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Contribution of Gross Domestic Product to employment levels in Kenya

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CONTRIBUTION OF GROSS DOMESTIC PRODUCT TO EMPLOYMENT LEVELS IN KENYA.

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the thesis contains no materials previously published or written by another person except where due reference is made in the thesis itself.

DIANA MWIKALI NZIOKI

Signature..... **Date**.....16th June, 2019.....

Approval

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ABSTRACT

It is in the interest of every country to ensure that national prosperity through economic growth and development is sustained, and the citizens share in the economic prosperity. In her quest to enhance the quality of life and living standards for the citizens, and to be competitive at the global stage, Kenya developed a growth roadmap titled 'Vision 2030' anchored on political, economic, and social pillars. Kenya, has been facing the big task of creating jobs in order to keep pace with a rapidly growing population. This study used secondary data from Kenya National Bureau of Statistics, Central Bank of Kenya, Ministry of Labour, International Labour Office, Vision 2030 Annual Reports, and World Development Reports. It analysed the overall employment elasticity of growth and Sectoral employment elasticity of growth in the following five key sectors; Agriculture, Manufacturing, Financial Services and Real Estate, Construction and Transport and Communication. It further analysed the employment elastic in the formal and informal sectors from the period 1987-2017.The data was processed and analysed using both descriptive and inferential statistics with the help of data analysis software -STATA. The results were presented in charts and tables. The results established that there exists a relationship between overall growth in GDP and that some sectors are more likely to create jobs than others. The study recommends further studies on other determinants of employment elasticity. Further research work can be done in reviewing what are the other determinants of employment elasticity. In addition, research can be done on estimating the productive elasticity (productivity) in Kenya to determine to what extent this improves job creation in Kenya. The findings from this research will help to contribute to overall employment creation policies in the country and also Sectoral employment strategy that will boost job creation in the areas identified.

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LIST OF ABBREVIATIONS

GDP	Gross Domestic Product
IEA	Institute of Economic Affairs
ILO	International Labour Organization
KIHBS	Kenya Integrated Household Survey
MSME	Micro, Small and Medium Establishment
MTP	Medium Term Plan
OECD	Organization for Economic Cooperation and Development
P.A.	Per Annum
SDGs	Sustainable Development Goals
SME	Small and Medium Enterprises
SEZ	Special Economic Zones
USA	United States of America
UN	United Nations
Vs	Versus

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CHAPTER ONE: INTRODUCTION

1.1. Background

It is in the interest of every country to ensure that national prosperity through economic growth and development is sustained, and that such economic prosperity is shared by the citizenry (Rodrik, 2015). Within the view of economic growth and development, shared prosperity for citizens is enhanced if not assured, through the creation of quality jobs. Such jobs created must be decent in such a manner that employees have a given level of income security as well as social and health protection. In the circumstances where decent jobs are created and accessible to every citizen in equal measure, both families and the society as a whole prosper (Masi, 2010). According to the World Bank 2012 report, macroeconomic performance is often measured by growth output and the levels of employment. But how well an economy is successful is primarily evaluated by the extent to which decent jobs are created.

The government of Kenya in its quest to increase the quality of life and living standards for the citizens, and to be competitive at the global stage, developed a growth roadmap which is Kenya's economic blueprint called the Vision 2030. The country in its Vision 2030 aims *to transform Kenya into a newly industrializing, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment whilst making the country globally competitive.* This roadmap is anchored on three pillars namely political, economic and social. The economic pillar aims to achieve an average economic growth rate of 10 per cent per annum and a target inflation rate of 5% p.a and sustaining the same until 2030. The social pillar seeks to engender just, cohesive and equitable social development in a clean and secure environment, while the political pillar aims to realize an issue-based, people-centred, result- oriented and accountable democratic system. (Government of the Republic of Kenya 2007)

In 2015, the country also adopted the Sustainable Development Goals (SDGs) 2030 which aim at transforming Kenya, and by extension, the world, through sustained development actions and just like the Vision 2030, Kenya has committed to implement these UN-ratified development goals (United Nations, 2015). As regards this study, it is noteworthy that SDG 8 focuses on achieving 'decent Work and economic growth'. In addition, it aims at promoting sustainable economic growth, full and productive employment and decent work for all. Indeed, the crafting of the SDGs appreciated the fact that globally, job creation has not been keeping

pace with the growing labour force and therefore encourages countries to promote policies that encourage entrepreneurship and job creation and can eradicate forced labour. (UNDP, 2018)

According to the Ministry of Devolution and Planning (2013), Kenya's roadmap to development has been divided into 5-year medium-term plans, which clearly stipulates the key implementation milestones. In this regard, the Medium-Term Plan (MTP) I (2008-2012) and II (2013-2017) and MTP III (2018-2022) had and have outlined strategies targeting the growth and diversification of the different sectors to boost the sectors' contribution to GDP create more jobs.

In the manufacturing sector, the government facilitated establishment of Special Economic Zones (SEZ) in Mombasa, Kisumu and Lamu, other initiatives in the sector include building clusters for meat and leather products, a stronger dairy sector and development of Small and Medium Enterprises (SME) and Industrial Parks which provide linkages to other sectors such as Agriculture and Financial Services and real estate sectors (Ministry of Devolution and Planning, 2013). These industries are meant to spur economic growth and in the process create jobs in the formal and informal sectors within the manufacturing segment.

In the Agriculture sector, the government has been focusing on increased acreage under irrigation to boost food security and address the issue of the country's dependence on rain, other initiatives include taking measures for mechanization of the sector, reviving co-operative unions, exploit green employment opportunities in organic products industries (Ministry of Devolution and Planning, 2013) (The National Treasury and Planning 2018).

In the Financial services and real estate sector, in addition to strengthening the sector to improve access to credit and capital by entrepreneurs the government of Kenya has been taking initiatives that mobilize savings and improve resource allocation to key growth sectors amongst others.

In the transport and communication sector, the government has plans to continue expanding and modernizing the aviation facilities, improve shipping and maritime facilities, expand the railway in addition to the work already completed on construction of the standard gauge railway line from Mombasa to Malaba. expansion and maintenance of roads to promote trade and relieve congestion in our main urban areas which will have a complementary effect on the real estate sector.

