the operational decisions affecting the enterprises, or delegate such decision while retaining responsibility (Armstrong et al., 2016).

Shore et al. (2004) found that self-employment tends to increase in times of high unemployment and economic growth. They argued that while some observers views the revival of self-employment as a sign of economic vitality, contributing to employment growth and industrial dynamism echoing the interest of many policy makers interested in job creation. The British government practiced this with a strong belief that the way to reduce unemployment is through more businesses, and more self-employment and greater wealth creation; all leading to more jobs (Storey & Jonson, 1987). Other countries, like Germany, viewed small businesses as an important source of new ideas and an impulse to keep the economy competitive and productive.

On the other hand, Hudson (1987) argued that rising rates of self-employment are more likely a reflection of labour market failure than a development contributing to their solution. Hudson (1987) argues that not only has the rate of new business founding's increased in the recent years but, failure rates also have risen as well.

A small proportion of the self-employed workers survive in marginal areas of economic activities where profit opportunities are limited. Their economic fate is intimately tied to the performance of the large corporations with which they maintain exchange relations. Many of the business established are in the service industry where entry barriers are very low and competition so very intense that the effect of new findings is simply to displace the existing firms (Storey and Johnson 1987).

1.2.2 Self-employment as proxy to informality

Collecting information on the formal sector is easy and straight forward. It is easy because most of the countries have a data base of all the registered companies. The data base is often used as a sampling frame for empirical studies. The challenge is on collecting information on the informal sector. By definition the informal sector is not regulation compliant. Rogerson and Hart (1989) used self-employment as proxy to measure the informality. The self-employment information can be found from the labour force survey.

This gives a clear picture of the importance of self-employment in this study on its contributions to the informal sector. In this study about informal sector, it will be based on the data collected under the labour force survey on the self-employed. Self-employment – working for ‘yourself’ - this can be both informal and formal employment. It is possible to be self-employed in a business that is registered for tax and also formally registered. There should be no confusion in this regards since our study will focus on the non-registered and non-tax paying companies. Informal employment is mostly composed self-employed people although it is possible for one person to run several informal stalls. These individuals are not registered for tax and satisfy characteristics of informal activities.

As Hart (1973; 86) defined the concept that “the distinction between formal and informal opportunities is based on that between wage-earnings and self-employment” which has continued to be an un-debated in literature. Sanya (1991; 41) used the concept without qualifying it and asserted that the large majority of urban informal sector is self-employed.

1.3 PROBLEM STATEMENT

According to Quarterly Labour Force Survey QLFS (2016 Statistics South Africa), unemployment is projected 26.7% in the country. Considering number of factors, there is a need to affirm whether as the employment rises, self-employment also takes the same increase or not. It is imperative to evaluate the contribution of self-employment towards employment figures.

Economic indicators are able to help one to know how the economy of a country is performing. A number of indicators are useful in this regards. The Gross Domestic Product (GDP), Consumer Price Index (CPI), interest rate, currency strength and Unemployment are used as economic indicators. Therefore, unemployment rate is an indicator that measures economic growth of the labour market mainly focusing on the formal sector. While the labour market is made up of all the economically active and working age proportion of the population who are not all absorbed by the formal sector such that some end up in the informal sector. The informal sector is often unaccounted. It is imported to have a good understanding of what makes up the informal sector because it can lead to a better understanding of the economic contribution of both the informal and formal sector. This will benefit scholars to better understand the impact the informal sector on the unemployment rate

1.4 RESEARCH QUESTIONS

Most of the problem statement was addressed by the theory, however the following is still in need of research.

1. How did the trend of the informal economy compare to the formal economy in Gauteng between 2001 and 2013.
2. What was the contribution of self-employment as a sub-category of the informally employed to the unemployment levels in Gauteng Province between 2001 and 2013?
3. What are the socio-economic characteristics of the Self Employed within the informal sector in Gauteng Province?
4. What is the spatial pattern of the self-employed/ informally employed across Gauteng?

1.5 AIMS AND OBJECTIVES

Aims and Objectives:

The main objective of the study is to look at the contribution of self-employment to unemployment rate by geo-types as defined by Statistics South Africa in order:

1. To define the informal economy compare to the formal economy in Gauteng
2. To assess the impact of self-employment on various employment figures produced.
3. To compare socio-economic characteristics of the Self Employed within the informal sector in Gauteng.
4. To pattern the self-employed/ informally employed across Gauteng.

1.6 THE LAYOUT OF THE STUDY

Chapter1 – Introduction to the Study

Chapter 2 – Literature Review

Chapter 3 – Research Methodology

Chapter 4 – Data Discussion

Chapter 5 – Recommendations and Conclusion

1.7 CONCLUSION

This chapter laid the foundation for the rest of the study. The next chapter will cover the theory that will cover the problem statement.

CHAPTER 2 LITERATURE REVIEW

2.1 INTRODUCTION

There are a wide variety of views on the driving forces behind Informal economy. Similarly there are several different approaches to this phenomenon. This chapter will attempt to discuss some of these driving forces and provide an overview on some of the theories and approaches related to informal employment. Firstly this section will provide overview of classical theories and approaches on informal employment, secondly a discussion on informality in the developed world thirdly looking at informality in the developing world, fourthly informal employment in South Africa and lastly the informal employment in Gauteng province.

2.2 AN OVERVIEW OF KEYNESIAN AND THE NEOCLASSICAL THEORIES ON THE INFORMAL ECONOMY

Kaulmann and Kaliberda (1996) view the informal economy as the result of the inefficiency of capitalism. Since the informal sector is a product of low productivity, high production costs and low skills, thus the state has to improve the productivity of workers to enable participation in the formal economy. They are of the view that, although informal firms are extra-legal, they are less burdened by regulations, than low productivity. They believe that living standards can be artificially stimulated through better social welfare services and cross subsidisation policies. Better policies in education subsidy, better infrastructure, production inputs and technology as means of increasing productivity and profits.

On the other hand, the Neoliberals view the informal economy as the market response to state regulation/bureaucracy. De Soto (2003) views the informal sector as a grassroots free market movement to satisfy the basic needs of the poor because the state overburdens the poor with excessive regulations and does not supply basic needs and that Informal markets provide subsistence needs of the majority of the population in Less developed countries (LDCs) at a significant lower costs than the formal economy. The informal economy provides essential public services such as housing, transportation, cheap food, electricity. De Soto (2003) noted that free market capitalism is an alternative to empower the poor

without resorting to Marxist revolutionary wars. De Soto (2003) notes that the removal of state regulations will lower operating costs and enable informal firms to enter the formal market removing minimum wages to increase employment in the formal sector.

2.3 KEYNESIAN AND NEOCLASICAL VIEWS ON HOW TO REDUCE DIVERGENCE

There are generally two overarching approaches for the different governments across the world regarding economic growth in the different countries. In the 1950s and 1960s it was widely assumed that with a correct mix of policies and resources, low income economies would be transformed into dynamic modern economies. That in the process the traditional informal activities would be absorbed into formal and thereby disappear. Furthermore, in the development of the developing countries would end up earning above the subsistence level wages and thereby eliminating poverty leading to the 'Lewis Turning Point' (Lewis, 2015).

The Keynesian theory believes that regional convergence can be achieved through state interventions and the redistribution of national resource through progressive taxes, state jobs, public works and social welfare. They argue that divergence is a result of market failure that needs the state to intervene to restore the equilibriums. They focus on the demand side of economics.

The Neoclassical theory emphasise "the Invisible hand" Says Law, Laissez faire and supply side economics. They explain the informal sector as free market dissent against state regulation and focus on the supply side. The Keynesian approach is a short run solution to the problem while the neoclassical a long run solution to the market equilibrium. Third Way Politics is a combination of the Keynesian and the Neoclassical approaches. This has been adopted by countries such as UK, USA, China and South Africa.

2.4 MORDENIST APPROACH ON INFORMALITY

City planning is a professional practice charged with shaping the urban environment, primarily through enacting municipal laws and regulations to restrict private activity in order to achieve broad public benefit (Fulton, 2005). Planning activity is relatively centralised in the hands of specialised professionals, who utilise a combination of public input and technical expertise to shape urban space.

By its very nature, informality seems in many ways to be irreconcilable with mainstream planning theory. It is a form of urbanism that, though not always completely spontaneous and unplanned, nevertheless occurs from the ground up, outside of laws regulating space.

Modernist argue that the rational planning approach hinder the capacity of planners working under this framework to think creatively about issues such as informality. Traditional planning seeks to mitigate differences and irrationalities in the urban environment, and as Sandercock (2000) observes, diverse cities and regions are a challenge to planning systems, policies and practices consequently resulting in the difference that is seen as a problem. Additionally, the modernist framework of rational planning is critiqued for failing to consider the “ethnographic present”, the heterogeneity of lived experience (Holston, 1999).

The modernist planning's “notion of alternative futures is based on absent causes and its methods rely on a theory of total de-contextualisation” (Holston, 1999, p. 158). Classic planning approaches, due largely to their modernist underpinnings, cannot recognise informal space claims as valid adaptations of low-income immigrants to harsh socio-economic conditions. Informality is conceptualized as rule breaking, with only a limited number of possible resolutions, either better enforcement of rules or the enactment of new rules to bring informal actors into compliance. There is very little room for creativity under this framework.

2.5 MULTICULTURAL APPROACH TO INFORMALITY

The multiculturalists approach obscures differences in political power and economic resources which underlie the issue of informality. For instance, in many immigrant neighbourhoods, merchants who complain about informal street vending are of the same ethnicity as the vendors themselves. Informality in this context has little to do with cultural misunderstanding, and much more to do with conflicting economic interests. No matter how laudable a social goal, respect for diversity and fostering of multicultural understanding alone cannot resolve conflicts which arise primarily from structural factors endemic to the contemporary neoliberal city (Shore et al., 2004). Nor does a focus on planning process and cultural understanding address the fact that, without serious reconsiderations at the level of legislation and rule-making about how space is regulated and how

rules are enforced, calls for multicultural understanding remain simple rhetoric, rather than a real pathway for resolving issues of informality.

2.6 INFORMALITY IN THE DEVELOPED WORLD

In the USA, Brooklyn, Red Hook is one of New York City's more isolated neighbourhoods. Therefore, it is a good example of how informal sector developed in the first world countries and how the authorities handled it. The informal market developed because there were sports activities that entertained the neighbourhood during the weekends (Feige, 2016). The locals prepared food and sold the food to the players and the spectators who came to watch soccer and baseball. The informal market took opportunity and introduced food from Mexico, El Salvador, Chile, Guatemala and the Dominican Republic that was cooked on site for cost saving purposes.

Roy (2005, p. 154) argues that formalisation can be a moment when inequalities are deepened and secure rights can be more insecure than informal claims. The inflexible demands of the government towards the vendors to comply with minimum requirements left many vendors with a new debt burden to acquire the required trucks from which to operate. The challenge with the law is that it is written in a form of one size fits all manner, such that officials are forced to primarily focus on the legal compliance rather than on the economic needs of the vendors and park goers. There is a need for a more flexible approach which allows for gradual upgrading of spatial practice and takes into account the economic and social inequalities that make informal urbanism a strategy of the poor in especially in developing countries like South Africa.

Holston, (1999 p.9) argues that fair inclusion into society can be defined on the basis of rights to different treatment with equal opportunity.

In the 1980s, the developed countries, like Europe, North America saw some reorganisation of production into centralised specialised small units, and this was associated with informal economy as mass production was giving way to specialisation (Piore & Sabel, 1984). This specialisation led to standard jobs being turned to substandard or atypical jobs with hourly wages but few benefits leading to the production of goods and services being subcontracted to small informal units and industrial out workers (Portes, Castells & Benton, 1989).

2.7 INFORMAL ECONOMY IN THE DEVELOPING WORLD

In the developing countries, the low rate of industrialization and productivity, and the presence of surplus labour are cited as main reasons why a dualistic system arose in the cities of the third world (Breman, 1980). Another reason named is low technology and intensive use of cheap unskilled and semi-skilled labour and this lead to the informal sector in less developed countries being considered a sector for survival. An important feature of the informal sector that was highlighted in the Latin America is the fact that it tends to increase in many developing countries during periods of economic crises (Tokman, 1984). This was also confirmed by Lee (1988) when millions of people who lost their jobs during the Asian economic crises in the former East Asian Tiger countries created work in the informal economy. This can further be observed through the structural changes in Africa and economic transition in the former Soviet Union and in the Central and Eastern Europe were also associated with the expansion of the Informal economy

2.8 THE INFORMAL ECONOMY IN SOUTH AFRICA

Beaumont and Baker (2011) argue that there are four areas of regulation that influenced the development of informal economy in South Africa namely, the racial based restrictions on labour market, racially based restricts on property ownership; regulations on distributions of different categories of products and services; and the direct regulation of the informal economy. Armstrong et al. (2016) points out that the policies of the apartheid regime dictated which jobs were accessible to which racial group and this has led to the majority of South Africans being excluded from participating in skilled labour because of the racial designation policies.

The group areas act that regulated Africans could live and what type of properties they could own, further shaped the landscape of the country (Shore, 2004). Land policies in rural South Africa resulted in virtual elimination of subsistence farming (Lewis, 2015). The land policies did not only limit economic opportunities but also indirectly resulted in the informal sector such as the formation of the taxi services. The taxi services came about because many Africans had to commute long distances for long hours on the road (Lindsay, 2015). According Rogerson and Hart (1989), restrictions of goods and services, to Africans also led to the

development of the informal sector, for examples there were initial restricts of who could sell alcohol to Africans, which in 1962 was replaced with stringent regulations that stipulated quantities that could be sold in townships. The informal society represents a large section of urban society in developing countries, including South Africa, where it is almost as large as the formal sector. It is defined using economic criteria.