Kenya has continued to grow as an ICT hub in Africa through upgrading of the National ICT infrastructure, upgrading ICT capacity through boosting ICT incubation hubs for the youth and ICT Industry development through development of the development hub in Africa. All the above initiatives complement the building and construction industry (Ministry of Devolution and Planning, 2013) (The National Treasury and Planning 2018).

In terms of current labour policy interventions that will provide cross-cutting benefits to all the sector, the government has set out of programmes that will initiate labor intensive public works programs be implemented in the Labour and Employment Sector. The Labour Market Information System (LMIS) will be developed to enable data sharing between stakeholders in the labour market. The Government will also upgrade and expand existing industrial training centres, develop and implement guidelines for internships and establish a sponsored apprenticeship programme of up to 12 months for all university and Technical and Vocational Education Training (TVET) graduates. (The National Treasury and Planning 2018)

The growth patterns on GDP in Kenya over the MTP I and MTP II years have however not been able to achieve this target, as illustrated in Table 1.1 below.

Table 1.1. GDP growth rates in MTP I and MTP II (actual vs target)

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Actual (%)	0.2	3.3	8.4	6.1	4.6	5.9	5.4	5.7	5.9	4.9
Target (%)	6.2	8.3	9.1	9.7	10.0	6.1	7.2	8.7	9.1	10.9

(Economic Survey, 2018)

Table 1.2: Employment targets and actuals ('000)

YEAR	2013		2014		2015		2016		2017	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
Formal	108	134.2	164	106.3	250	128	418	85.6	573	110
Informal	615	601.7	657	695.9	750	713.6	776	747.3	859	787.8
Total	723	735.9	821	802.2	1000	841.6	1194	832.9	1432	897.8
Ration to formal	0.15	0.18	0.20	0.13	0.25	0.15	0.35	0.10	0.40	0.12
Ration to informal	0.85	0.82	0.80	0.87	0.75	0.85	0.65	0.90	0.60	0.88

(Ministry of Devolution and Planning, 2013).

Table 1.2 above indicates the number of formal sector jobs created averaged 112,820 between 2013 and 2017. On the other hand, the number of informal sector jobs created increased progressively from 601,700 to 787,800 over the review period. (Ministry of Devolution and Planning, 2013).

The economy generated 110,000 and 84,800 new jobs in 2017 and 2016 respectively in the modern sector. The new jobs in 2017 included the extra personnel engaged in the public sector to serve the Independent Electoral and Boundaries Commission (IEBC) and recruitment in the essential services which include health, education and security services. The informal sector constituted 83.4% and 89.7%of total employment in 2017 and 2016 respectively with new jobs in the informal sector estimated to be 787,800 in 2017 and 747,300 in 2016. Within the public sector, wage employment increased from 71,840 persons in 2015 to 73,710 persons in 2016, indicating 1870 jobs created (KNBS, 2017).

Further, the number of economically inactive population is estimated to have increased from 5.3 million during the 2005/06 KIHBS to 5.6 million in 2015/16. Besides, 3.7 million or 20.4 per cent of the employed persons in the working age population were under-employed. Under the "strict" definition of unemployed (not working, available and looking for work), there is an overall 7.4 per cent unemployment rate (KNBS, 2018). Ikiara and Ndungu (2011) add that the situation of unemployment and underemployment is made worse by a fast growing youthful population, growth in the economy that is both low and cannot be sustained.

The Ministry of Labour estimated that a significant proportion of Kenyans capable of working were believed to be out of work. For instance, KNBS (2018) report show that the unemployed (85 per cent) were aged below 35. The largest unemployment rate was recorded in the age cohort "20 – 24" at 19.2 per cent. Majority of the unemployed for both male and female were in the same age cohort. Female constituted 64.5 per cent of the unemployed. The situation compounded by the fact that the economy was not expanding fast enough to cope with the newcomers in the market. (Government of Kenya, 2013).

It is evident that jobs being created from the public sector are so minimal in relation to the employment deficit at hand. Most of job creation discourses is being driven by non-governmental actors. The direction of such discourses have been necessitated by the fact that even when the economy is registering some growth progress, employment from the formal sector has barely improved (Omolo, 2012). The point being, Kenya gained independence in 1963, and to date, it is hard to clearly articulate Kenya's economic growth and employment trajectory with a reasonable degree of certainty-which is the foundation of her aspirations in its Vision 2030.

In the MTP III (2018-2022), the Government is committed to create 1.3 million new jobs annually to address the pressing problem of youth unemployment. The principal focus of the Government job creation strategy will be to increase the ratio of formal sector employment from 13 per cent in 2017 to 40 per cent in 2022 as outlined in Table 1.3 (The National Treasury and Planning 2018)

Table 1.3 Employment projections (000) 2018-2022

	2013-2017 (MTP 2)		2018	2019	2020	2021	2022	2018-2022 (MTP 3)	
	Total	Average						Total	Average
Total Employment	4099	819	1067	1242	1318	1346	1402	6500	1300
Formal	537	107	304	476	550	576	631	2661	482
Informal	3562	712	763	766	768	770	771	3838	767

Source: (The National Treasury and Planning, 2018)

All the policy documents previously developed, acknowledged the problem of youth unemployment and prescribed policies to deal with it, despite these efforts, unemployment, and underemployment among the youth remain a big problem, any youths in Kenya remain unemployed and vulnerable to crime and social unrest (Muiya, 2014).

While the achievement of such a robust policy document like the Vision 2030 blueprint is obviously hinged on a number of factors, the country must create and nurture a competitive and adaptive human resource base responsive to the rapidly industrializing and globalizing economy. As such, its suffice to say that, shared prosperity arising from the fruits of Vision 2030 is pegged in part through the creation of opportunities for work that are decent, accessible to the citizenry and are sustainable. (Republic of Kenya, 2012).

It is therefore important to review the progress made with respect to the creation the employment through a sustained economic growth as a core imperative of this study.

1.2 Problem Definition

The Country, in it's vision 2030, aims at ensuring a GDP growth rate of 10% p.a. with provision of a higher quality of life, for instance through creation of jobs. The current growth trends in the country as illustrated in Table 1.1 above indicate that this has not been realizable so far.

While the policy makers, scholars and the government acknowledge that creation of employment opportunities is a key avenue to combating poverty and inequality (GoK, Third Annual Progress Report, 2012) restoring and sustaining high economic growth while at the same time generating gainful employment remains one of the greatest challenges. The growth in employment has fallen short of the growth in the labour force, leading to high unemployment rates.

The growth projections in MTP I were 6% p.a. with a target of a total of 3.7 million new jobs. However, an annual average of 511,000 jobs were created between 2008 and 2012 against the target of 740,000 with over 80% of the jobs in the informal sector where most jobs are characterized by underemployment and low productivity. (Ministry of Devolution and Planning, 2013).

In MTP II, (2013-2017) the growth projections were 5.17 million new jobs in total, with an average annual target of 1,034,000 jobs annually to address youth unemployment and upscale skill training. The Government policy also aimed at increasing the proportion of modern sector employment from 12 per cent in 2012 to 40 per cent by the end of plan period. On average, 826,600 jobs were created annually between 2013 and 2017 (out of which 86% constituted of jobs created in the informal sector and 14% of the new jobs were in the formal sector) against an average annual target of 1,034,000 jobs over the same period; with exception of the initial year of MTP II, the other four years registered lower than the targeted number of jobs. Ministry of Devolution and Planning, 2013).

If growth fails to generate adequate employment opportunities for the populace, then it will not be possible to achieve a higher standard of living for the populace. Therefore, there is need to investigate how many jobs can be created with the current growth levels.

1.3. General Objective

This research paper will focus on assessing the employment elasticity of growth by analysing whether the current growth patterns generate employment and in which sectors of the economy this happens.

1.3.1 Specific Objectives

1. To assess the extent to which the higher levels of growth have translated into creation of more job opportunities i.e. employment elasticity of growth.
2. To assess the sectoral employment elasticity of growth for key sectors (Agriculture, Manufacturing, Construction, Financial Services and Real Estate, Transport and Communications)
3. To assess the effect of employment structure on job creation i.e. employment elasticity of formal and informal sectors

1.3.2. Research Questions

1. To what extent has Kenya's overall economic growth in the last 30 years translated into creation of more job opportunities ?
2. Which of the following key sectors; Agriculture, Manufacturing, Construction, Financial Services and Real Estate, Transport and Communications have contributed more to job creation given the past economic growth trends?
3. What is the employment elasticity of the formal and informal sectors?

1.4. Justification

For Kenya, creation of employment has almost entirely been hinged on the growth in economy since the attainment of her political independence in 1963 (Republic of Kenya, 2012). Kenya has more or less pursued economic growth as a panacea for responding to the demands of job creation (Omolo, 2011). There has been a notable decline in Kenya's employment elasticity and sometimes an increase. Simply put, Kenya has had a mixed trend in terms of growth in employment elasticity and sometimes its been very low even when you compare with her African peers and developing countries at large (IEA, 2010).

Indeed, as earlier mentioned that Kenya has always premised her employment creation agenda on economic growth, World Bank (2012) report reiterated that, employment creation driven by economic growth can only be successful if a country posts an economic growth rate of at least 7 per cent and sustains it over a long period of time. This has not been the case for Kenya, except for the period leading to the 2007 general elections.

What is clear from these trends is that whenever the desirable GDP growth rates were attained, they were not sustained. As such, the rates of growth have been too erratic to propel

meaningful employment creation, not only in Kenya but also in the EAC region (IEA, 2010). But the economic growth-employment creation nexus is not all gloom and doom, results from some 13 economies of the world show that it is something that can be achieved (World Bank, 2012). Among the economies that have managed to register a sustained GDP growth rate of at least 7 per cent are not only found in the developed economies, but also developing ones including the African continent.

Kenya needs a huge leap forward in their economic growth agenda if any meaningful jobs are to be created. To put this in its proper context is to highlight the fact that even a GDP growth rate of more than 7% will still not entirely solve Kenya's complex job deficit situation. The reason being, even during those years when the economic is performing well, jobs created will still mostly come from the informal sector which are devoid of income security-which is a precursor to enhancing shared gains in a growing economy. (Ikiara & Ndung'u, 2011).

The policy challenge for Kenya then is whether to maintain growth-driven employment as a goal, or adopt employment-driven growth. If the policy choice is to proceed along the path of growth-oriented employment, then the next challenge would be how to spur high and accelerated growth rates and sustain it over a sufficiently long period of time (Omolo, 2012). Therefore, the implementation of Vision 2030 agenda must really be monitored so closely to ensure that Kenya does not veer of the tangent of her intended development goals particularly, where creation of jobs is concerned. (Okado, 2013) (Government of Kenya, 2013).

This study therefore provides useful insights on to policy makers and government on how overall economic growth influences job creation in the economy. In addition, the study provides insight on which sectors of the economy create more jobs as their relative contribution to overall GDP grows and finally how many jobs can be created with the current growth levels in the five sectors identified above and also in the formal and informal sectors.

This study highlights other important relationships that require further research; this would be in the areas of other determinants of employment elasticity such as the role of labour productivity, labour skills, macro-economic polies amongst others on job. Kenya being a labour-surplus economy, a key area of consideration in the implementation of Vision 2030 agenda is to work towards an equilibrium between fixing employment in terms of quantity (numbers) and ensuring that the jobs created are of a quality that can transform the lives of her citizen.

The results of this study would also be invaluable to researchers and scholars, as it would form a basis for further research. The study would be a source of reference material for future researchers on other related topics; it would also help other academicians who undertake the same topic in their studies.