2.9 INFORMAL ECONOMY IN GAUTENG

Gauteng province is a home to three large cities, The City of Johannesburg which is the hub of financial and ICT industries with a strong retail and services sector. The City of Ekurhuleni, a manufacturing city, logistics and transport hub of the province and finally the City of Tshwane as one of the hub of the automotive sector and of research & development (Feige, 2016).

The involvement in informal self-employment seems to be differentiated by a number of key factors including locality, age and gender. Informal self-employment is most prevalent in urban formal areas. For some reason Gauteng province seem to have all the ingredients for the informal self-employment (Lindsay, 2015).

South African Local Government Association (SALGA) has accepted that informal trade has always been part of the South African economy and should as well be accepted as be accepted as an important part of the government strategy to address unemployment and support livelihood creations and reducing the vulnerability (Lewis, 2015). Many municipalities have now taken it upon themselves to provide some level of planning and control by providing the street vendors with demarcated area and stands for the purpose of informal trading.

The ruling party, African National Congress (ANC) Congress (2007), has taken a decision to prioritise the informal economy through the support of inclusive economy and decent work pillar. However the sector continues to be marginalised or disconnected from the main stream economy. According to the provincial budget speech, Gauteng houses 40% of the business in South Africa and accounts for 64% of the trade opportunities for export to sub-Saharan Africa.

2.10 INFORMAL EMPLOYMENT VERSUS SELF EMPLOYEMENT

In this study it was stated that the informal sector consists of those organisations that are not registered in any way. They are generally small in nature, and are seldom run from business premises. Instead, they are generally run from homes, street pavements and other informal arrangements. The informal sector therefore provides informal employment that is characterised by no division of labour and capital cost as defined by Mowforth and Munt (2015).

The definition of self-employment is a person who works but not for anyone else except under arm's length contract. Therefore, one can learn from the International Labour Organisation's definition that Self-employment includes those jobs where the remuneration is directly dependent upon the profit or potential for profits derived from the goods or services produced and own consumption is considered to be part of the profits. Mowforth and Munt (2015) note that while self-employment is not confined to the informal sector alone, but it is clearly a dominant in the informal sector. In unpacking the informal employment, we noticed that self-employment forms a portion of the small businesses.

2.11 CONCLUSION

In this study the definition of self-employment was done to that informal economy that have just discussed above. The SESE data mainly focuses on the informal business. Hence our definition of self-employment shall be confined only to the informal employment. It also showed the issues that were not addressed. The next chapter will discuss the research methodology.

CHAPTER 3 DATA SOURCE AND METHODOLOGY

3.1 INTRODUCTION

This chapter describes the profile of the informal employment using two data sources, Quarterly Labour Force Survey (QLFS) and Survey of Employers and Self Employed (SESE). In the collection of the SESE data, the survey only focused on all the informal business that are not registered for VAT, by eliminating any business that was registered or formal. As such this study is focused on the informal businesses. Informal business that contributes to what we can call the informal economy. Informal economy and informal business will be used interchangeably in this study as a result. Statistics South Africa has been collecting information on SESE every four years since 2001. The data is available for the years 2001, 2005 2009 and 2013. The study seeks to illustrate the significance of informal employment in Gauteng. It will do that by focusing on Self-employment within the informal sector and its relationship to the labour market in Gauteng. Gauteng is the hub of the South African economic activities and it attracts not only locals but also people from the rest of the continent of Africa.

3.2. DATA SOURCES

This study is a quantitative study and uses secondary data from the Survey of Employers and Self Employed (SESE) 2001 and 2013 and Quarterly Labour Force Survey both data sets collected by Statistics South Africa. The sample for each data set is drawn from the master sample, which Stats SA uses to draw samples for its surveys. The SESE is only interested in businesses not registered for Value added tax (VAT). There is a difference between a business paying VAT for its purchases and a business that is registered with the Receiver of Revenue for VAT for its profits. It is important to understand that the majority of informal employment is experienced on the Non Vat registered businesses by virtue of their noncompliance with the law, hence the study is looking for such information in the SESE data. Software that will be used includes SAS, Excel and GIS software.

3.2.1 Methodological Analysis

The study will use the secondary data described above and use both descriptive and inferential statistical tools for analysis. It will also include spatial statistics where possible. Statistical methods like logistic regression will be employed. The software that will be used is SPSS and GIS software for spatial analysis.

3.2.2 Descriptive Analysis

Descriptive analysis showing the business will be done in two data points, SESE 2001 and SESE 2013 of the informal business in Gauteng. The demographic and socio-economic characteristics of the self-employed and informal business will be explored. The section begins with the demographic characteristics followed by the socio-economic characteristics. Furthermore, a detailed analysis will be made on variables requiring any further interpretation such as checking if there is any significant relationship between self-employed and the informal business and their socio-economic characteristics.

3.2.3 Multivariate analysis

3.2.3.1 The Binary logistic model

This section presents the background to the binary logistic model and its application in the study and the mathematical representation of the model. The binary logistic regression is used to determine the factors affecting the Self Employment and the Informal business.

3.2.3.2 Introduction and application of model

Multiple linear regression is used to investigate the relationship between a continuous (interval scale) dependent variable (Gujarati, 2003). In the case of, socio-economic variables, they are often categorical, rather than interval scale. The Logistic regression is used in instances where the dependent variable is binary or ordinal (Pampel, 2002).

The logistic regression is used to predict the category of outcome for individual cases. It takes into consideration the factors under investigation, and it establishes the most best-fit model. This is achieved by creating model that includes the factors (called “predictor variables”) that are useful in predicting the outcome. For each model calculated a statistics called “Wald test” is used to test the statistical of each factor or combination of factors (Gujarati, 2003). The probability value

corresponding to this statistic, and taken from the resulting, that is the best-fitting model, will be used in the presentation and evaluation of the data (Rietveld & van Hout, 1993).

3.2.3.3 Mathematical representation of the binary logistic model

The binary logistic regression is used to determine the factors affecting the Self Employment. Based on the review of literature, the model is estimated as follows
Self-employment is modelled using the binary logistic regression model with the model outcomes:

$$Y_i = 0 \text{ (No),}$$

$$Y_i = 1 \text{ (Yes)}$$

Mathematically, when the logistic regression model involves only one explanatory variable, say X_i and that X_i takes only two values, 0 (not self-employed) and 1 (self-employed). A logistic regression model for this data would correspond to:

$$\log \left\{ \frac{\pi(X_1=1)}{1-\pi(X_1=1)} \right\} = \beta_0 + \beta_1 \dots \dots \dots 1$$

$$\text{For the self-employed } (X_1 = 1) \text{ and } \log \left\{ \frac{\pi(X_1=0)}{1-\pi(X_1=0)} \right\} = \beta_0 \dots \dots \dots 2$$

For the ones not self-employed ($X_1 = 0$)

We see that β_0 represents the logarithm of the odds of response for not self-employed individuals, whereas the logarithm of the odds of response for self-employed is given by $\beta_0 + \beta_1$.

According to Hosmer and Lemeshow (2000), multiple logistic regression generalises the binomial logistic model to the case of more than one independent variable.

For illustration, let us consider a collection of p independent variables (say $X_1 =$ gender; $X_2 =$ marital status; ... $X_p =$ highest level of education) denoted by the vector $X' = (X_1, X_2, \dots, X_p)$. The logit of the multiple logistic regression model is given by the equation $g(x) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_p$ such that the logistic regression is

$$\pi(X_1 = 1) = \Pr(Y = 1|X_1 = 1) = \frac{\exp(\beta_0 + \beta_1)}{1 + \exp(\beta_0 + \beta_1)} \dots \dots \dots 3$$

A logistic regression analysis will be done on the Self-employment as a dependent variable. To that end, the variable Self-Employed (Yes = 1 , No = 0) will be used to do a logistic regression to determine the odds of being Self-employed with age, education level, sex, population group and site of business as controlling variables and any other variables of interest. The logistic regression will be conducted on both the 2001 and 2013 data.

3.2.4 Spatial Analysis

Statistics South Africa also provides geo-referenced data with small area layer for selected variables. The small area layer is a lower geographic level which is below a sub-place name but higher than the enumeration area. A thematic maps showing the informal business by municipality in Gauteng province will be made. If data permits further analysis of spatial patterns will be done to establish if there is clustering of informal businesses or not. Cluster and outlier analysis (Anselin's Local Moran's I). In this analysis the researcher will try to establish if informal business is clustered or not.

3.3 CONCLUSION

The study will use some model building and data will be collected to complete the processes. In this chapter the researcher has indicated the methodology carried out in the study. The important issues are such as the method of data collection, type of data that will. There are various reasons on how choices in this study were arrived at and justification as to how, where also provided in here. In chapter two there were questions that were posed and need to be answered by this study. In the next chapter the researcher present findings that are aided by the data and analysed so as make a meaningful response.

CHAPTER 4 DATA ANALYSIS

4.1 INTRODUCTION

This chapter presents the results of the analyses of the data on SESE. Quantitative approaches would be used to evaluate the data in order to gain deeper understanding of the overview of the Self-employed and Informal employment in South Africa by mainly focusing in Gauteng province. The chapter begins with the presentation of summary statistics of the demographic and socio-economic characteristics of the Self-employed. Quantitative variables would be expressed as averages, whereas the gender and literacy dummy variables were reported as frequencies and percentages.

4.2 DESCRIPTIVE STATISTICS OF THE DATA

This section presents the results of the demographic and socio-economic characteristics of the survey. The section begins with the demographic characteristics followed by the socio-economic characteristics. Detailed analysis is made on variables requiring any further interpretation.

The summary statistics of the variables comprising demographic and socio-economic data will be presented. Demographic characteristics of the Self-employed and the Informal employment present the summary statistics of age, gender, race, and education of between 2001 and 2013 in Gauteng Province.

Over the years there seem to be a slight decrease in the numbers of persons that are in the informal sector from over half a million in 2001 to below half a million in 2013. We also notice that the age distribution of the participants in the informal sector in Gauteng is consistently dominated by the middle age groups with very little youth and old age group participating in the Informal sector.

For the age distribution over the years we notice that the majority of the age group that is dominating the informal sector is the middle age group (35 -44) at around 33% percent followed by the youth (25 -34) at around 28% percent and dropping as the people growing older, indicating that the risk takers are the youth and the middle age group who are still ambitious and courageous. As far as ownership of businesses is concerned, We notice that the majority of the owners only owns a single business at around 97% making this group to be of even more interest as to

finding out what percentage of this single business owners are the self-employed, the real daring and what we can call survivors who carry their businesses on their shoulders such that if they don't work they don't earn.

This is where we will find our sub category of the self-employed under the informal employment. This also shows to us that the real employers in the informal sector are really almost non-existent since they constitute just over 2% of the informal sector. Therefore, making the regulation of the informal sector almost an unnecessary since very little employees needs to be protected within this economy.

4.3 UNDERSTANDING THE DISTRIBUTIONS OF VARIABLES OF INTEREST (2001)

The univariate table shows us that there is more self-employed (85%) people in the informal sector than the employers (15%). This highlights a need to zoom in to this subcategory of the informal sector. Looking at the age distribution of the people in the informal sector, we notice that more young people that the formal sector has not been able to absorb have resorted to the informal sector so as to have some sort of income for themselves and of course we see a that the aged are not keen to take the risk of venturing into the informal sector as the numbers dwindle down on the 55+ age group making less than 10% of the workforce in the informal sector whilst the youth makes up 37% of the workforce in the informal sector.

As far as education level is concerned tin the informal sector, we see a perfect normal distribution very few people that have no schooling and also very few people that have tertiary education in the informal sector. This makes a lot of sense because basic skills will be important for the survival of the business hence if you have no schooling background it is almost next to impossible to survive in the informal sector but then again the people with higher education will mostly have formal jobs and not be in the informal sector. In this study we see that the distribution of males (49.94%) and female (50%) population is evenly distributed in the informal sector in Gauteng.

Population group in the informal sector is in line with our national official figures where we see that the majority of the population in the country is Blacks, as such it is not strange to see that the informal sector is mainly dominated by Blacks and the other ethnics are a minority so much that it will make statistical sense to combine the minority groups so that we can have statistically significant figures to calculate. Hence in our study we shall have only two population groups that is Blacks and others (10%). We see that 90% of the population in the informal sector in 2001 was mainly Black.

The nature of businesses in the informal sector is that they are found almost anywhere. This is because they have to be run at low cost and maximum returns. Their location is mostly based on convenience so as to derive maximum benefit. Hence two locations are taking the upper hand in our data. First one is because of low cost on rental and infrastructure, 62% of them run within the dwelling. This favours the informal business as there is no extra cost on rental and in some cases even on the building structure since in most case they are housed within the existing structures. The second group is the one that takes advantage of open spaces and utilise the spaces to its advantage. They also often do not pay rent. They either erect tents or have mobile structures that occupy the space and sell their products to the public. This is the second largest group at 26% percent.

The question of when ago was the business started was answered in five categories ranging from less than a year to more than ten years ago. One notices that 22% of the businesses were less than a year old, 36% less than three years and 20% were less 5 years, 13% were less than ten years while only 8% were more than ten years old in 2001 in Gauteng in the informal sector.

4.4 BIVARIATE ANALYSIS FOR 2001

In 2001 the 88 % of the 15 -35 age group were self-employed as compared to 12% that was not. And 84 % of the 35 - 44 age groups were also self-employed as compared to only 15 who are not within the same age group. For the age group 55 and above 78% of them are in self-employment and only 22% not self-employed.

For the males 80% of them are self-employed as compared to only 20 % who are not self-employed. Females, 90% of them are self-employed as compared to only

10 % who are not. In general one can say that more people seem to prefer to be self-employed as compared to not being self-employed. Within the no schooling group, 87% are self-employed as compared to only 13% who are not. The primary education group, 89% are self-employed as compared to only 11 % who are not. The secondary education group also 84% of the people are self-employed as compared to only 16% of them who are not. In the tertiary education group about 79 % of them are self-employed as compared to 21% who are not.