1.5. Scope of the study

The study will rely on secondary information collected through review of relevant literature, government policy documents covering three decades. The study used annual data on Employment growth and Real Gross Domestic Product over the period of 1987-2018. The study reviewed an additional 5 key sectors of the economy namely; Agriculture, Manufacturing, Building and Construction, Financial Services and Real Estate, Transport and Communication sampled out of 21 sectors in the economic survey based on their relative strength in contributing to the national GDP for the last 30 years. The sectors selected are also aligned to a great extent to the existing priority sectors selected by government under the economic pillar of Vision 2030 which has Agriculture, Financial Services, Manufacturing and Transport and Communications. This will be useful in providing insights on the trajectory that the government agenda will take on job creation and economic growth. In addition to this the has also used data on employment in the formal and informal sectors to estimate the employment elasticity in the two sectors

The remainder of the thesis is organized as follows: chapter two presents the literature on different variables that are directly affected by the economic growth, as well as the conceptual framework of the study. Chapter three, documents the methodologies that was applied, in terms of specification of theoretical models, sampling procedures and data collection approaches. Chapter four outlines the results and the findings of the data analysis from the perspectives of the overall economic growth on overall job creation, sectoral job creation and job creation in the formal and informal sectors. Chapter five gives the summary of the study, conclusion, recommendations and suggested areas for further research.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

The way businesses operate in a globalized marketplace is so nuanced, that it behooves economic developers to constantly re-imagine their planning, strategies and the subsequent actions (Dantwala, 2013). This obviously has not been easy for most economic policy makers and implementers-more so for the developing economies. As a way of illustration for instance, an economy can grow, but not able to absorb the available labour. The reason is, from a policy perspective, the level of employment depends on both the economic growth and the level at which the economy can absorb labor (Caporale, &Škare, 2011). This means that even if a country's economic growth increases considerably, it should be accompanied with an increased demand for workers. But there is no guarantee that increased economic growth can increase the labor-absorption (Bureau of Market Research, 2011)

2.2 Theoretical review

One of the most commonly applied theories when studying the link between employment and growth is Okun's law. Okun's law was developed by Arthur Okun in 1962. The law stipulates that there exists an inverse relationship between changes in real output (GDP) and changes in the rate of unemployment, where GDP is regressed on unemployment; that is, real output growth was the exogenous (independent) variable and unemployment was the endogenous (dependent) variable (Okun, 1962, 1970).

The law has been supported by various authors, either by adopting a methodology addressing one country, a panel of countries or regional dataset. In addition different studies conducted for example in the US using different econometric models such as Ordinary Least Squares, Vector Auto-regressive (VAR) etc and found the existence of a negative relationship between unemployment and growth and confirmed therefore the validity of Okun's law for the American economy. (Karim & Aomar , 2016).

In OECD Countries, the results showed a higher employment elasticity (Howell, Baker, Glyn, & Schmitt, 2007); the Spanish regions the results were showed that there exists a negative relationship between output and unemployment, with a difference in the value of the coefficient compared to the value suggested by Okun (Villaverde & Maza, 2009) whereas in Italy and Sweden and the results showed an increase in the employment elasticities of growth for Germany and Japan, while France and Sweden experienced low elasticities. (Pini, 1997).

The main criticisms of Okun's law are; there have been limitations highlighted by different authors on Okun's law arising from the status of empirical regularity which implies that Okun's coefficient might be different across the business cycle. The arguments invoked factor substitution (hours, labor force participation and capital) during cycles, multifactor productivity, participation rates, and changes in the relatives' strength of Sectoral growth rates (Courtney, 1991), (Palley, 1993) and (Silverstone & Harris, 2001) and (Slimane, 2015)

Further, more critics have highlighted the fact that Okun's law neglects the role of prices (Flaig & Rottmann, 2000) institutional factors (Revenga & Bentolila, 1995) or exchange rate volatility (Stirböck & Buscher, 2000).

More insight can be gleaned from the nexus of a country's economic growth and its labour absorption by considering The General Theory as advanced by Keynes (1936). In his General Theory, Keynes reasoned that it is only through aggregate demand, that changes in employment can results from changes in GDP. Kumo (2012) also weighs in Keynes argument by asserting that, it should be expected in theory that if GDP increases, then the same should trigger an improvement in employment levels. According to the Bureau of Market Research (2011) and Hansen (2013), only those countries whose economic growth are labour-absorptive in nature can experience in increase employment.

The neo-keynesian theory advanced the Keynesian theory by stating that if aggregate demand is kept deficient causing the inflation rate to fall steadily ahead of the expectations on which firms based their money, wages and prices, unemployment will seek a level above the natural rate. he neoclassical approach to employment determination, also known as real-business cycle theory, has also failed to illuminate the increased joblessness (see e.g., Robert King etal., 1988). This approach does not encompass involuntary unemployment. It does address total employment, usually as a ratio to the working age population. (Phelps, 1995)

2.3 Empirical literature review

This section outlines the different studies that have examined the relationship between employment and GDP as well as studies that measured the employment elasticities of different economies. Globally, a number of scholars have conducted causality studies on the relationship between employment and economic growth by GDP. For instance, in Namibia, Eita and Ashipala (2010) found a positive relationship between employment and total GDP as well as between employment and GDP of the manufacturing sector. On a similar note, Rad

(2011) found that while Jordan did experience some level of increase in economic growth, it did translate to any meaningful and productive jobs created.

In addition, different studies have also shown levels of economic growth influencing levels of employment and vice versa, high levels of employment were experienced among European Union economies however a slump in economic growth was observed Marelli and Signorelli (2010). On the contrary, a study on economic growth, infrastructure investment and private and public employment in South Africa, Kumo (2012) established that GDP growth did lead to some employment in the private and public sectors.

While there may be observable growth in the economy, the actual creation of jobs is somewhat a science. The reason being, for businesses to create jobs, it will depend in part, by what information they have in their disposal (Sodipe & Ogunrinola, 2011). Most of the time, it's the existing businesses that do create jobs. A three-year study (2010-2012) of US manufacturing firms of 3 years or below revealed that they accounted for 18% of total jobs created within the period (BMR, 2011). Existing firms have good information about the profitability of new differentiated products within their sectors, so a natural assumption to make is that new jobs are more productive than existing ones.