Looking at different business location, concerning ownership, one thing that stands out is that across all the different locations almost all of them are dominated by self-employed business ranging from 76% to 88% with the exception of only one that is business outside dwelling with its own structure. He we notice that only 48% are self-employed business as compared to 52% who are not self-employed. In a way this makes a lot of sense because when we look at those businesses which are not self-employed, we actually talking about larger businesses who employers more than one person. It makes sense that this business will mostly be found outside the dwellings.

4.4.1 Review of 2013

This section presents additional results of the demographic and socio-economic characteristics of the survey. The section again begins with the demographic characteristics followed by the socio-economic characteristics. In both cases summary tables of some variables are presented. Detailed analysis is made on variables requiring any further interpretation.

When we compare informal business over the years from 2001 to 2013 we notice that majority of people over time have been motivated to start their own business because of unemployment. This averages of over 60 % each data year stating unemployment as their main reason why they started the business.

4.4.2 Multivariate analysis of labour market status

Multivariate analysis measures the relative importance of a factor in explaining the dependent variable. The objective of this study is to determine the relative differences between Self Employed and those that are not Self-employed in Gauteng in the informal sector.

The logistic regression model results are interpreted as an odds ratio, which is a probability of an event to occur. For example in this study the labour market

outcome had two outcomes, either to be Self-employed or not self-employed (Employers). As discussed earlier, the Self-employed are a subcategory of on the informal sector. These are the real survivalist since their productivity and income solely depends on them.

4.4.3 Bivariate analysis 2001

Ownership by Age_3

We notice that about 88 % of the respondents in the age group (15 -34) are self-employed as compared to the only 12 % who are not self-employed, 85 % of the people in the age group 35 -54) are also self-employed as compared to only 15 % who are not self-employed whilst 78% in the age group 55+ are self-employed as compared to 22% who are not self-employed in this age category

Ownership by Gender

Gender indicates that 80% of the males are self-employed as compared to the 20% who are not self-employed in the informal sector. It also shows that 90% of the females are self-employed as compared to only 10% that are not self-employed in the informal sector in Gauteng in 2001

Ownership by education

For education we see that for the No schooling respondents, 87% of them are self-employed as compared to 13% who are not self-employed. Those with Primary education 89% are self-employed as compared to 10% who are not self-employed. Those with secondary education, 84% are Self-employed as compared to 16 % who are Self-employed. In the tertiary education group 795 are self-employed as compared to 21% who are not self-employed.

Ownership by population group

Population group shows that 87% of blacks are self-employed as compared to 13% who are not self-employed and while the Whites, Indians and Coloureds have 74% self-employed and 26% not self-employed in the informal sector in Gauteng.

4.5 LOGISTIC REGRESSION FOR INDIVIDUAL VARIABLES IN 2001

Each variable was tested individually and multinomial in the model to assess its significance in the model. First we report on the significance of each of our independent control variables. The results are summarised briefly as follows:

4.5.1 Age variable and in the model

Age has 3 categorical values namely 1=15 -34, 2= 35 -54, 3= 55 and above, the third category which is 55 and above will be used as a reference group to test if it has any significance difference from the other groups

Testing for age individually in the model, the P value is not than 0.05 meaning that age has got not important statistical association in the model with predicting self-employment. With P value of 0.1349

The Null hypothesis that $B=0$ for age was significantly different with P value of less than 0.0001 indicating that age is associated with the dependent value in the model which is self-employment

When age category 55 + years is compared against the 15 -24 year age group, there is significant difference but no significant difference could be found between this reference age group and the age group from 25 -54. This implies that the grouping of the age category might as well be divided into the two age groups, one that is significant predictor and the other that has no significance which is from 25 -54.

This could mean that the young people are not associated with self-employment since many of them are not employed and similarly the older people are not associated with the self-employed as they grow old because many of them are retired and not working

By looking at the odds ratios estimates of Age, we know that Age is divided into five age groups namely; 15 -24, 25 -34, 35 -44, 45 -54, and 55 +. Using the 55+ as a reference group, we find that the 15 -24 are 9 times more likely being not self-employed as compared to the 55+ age group. The rest of the age groups do not have any significant difference with the reference age group, meaning they are all the same.

4.5.2 Gender

Gender variable individually is a significant predictor of the depend variable which is self-employment in our model. Gender within the Model and between the age categories, the statistics reveals the Male gender is significantly different from the females in the model. Its P value is 0.0014 which is less than 0.05

For gender, using females as a reference group, we notice that Females are 0.5 times more likely to be not self-employed as compared to males. In other words, males are twice more likely than females to not to be self-employed.

4.5.3 Population

The population variable is divided into four categories, Blacks, Coloureds, Indians and Whites. Using whites as a reference category to compare with the other categories to test for statistical difference against the other categories. The population variable has a statistical significance in the prediction of the dependent variable which is Self-employment within the informal sector in Gauteng. It has a P value of less than 0, 05.

When the three population categories are compared against the Blacks, no statistical significance could be found between the reference group and the Indians and coloureds, but only against the White population there was a significant deference in Gauteng province for the informal sector. This make sense when considering that the blacks coloured's and Indians were all at some stage similar under privileged in South Africa.

Using Blacks as a reference group, Whites and Indians are 0.3 less likely to be self-employed, and the coloured 0.6 less likely to be self-employed than black in the informal sector in Gauteng. Using the other races combined as a single category as a reference group, Blacks are 2.6 more likely to be self-employed in than the other races combined in the informal sector in Gauteng in 2001.this is a significant difference between blacks and the other population group.

4.5.4 Education

Testing for the education variable which has four categories, the No schooling category will be used as a reference category to test for significance difference between the categories. The education variable within the model is not significant in predicting our dependent variable because it has a P value that is greater than 0.05 which is 0.235. When education category of no schooling is compared

against the other three education categories, namely Primary, Secondary and Tertiary, there were no significant differences between this age categories. This means that education is not a good predictor of self-employment in the informal sector in Gauteng. Using the no schooling as a reference group we notice that there is no significant difference between all the groups. This is in agreement with the fact that education was earlier seen to be a poor predictor of Self-employment in our model

4.5.6 Business started location

The location of businesses is divided into ten categories. The last category (dwelling at the customers place) will be used as the reference variable that will be compared with the rest of the categories for statistical significance difference from others. Overall the location has a statistically significance in predicting the dependant variable in Gauteng which is the self-employment since the P value is less than 0.05.

With the business location divided into five categories, the first being location at the customers place being used as a reference, we see that business outside the premises 0.16 less likely for the self-employed business as compared to the rest of the location which are all not significantly different from each other.

4.6 MULTIVARIATE ANALYSIS

The model looks at the dependant variable that is self-employment and test if it can be statistical significantly predicated by the following variables such as Age, Education, Location Population group and gender.