Secondly, one of the factors that has undermined the translation of growth into job creation is the lack of skills required in the sectors in which jobs were created (Rad, 2011; Dantwala, 2013). The poor have not been effectively integrated into the growth process, which has undermined the poverty reducing effects of growth. This is evidenced by the experience in Arab Middle East and North Africa (MENA) region, where higher economic growth did not lead to poverty reduction and employment creation (Ajilore and Yinusa, 2011) Thus, the emphasis should be multi-thronged: the creation of decent jobs, development of requisite skills and establishing mechanisms for access to the created jobs.

Thirdly, keeping the populace out of poverty may not be entirely achieved simply by ensuring there is full employment (Rad, 2011; Yogo, 2008). Countries need to sustain their growth in order to generate jobs, but at the same time need the fiscal muscles to ensure social welfare and healthcare services are at best able to provide basic services. Further, shared prosperity for a nation is not guaranteed simply because the economy is growing (ILO, 2012). Policy choices, actions of the leadership and economic models adopted, have a huge role in determining whether the gains accrued from a sustained growth in the economy translates to shared gains within the wider society.

Fourthly, the economic and employment structures of the economy affect the different levels of employment elasticity. This is because, from (Ewing's, 2009) perspective, even with the best of policies on economic growth and employment, followed by effective implementation, the reality is that various economic segments experience different levels of employment elasticities. In East Asia, the employment structure underwent a deep structural change in the 1990s from low productivity Agriculture to employment intensive services and restructuring in industries with fewer people producing equal or increased output. Services have become the main source of job creation in East Asia, further the declining labour absorption in China illustrates the structural change from employment – intensive growth to capital intensive growth. (Berger & Harasty, 2004)

Fifthly, the discussion on economic growth-employment-to poverty nexus cannot be complete without a review on contribution of technology. It has been fronted that positive change such as improvement in people's living standards accrues from the advancement in and hence the adoption of technology. The argument has been, with a sustained technological revolution as has been witnessed, new ideas, products and techniques of executing activities are easily exchanged through national and transnational boundaries (Oxford Economics, 2013). These exchange of ideas and adoption of superior technologies results in a creative destruction process throughout the economy.

Indeed, a rapid technological change has been accompanied by a mixed basketful of outcomes ranging from net job creation, to establishment of new industries that replace the old ones, workers acquiring better skills and a changing landscape for demand of goods and services (BMR, 2011). Indeed, in some quarters, advancement in technology has been associated with losses in jobs and to a given extent social distress (Sawtelle, 2009). Nevertheless, technology *per se* is not the culprit (Ajilore &Yinusa, 2011). There are many ways in which technology can be made to bring positive and desirable results. This should include techniques for translating technology into jobs (Rodrik, 2015).

Finally, Asari*et al.,* (2011) made a clarification about this argument by stating that unemployment maybe high in the MENA region, but it does not necessarily mean that all those who are not employed are poor. As earlier stated in this study, the ills of poverty and any subsequent forms of vulnerability may not be solved through policies that deal with employment and economic growth alone. Other factors that hinder economic growth not to translate into the desired shared gains is due to the inefficiencies arising from leadership and management, both from the government side as well as the business firms (Kumo, 2012).

2.4. Model specification

Employment elasticity can simply be looked at as the quantity of employment generated by a unit increase in GDP (Dantwala, 2013). A summary indicator of the employment growth that is associated with a given output growth is provided by the employment elasticity of output growth (for overall GDP, measured as the proportionate change in employment divided by the proportionate change in GDP during a given period). Employment elasticity reflects the inverse of labour productivity, whereas an elasticity higher than unit implies decline in productivity, a lower than unit elasticity means that employment expansion is taking place along with an increase in productivity.

A rise in productivity would lead to a reduction in employment elasticity. Therefore, raising employment elasticity in individual activities cannot be the objective as that would mean a further lowering of productivity in economies that may already be characterized by widespread low-productivity employment. (Islam, 2004)

The have been different approaches used by different researchers on researchers to compute employment elasticity depending on whether the approach is for country and or cross country. Employment and Growth have been used as the main economic variables by (Kapsos, 2015) (Leshoro, 2014) and (Slimane, 2015) with the unit of measurement for each of those as absolute values in thousands of workers and real GDP prices for economic growth. (Aydiner-Avsar & Onaran, 2010) included an additional variable for country elasticity and used openness to trade to estimate the long-run output elasticity of labour. Appendix 1 has a summary of the different variables applied and the different methods of estimation adopted by different authors.

Two methods of measuring country employment elasticity have been identified by (Kapsos, 2005). The first one being arc elasticity which is expressed as below:

$$\eta \equiv (\Delta E / E) / (\Delta Y / Y) = (\Delta E / \Delta Y) * Y/e,$$

where E denotes employment, Y denotes real output (value added) and Δx stands for change in the variable x.

While this methodology is simple, Nazara (2000) and (Islam, 2004) have demonstrated that year-over-year employment elasticities calculated using this method tend to exhibit a great deal of instability and may therefore be inappropriate for comparative purposes.

The second method identified by (Kapsos 2005) is a multivariate log-linear regression model with country dummy variables, Di, interacted with log GDP for generating the point elasticity where;

Equation1

$\ln E = \alpha + \beta_1 \ln Y_1 + \beta_2 (\ln Yi \times Di) + \beta_3 Di + \mu i$

Equation 2

the elasticity of employment with respect to GDP in country is given as $(\beta_1 + \beta_2)$. this is given by differentiating both sides of the equation to solve for $\frac{\delta E}{\delta Y}$:

$$\left(\frac{\delta E}{E}\right) = (\beta 1 + \beta 2)\left(\frac{\delta Y}{Y}\right) \rightarrow \left(\frac{\delta E}{\delta Y}\right)\left(\frac{Y}{E}\right) = (\beta 1 + \beta 2)$$

Thus, the multivariate linear regression equation (applicable for sector-specific and aggregate growth) is estimated as:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots + \beta n Xn + \varepsilon$$

Y = Growth in employment by sector

α = constant term

β = regression coefficient

X = independent variables (X denotes Real GDP in Agriculture (X_1); Real GDP in Manufacturing(X_2); Real GDP in Financial Services and Real Estate (X_3); Real GDP in Transport and Communication(X_4) and GDP in Construction (X_5)

n = number of variables

ε = error term (it reflects to other factors that influence Y)

It is important to note that both employment elasticity growth and productivity growth are necessary in any economy in order to reduce poverty. The reason for this is that, while employment elasticity growth gives the quantitative part of employment growth, the latter is the qualitative characteristic of employment growth and therefore one aspect should not be stressed more than the other (Khan, 2001; Kapsos, 2005).

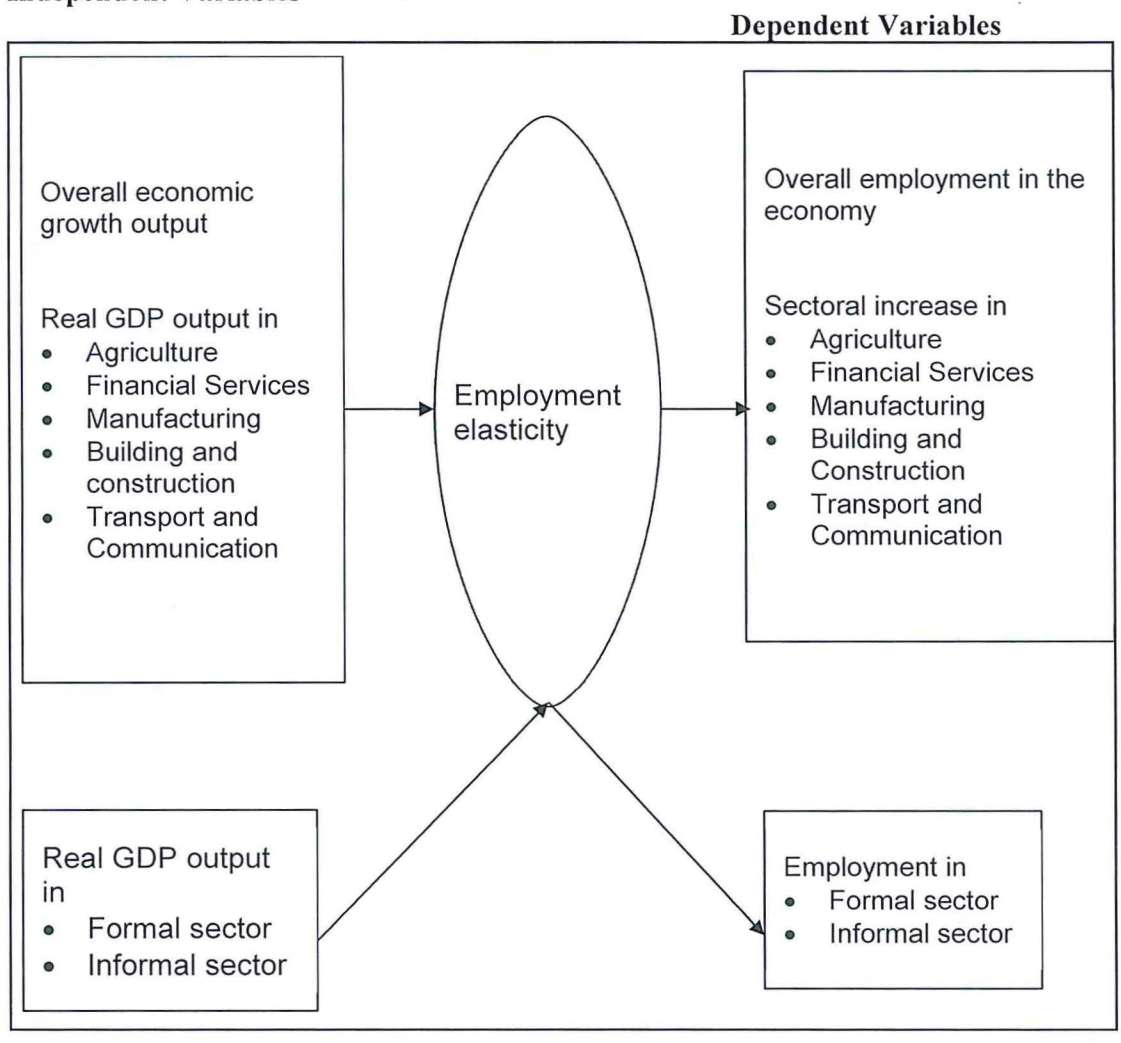
2.5 Research gap

This research is of great interest from at least two perspectives. First, the main channel through which the Kenyan economy through its economic development blueprint Vision 2030 will achieve its goal of shared prosperity for all citizens is the employment opportunities it generates. Hence, understanding the determinants of employment elasticities is crucial Second, some facts highlighted by the papers exploring world and regional trends of employment intensity of growth seem to bring interesting facts. First, they point out a decline in employment elasticity of growth both in many developed and developing countries. Secondly, one would have rather expected a rise in this elasticity as trade liberalisation might lead to a shift in low-income countries' economic structure towards more labor-intensive industries. The increase in capital intensity induced by innovations and technological change seems to be one of the culprits. Thirdly, other macroeconomic and policy determinants as well as labour supply and economic structure characteristics might interfere in the employment outcome of growth. With that in mind, it is crucial to understand the driving forces behind the evolution of the employment intensity of growth in Kenya. Although researchers have deeply analysed the impact of various shocks on developing countries labor markets, only few studies seem to focus on the relationship between employment and output growth in these countries (Islam and Nazara (2000) for Indonesia; (Ajilora and Yinusa, 2011) for Botswana; (N'Zué, 2002) for Côte d'Ivoire; (Sodipe and Ogunrinola, 2011) for Nigeria; (Yogo, 2008) for sub-Saharan African countries; (El Ehwani and Elmegharbel, 2009) for Egypt; (Aydiner-Avsar and Onaran, 2010), (Yeldan, 2013) and(Erkan and Yeldan, 2011) for Turkey). Furthermore, a limited literature has investigated the determinants of employment-output elasticities (Kapsos, 2006; Crivelli et al., 2012). Overall, these studies emphasize the relatively low employment intensity of GDP growth in such countries suggesting that growth performance is "jobless growth. This forms a need for further analysis in the context of Kenya and the assessing whether the government agenda outlined in Vision 2030 on job creation is being realized

2.6 Conceptual framework

A conceptual framework can be defined as a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Reichel & Ramey, 1987). The schematic diagram will not only guide the study but will also show the relationship among the key variables in the study.