Table 4.1: Illustration of the multinomial logistic regression models including control: **Variables for each model.**

	Model
Self-employment Employers (ref)	Informal employment
Other control Variables	Education
	Sex
	Population
	When was Bus started
	Location

Probability modelled is ownership='1' =Self-employed and 2=not self employed

Table 4.1 indicates the variables that will be used in the model and the reference categories of the different variables that will be used to test for significance statistical differences within the variables.

Model Fit Statistics

From **appendix A3** we see that the model is statistically significant and the null hypothesis is rejected, implying that the BETA exists and is not equal to zero.

Testing Global Null Hypothesis: BETA=0

All the other variables within the model are statistically significant except age (**Appendix A4**). There is not enough evidence that age is a predictor of the Self-employment when we test it individually taking all the other variables into consideration. This is also shown that only the Middle age group was significantly different from the rest of the age groups. The P value for Age is greater than 0.05.

4.7 DISCUSSION OF MULTIVARIATE FINDINGS

This explains our responses in the model so that Ownership will either be 1=self-employed or 2= not self-employed. The null hypothesis confirms to us that our model is significant and our Betas are not zero, therefore there exist some arbitrary number so that the model is valid.

We have seen that in 2001 the informal sector in Gauteng had 783 observations in the informal not vat registered business. 677 of which were self-employed and only 116 were informal employers (not self-employed). This were sorted by the Ownership variable so that 1= Self-employed and 2=employers. The logistic regression was however represent the Self-employed =1 and the not self-employed =0 as binary responses. The likelihood ratio chi-square of 2486 with p-value of 0.0001 tells us that our model as a whole fits significantly better than an empty cell model. The score and Wald test are indicating that the model is statistically significant.

4.8 INDIVIDUAL ANALYSIS OF EACH VARIABLE

The type 3 analysis of effect show the hypothesis test for age, gender, education and population group business location individually. The chi-square test and associated p-values shows that the four variables in the models improve the model fit. The tables of maximum likelihood estimates showing the coefficients of the listed variables as statistically significant predictors of self-employment in Gauteng. Indicating that every one unit change in age , the log odds of self-employment decrease by 2.5 for age group 1 when compared to age group 5, by 2,4 when compared to age group 4, by almost 2 when compared to age group 3, and by 1.9 when compared to age group 2 . The odds are also decreasing by 0.8 for females when compared to males. For education the odds decrease by 0.7 for tertiary education when compared to no schooling, 0.01 when compared to primary education and by 0.7 when compared to secondary education. The population group for the whites the odds will increase by 0.96 when compared against the Blacks, by 0.6 when compared against the coloured's and decrease by 0.1 when compared to Indians

We also saw that there is a coefficient of the gender education population groups are statistical significant, indicating the change the log odds of the outcome one unit increase in the predictor variable to the predictor variable.

1. For every one unit change in education the log odds of self-employment (versus not self-employment) increases by 9.2 for no schooling, decrease by 31, 3 for primary education and 0.2 for secondary education.
2. For a one unit increase in population group for Blacks , the log odds of being self-employed to informal sector in Gauteng decreases by 11,5.

Table 4.2: Formal employment in Gauteng 2008 to 2013 versus the Self-employment in the informal sector

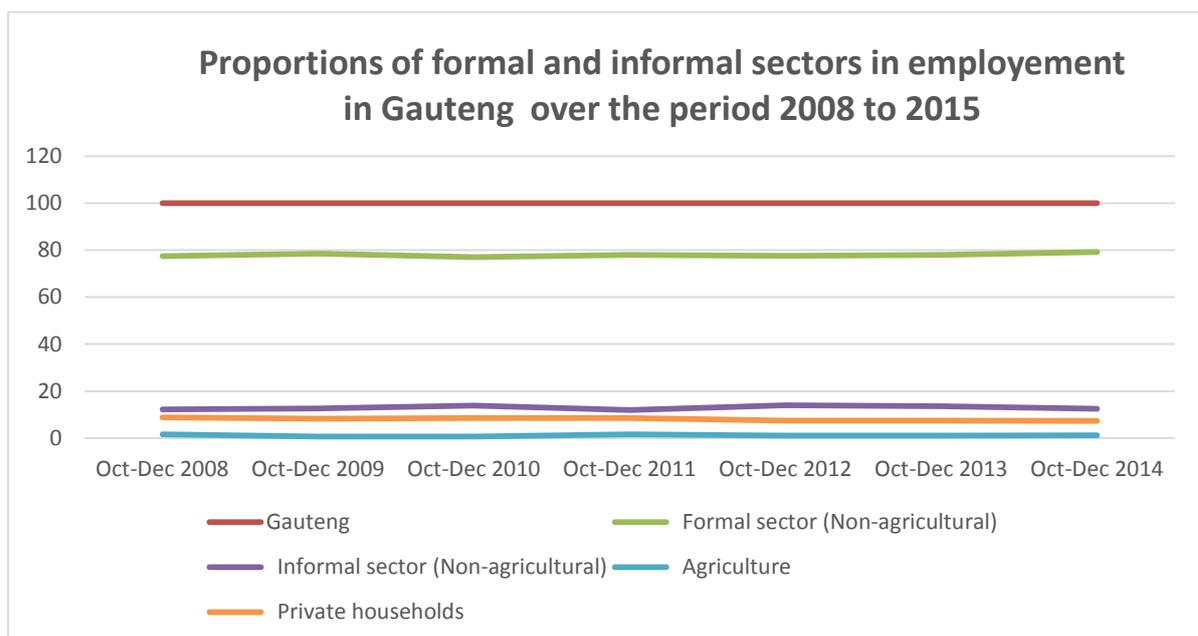
Oct-Dec 2009	Oct-Dec 2010	Oct-Dec 2011	Oct-Dec 2012	Oct-Dec 2013	Oct-Dec 2014		Oct-Dec 2015
Thousand	Thousand	Thousand	Thousand	Thousand	Thousand		Thousand
4,414	4,419	4,607	4,724	4,823	4,881	Gauteng	5,090
3,464	3,402	3,588	3,661	3,758	3,863	Formal sector (Non-agricultural)	3,951

558	609	549	659	651	607	Informal sector (Non-agricultural)	726
29	31	74	51	53	55	Agriculture	34
363	375	395	353	360	355	Private households	378

Source STATS SA QLFS 2015

Figure 4.2 shows a snapshot of the formal employment trends in Gauteng from 2008 to 2015. From the table 4.2 we see that's over the above period the employment has remained almost constant in Gauteng and reaching the 5 million mark in 2015. Similarly the informal sector has also contributed at a constant rate to the formal employment remaining constant just above 0.5 million out of the 5 million of the total employment in Gauteng province.

Figure 4.1



Source: Stats SA, QLFS 2015

Figure 4.1 shows the contributions of the different sectors to the formal employment figures in the Gauteng province over the years 2008 to 2015 as published in the QLFS. Figure 4.1 gives an indication of the percentage contribution of each sector to the employment in Gauteng province. The

contribution of average contribution of the informal sector over the period is 13% of the total employment figures in Gauteng.