Figure 1. Conceptual framework



2.6.1 Operationalization of the variables

The conceptual framework above shows the relationship how increase in economic growth and the structure of the economy affects employment elasticity and contributes to the level of employment on overall to the economy and in each of the sectors indicated.

Economic growth; Refers to the increase in the goods and services produced by a country over a period of time. This can be measured by the change in Real Gross Domestic Product in Kenya shillings.

Employment; Employment creation shall be measured by the absolute numbers of employed persons in the economy.

Employment in the sectors will be measured by the new jobs created absolute number of people on overall and in the sector Agriculture, Agriculture sector, Financial services and real estate sector, Building and construction sector, Manufacturing sector and Transport and Communication.

Employment elasticity- Employment elasticity can simply be looked at as the quantity of employment generated by a unit increase in GDP (Dantwala, 2013). A summary indicator of the employment growth that is associated with a given output growth is provided by the employment elasticity of output growth

Formal sector; This refers to enterprises which are registered at the Registrar of Companies as provided in Business Names Act, Partnerships Act and Company's Act.

Output in the formal sector This will be measured by real GDP (Kenya shillings) in the employment in the formal sector will be measured by the number of people employed in that sector.

Employment in the formal sector will be measured by the number of persons employed in that sector

Informal sector; This is regarded as a group of production units which form a part within the "system of national accounts" (SNA) of the household sector as unincorporated enterprises owned by households. Household-based enterprises are distinguished from corporations': and quasi-corporations on the basis of their legal status and the type of office accounts they hold. Informally self-owned enterprises employ family workers and workers on an occasional basis.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The chapter consists of the research design, population and sampling design, data collection methods and instruments and data analysis techniques.

3.2 Research design

This is the plan/outline laid down to help in realizing the objectives of the study (Babbie, 2010). This study adopted a descriptive and inference quantitative approach. Further, this design is applicable when a researcher wants to develop new concepts or theoretical perspectives about the phenomenon (Creswell, 2013).

3.3 Target population and sampling

According to Mugenda and Mugenda (2003), a population is defined as all elements that meet the sample criteria for inclusion in a study. The study used annual data on Employment growth and Real Gross Domestic Product over the period of 1987-2018.

The study reviewed an additional 5 key sectors of the economy namely; Agriculture, Manufacturing, Building and Construction, Financial Services and Real Estate, Transport and Communication sampled out of 21 sectors in the economic survey based on their relative strength in contributing to the national GDP for the last 30 years.

In addition to this the has also used data on employment in the formal and informal sectors to estimate the employment elasticity in the two sectors. This study will exclusively rely on employment and economic growth data from the Kenya National Bureau of Statistics.

3.4 Data collection

In any given research project, data can be collected from either primary or secondary sources using a number of instruments (Trzesniewski, Donnellan& Lucas, 2011). In this study, data was collected using secondary sources. These secondary sources included but are not limited to publications from Kenya National Bureau of Statistics, Ministry of Labour, Vision 2030 Progress Reports, and World Development Reports.

All of the secondary data sources mentioned in 3.3 above are publications accessible to the public in the Kenya National Bureau of Statistics thus, the process of conducting the research will be easy.

We used the following data to analyse the performance of each of the sectors identified. Independent variables are Economic growth which we will be using Real GDP over the last 30 years, whereas the dependent variable which is employment will use the absolute number of employees on overall and specific sector contribution of real GDP for the 5 areas selected and the absolute number of employees employed annual in each of those sectors and further analysed data in the formal and informal sectors

3.5 Data analysis

As highlighted earlier, this study considered data from 1987, which is a 30-year period. Because of this, the data type the study applied was a Time Series Data and was be analysed through multivariate linear regression analysis methods. In our analysis, before running the multivariate linear regression, we performed descriptive statistics on the data by presenting the mean, skewness and kurtosis measures on the data. The analysis also employed different diagnostic tests such as the durbin Watson test, heteroscedacity using Breusch pagan tests. The data was further tested for Stationarity and cointegration of data and the error correction model using the Auto regressive Distributed Lag (ARDL) model.

Generally, secondary statistical analysis is the analysis of data that have been collected by others, and will be using the data for purposes other than what it was originally intended (Vartanian, 2010). One of the advantages for using secondary data is because of a relative guarantee of high quality data since most often sampling has been rigorous, and a lot of the time the datasets have been generated highly experienced researchers or consultancy firms Besides, it offers a broad opportunity for longitudinal and subgroup analysis. Even though, one of the downsides of secondary data is that data may be complex and certain variables of interest may be lacking, the data is most often of high-quality datasets that are based on large reasonable representative samples. Another disadvantage of secondary data is he data may be out of date or inaccurate. If using data collected for different research purposes, it may not cover those samples of the population researchers want to examine, or not in sufficient detail. (Enders, 2010). (Asparouhov&Muthén, 2010).

In the study, data was analysed by first familiarization with the original studies from where the various data sets have been sourced. In the event of an absence of key variables, they be

generated based on the data available, and an appropriate statistical analysis employed. Primarily though, data was processed and analysed using both descriptive and multivariate linear regression as was applied by ILO (2005) on employment elasticities and GDP growth, sector employment elasticities, sector value-added growth and GDP growth for a 30-year period analysis. Point elasticity was performed on estimating employment elasticity in the formal and informal sectors. The main software tool in this analysis will be STATA. The results will be presented in charts and tables.

As discussed in Chapter one and two employment growth is by far the most important mechanism for achieving shared prosperity, especially through robust poverty reduction. In this study, Economic Growth and Employment are the key endogenous variables and from the empirical review done other variables identified include from the demand side economic structure and employment structure and from the supply side; labour productivity, labour skills, income. There are other moderating variables include the role technology plays, macro-economic policies adopted and the decisions influenced by leadership in a country.

Holding other factors constant, the understanding is that growth in employment (Y) should be a response in the GDP growth by various Sectors (X) (Basu & Foley, 2013). This study's concept assumes that for each percentage point of output growth by GDP, there should be an associated growth rate in employment.