4.9 SPATIAL CLUSTERING OF FORMAL AND INFOMAL BUSINESS IN GAUTENG

4.9.1 Spatial analysis

One of the objectives of this study is thus to establish if there is any evidence of spatial clustering of formal and informal business in Gauteng, To determine if there is any clustering, the global spatial auto correlation Moran's I statistics as considered. The results presented in **Table 4.3** shows positive z-score values for all the variables. i.e Formal (39,56) Informal sectors (24,46).

Table 4.3 Moran's I statistics for formal and informal sector in Gauteng

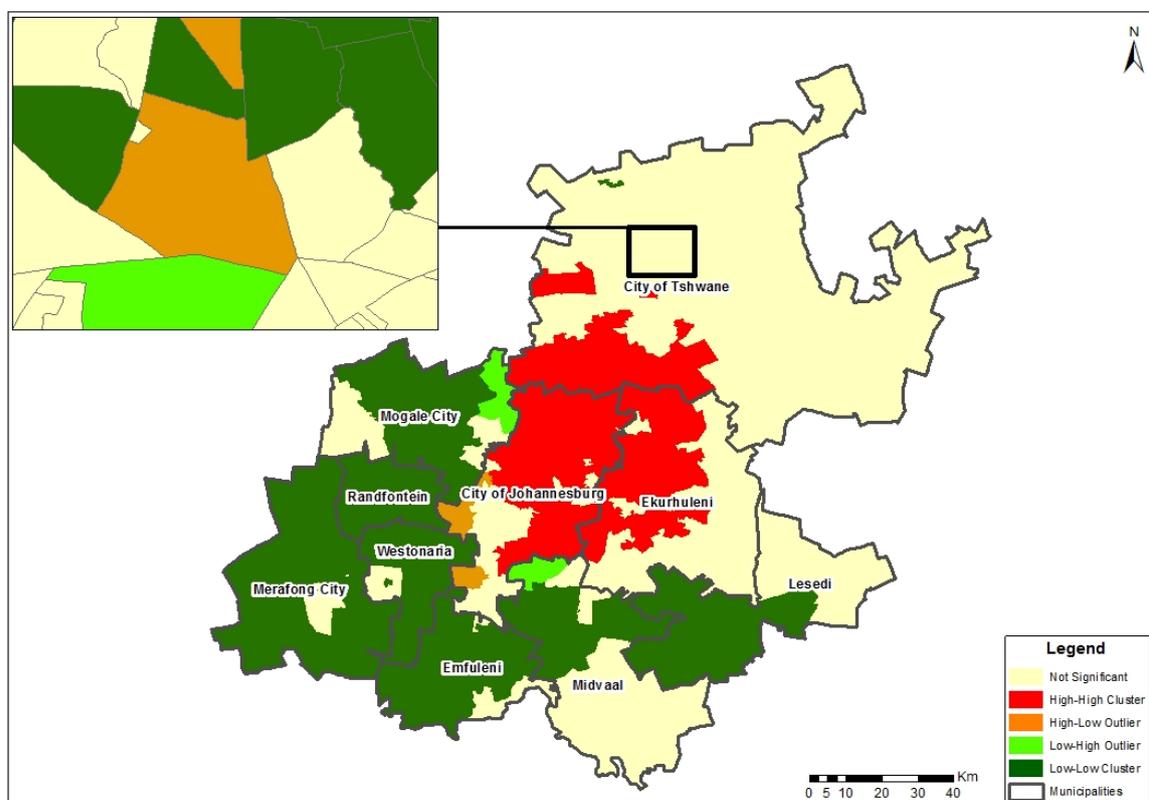
	Formal sector in 2011	Informal Sector 2011
Moran's index	0,502100	0,307243
Z Score	39,563887	24,464537
P value	0,000000	0,000000

Source of data: Census 2011

These positive z-score values suggest that the null hypothesis of Complete Spatial Randomness (CSR) can be rejected and thus, there is statistically significant spatial clustering in both formal and informal sectors. This implies that similar values (high or low) of employment sectors tend to spatially cluster together (Figures 4.2. to 4.3).

The results distinguishes between a statistically significant cluster (using informal employment as the indicator) of high values (HH), cluster of low values (LL), outlier in which a high value is surrounded primarily by low values (HL), and outlier in which a low value is surrounded primarily by high values (LH).

Figure 4.2: Spatial clusters and outliers of formal sectors in Gauteng



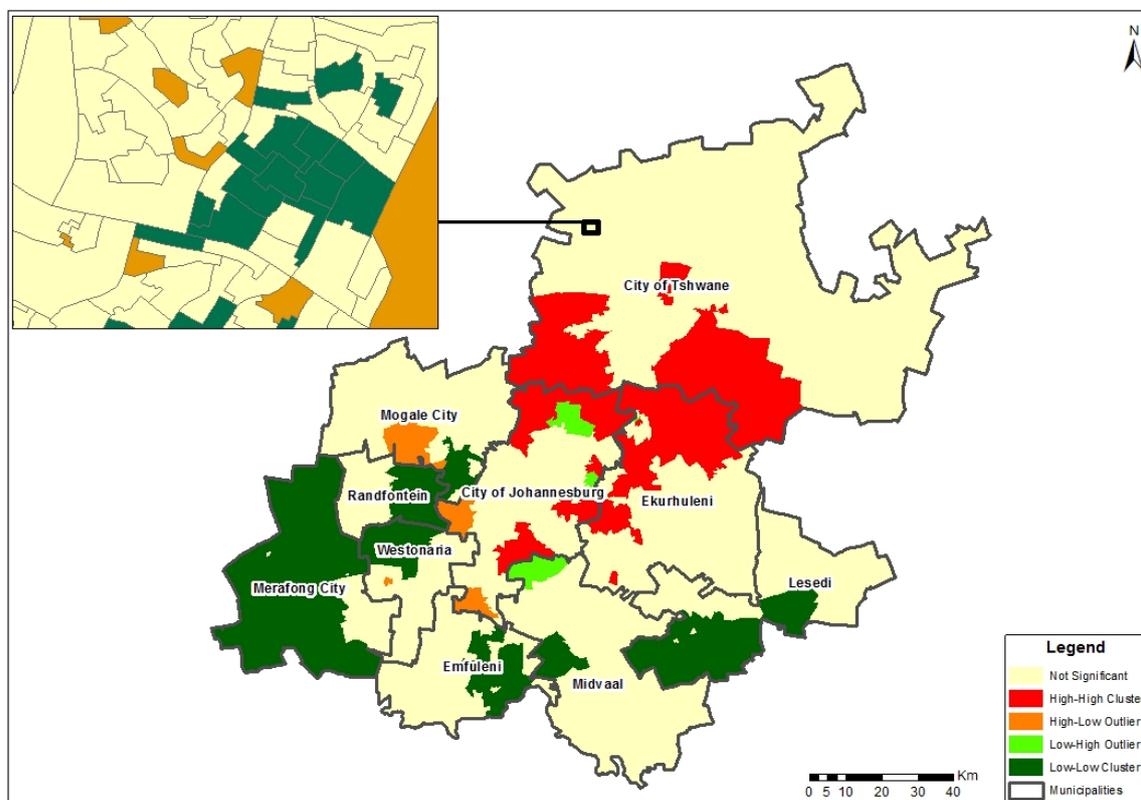
Source: Census 2011

Figure 4.2 shows the spatial cluster and outlier map for Formal business. The High-High clusters are concentrated in Tshwane and Ekurhuleni and the City of Johannesburg. The High-High clusters in the map reflect that Midrand is the centre of formal businesses that are taking place in Gauteng province as expected.

The lower low clusters are seen on the eastern fringe of Gauteng , Mogale City, Randfontein Westonaria and Merafong City are in the low cluster range of the

formal businesses. The north of Gauteng and the eastern side displaying non-significant clustering of the formal businesses

Figure 4.3: Spatial clusters and outliers of informal sectors in Gauteng



Source: Census 2011

From the figure 4.3 above we notice that the informal business also seem to be clustered around the same areas that have high clustering of the formal business indicating that the informal sector seeks opportunities that they can only be afforded by the existing infrastructure to tag on. This could also be because of the fact that most of the people who resort to self-employment are mainly individuals

who could not be absorbed into the formal employment due to the high rate of unemployment in the country.

4.10 CONCLUSION

This chapter has presented the results of data that was collected as prescribed in chapter three. The data was analysed and presented in meaningful graphs and charts format. These results endeavoured to provide answers to that were raised in chapter two. The chapter indicated the participant's percentage in terms of gender, age and working experience. The chapter also provided answers to the research questions; (1) how did the trend of the informal economy compare to the formal economy in Gauteng between 2001 and 2013, (2) what was the contribution of self-employment as a sub-category of the informally employed to the unemployment levels in Gauteng Province between 2001 and 2013? (3) What are the socio-economic characteristics of the Self Employed within the informal sector in Gauteng Province? And (4) what is the spatial pattern of the self-employed/ informally employed across Gauteng?

The next chapter makes recommendations to the self-employed and informal employment as to what measure could be put in place in the employment economy in South Africa to remains maintained and satisfactory.

CHAPTER 5

RECOMMENDATIONS AND FINAL CONCLUSION

5.1 INTRODUCTION

This chapter presents the summary and overview followed by recommendations and conclusion. The previous chapter, chapter 4 has focused on data collection, analysis and interpretation in relation to the research objectives. Strategic planning is important to ensure that the informal sector is well enabled to compete well with other counterparts for long term survival and sustainability.

The purpose of this research was to determine the extent of the number of factors that will help to determine whether employment rises, self-employment also takes the same increase or not. It is imperative to evaluate the contribution of self-employment towards employment figures.

This chapter comprises a summary of the study, addresses the findings per research question, provides managerial guidelines for opportunities and highlights future research opportunity in this field of study. Conclusion of the study will be drawn and recommendations will also be outlined.

5.2 BRIEF SUMMARY OF THE STUDY

The problem is in developing countries to determine if the employment number rises, self-employment also takes the same increase or not. It is imperative to evaluate the contribution of self-employment towards employment figures. The brief literature review showed a summary of what is happening.

The research design was performed in order to gather data to this effect and see as to how this is affecting the government. The measuring instrument developed for data collection to analyse and interpret in the findings that will actually lead to the response to the main research questions.

Below are the main research questions that were posed to respondents so that the actual facts can be proven. The recommendations to the public sector and self-employed also follow later in the chapter.

5.3 RECOMENDATIONS

From the results of this study the following guidelines are given to the Gauteng Province that have a sustainability solution or are planning to develop and implement sustainability in the future:

- The Gauteng Province personnel should offer continued support to self-employed and the. Gauteng Province should also develop an internal system that will enable management to know what everyone is doing.
- A proof in terms of recording of what was done should be made available. The records of what is being done should only be accessed by Gauteng Province and an alert should be send as notification immediately when there is abuse. If this monitoring tool is implemented effectively, Gauteng Province wiill know that whatever that is being done is being recorded.
- Much as department refer employees to training for other courses that adds value, after skills gap analysis mentioned above, employees referred to training to acquire knowledge that enhance their day to day duties.
- Gauteng Province should note that adding value to productivity of the employees in line with a Performance Plan should be allowed. Should the Gauteng Province not deal with this effectively it may be cost effective to levy the self-employed.
- Gauteng Province personnel when assisting officials to perform un-employment activities should only instruct them and observe performance. This will assist people to be independent and encouraged to explore the possibilities.

5.4 CONCLUSION

The findings of this study have provided information on important attributes the un-employment and self-employed value most. It also managed to assess perceptions of the un-employment and self-employed service quality. Findings of this study have added to the body of knowledge on the un-employment and self-employed and have also provided a platform for a number of recommendations on how government can improve the quality of the un-employment and self-employed to curtail unemployment rate.

Although this study was confined to Gauteng Province, findings of this research may be applied to other provinces and the nation at large. Other disciplines also stand to benefit from these findings. This study therefore makes a contribution on how provinces *can better the quality of service to the un-employment and self-employed*.

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LIST OF APPENDICES

Appendix A1: Number of persons running non-VAT businesses informal businesses in Gauteng

	Sese 2001	Sese 2005	Sese 2009	Sese 2013
	Thousand	Thousand	Thousand	Thousand
By sex	559	426	276	454
Women	259	168	107	165
Men	301	258	169	289
By population group	559	426	276	454
Black/African	486	394	252	384
Coloured	18	9	9	4
Indian/Asian	12	2	1	19
White	44	20	13	47
By age	559	426	276	454
15-24 yrs	43	33	18	14
25-34 yrs	191	130	66	99
35-44 yrs	168	138	107	139
45-54 yrs	103	83	63	147
55-64 yrs	54	42	23	55

Appendix A2: Number of persons running at least one non-VAT registered business by location and whether they pay for the use of location

Location of operation	Sese 2001	Sese 2005	Sese 2009	Sese 2013
	Thousand	Thousand	Thousand	Thousand
Total	559	426	276	454
Within the owner's dwelling-with its own space	163	87	86	165
Within the owner's dwelling-without its own space	140	81	69	73
In a structure attached to owner's dwelling	21	34	17	38
Within another person's dwelling	9	9	1	14
In a non-residential building	23	15	14	31
From a taxi rank	20	15	6	24
On a footpath, street or open space	66	51	36	30
At a market	3	4	4	3
No fixed location/mobile	96	113	22	51
At a customer's home or offices	14	10	18	20
Other	5	8	2	6
Paying for location				
Total	559	426	276	454
Yes	68	42	30	73
No	395	271	206	310

Not applicable	96	113	40	71
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Appendix A3: Model Fit Statistics

Criterion	Intercept Only	Intercept and Covariates
AIC	423383.60	383071.73
SC	423394.73	383249.69
-2 Log L	423381.60	383039.73

Appendix A4: Testing Global Null Hypothesis: BETA=0

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	2689.46	15	768	<.0001
Score	3.28	15	768	<.0001
Wald	3.06	15	768	<.0001