As mentioned earlier, the study is interested in observing the trends in employment elasticities by sectors as well as the aggregate i.e. employment elasticity of the whole economy. The study considers Kenya's economy to be composed of many sectors, which are very different from one another. This justifies analysis from a sectoral perspective over time, as has been the practice in much of the previous literature, for instance, Papola and Sahu (2012).

Since Vision 2030 development actions are specific and deliberate, the study is keen to establish employment growth associated with each percentage point growth of real value added per sector. To do this, the study will plot the aggregate output elasticity of employment, which measures the percentage change in employment for every percentage change in real value added, for five (5) sectors of the economy since 1987. In addition, the study will establish the variations in dominance by sectors in terms of growth output (by GDP) and employment elasticities-this purely for policy recommendation purposes.

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presents the descriptive statistics properties of the data under analysis in the form of Mean, standard deviation, skewness and Kurtosis on the data to test for normality. Correlation on the data was run to give the relationship amongst the variables under consideration. The coefficients in the equations were used to explain for employment elasticises.

4.2 Descriptive statistics

The variables of interest were the Gross Domestic Product which was measured in Local currency unit Kshs and the employment numbers over the period under consideration. To put the figures into perspective, the figures for the GDP and employment numbers were transformed into logarithm and the following descriptive were generated. Logarithmic transformation allowed the numbers to be easily interpreted in terms of employment elasticities to GDP. The summary statistics on the variables are as given below.

Table 4.1 Summary of Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
GDP overall	33	1,892,298	301,587	4,418.67	8,144,373	1.211	3.466
Employment overall	33	7,267.70	47,373	1,462.00	16,942.8	0.494	2.048
GDP in Agricultural	33	401,064.20	555,485	146517	2,836,583	2.642	12.119
GDP in Manufacturing	33	173,347.10	187,664	518.4	655,331.80	0.723	2.306
GDP in Building and construction	33	72,391.08	9,755,730	237.83	453,475.70	2.064	8.098
GDP in Finance, insurance and Real estate	33	212,450.60	263,303	314.85	1,075,621.0	1.320	4.458
GDP in Transportation and communication	33	145,258.90	16,183,530	296.4	462,306.30	0.688	1.938

The number of observations were 33 and our data ran from the year 1987 to 2017. The average GDP over the period under consideration was given as KES 1,892,298 (millions). The annual average number of employment over the period was seen to be 7,267.696 (thousands). The figure for measure had a higher standard deviation. The year that recorded the least number of

employment had 1,462,000 people while the year that had the most number of people of employed people had 16942800 people being under employment. On a general overview, the sector under review that had the most contribution to GDP was the agricultural sector followed by finance, insurance and real estate in Kenya.

Skewness is a measure of the degree and direction of asymmetry for a given data, that is, how far the data values being considered are from the median value. This shows the shape of the distribution of the data set. The table above shows that the GDP has a skewness of 1.211 which implies that the distribution of the data is moderately positively skewed. The skewness for employment is given as -0.4938 which is again seen to be approximately symmetrical.

Kurtosis is a measure of the heaviness of the tail of a given distribution in comparison to the normal distribution. Distributions with large kurtosis exhibit tail data exceeding the tails of the normal distribution. The heavy tails are a characteristic of outliers that are present in the data. Heavy tails are characterized by kurtosis that are more than 3 while light tails are characterized by kurtosis that are less than 3. In this data set the logarithmic transformation of both GDP and Employment revealed a kurtosis that is within acceptable range. In this case, this is a confirmation that the data is normal. The variables under consideration that have a kurtosis greater than 3 are GDP, Agricultural Sector, Building and Construction, Financial Services and Real estate.

4.3.1 Diagnostic tests

To check for Normality of the Data, several diagnostics test were done. The test was conducted at 5% significance level. The post estimation Diagnostic test that was carried out to test for Auto correlation on the Data Set was the Durbin Watson Test. The P value from the Durbin alternative *test was found to be 0.4122* which led to the conclusion that the error term in the data set did not have serial correlation.

The data was also tested to check for Heteroscedasticity using the Breusch-Pagan Test. Heteroscedasticity checks if the variance of the errors from a regression is dependent on the values of the independent variables. The test revealed a P value 0.2136 and the conclusion was that *the error term did not have a constant variance.*

The Omitted Variable test was conducted using the Ramsey Reset test and the P value from the test was 0.0023 which led to the conclusion that *there was an omitted variable in the model.* The omitted variable can be attributed to the rest of the sectors that have not been included in the study. Finally, the Stationarity test was done using the Augmented dickey-fuller Test and

in situations where the variable was found not to be stationary, differencing was done to ensure Stationarity.

4.3.2 Cointegration Test (Engle Granger 2-Step Method)

According to Engle & Granger (1987), a vector of time series is said to be cointegrated with cointegrating vector if each element is stationary only after differencing while linear combinations of the two variables are themselves stationary. The basic proposition of cointegration is that even where we have non-stationary data, if a true log run relationship between (say two) variables exists, then over time their behaviour must be somehow systematically related. The difference between them over time is therefore stable, or stationary One of the tests of cointegration is by Engle & Granger (1987) has a null hypothesis of no cointegration, vs an alternative hypothesis of cointegration being present. This corresponds to a null hypothesis of presence of unit root in the residuals from a regression of the two variables (no cointegration) vs no unit root in the residuals of the regression.

The stationarity test of the two variables GDP and Employment indicate that both are non-stationary at level, but stationary at first difference. The final results of the Engle Granger cointegration test are presented below, after the residuals are isolated from the cointegrating regression:

Augmented Dickey Fuller Test on Residuals				
	Test Statistic	1% critical value	5% critical value	10% critical value
Z(t)	-2.111	-3.702	-2.980	-2.622

Based on the results presented above, the residuals from the cointegrating regression of the two variables (GDP vs Employment) are non-stationary (unit root is present). This is because the absolute value of the test statistic does not exceed the absolute critical values. Therefore, this aligns to the null hypothesis -- that there is no cointegration between the two variables.

4.3.3 Stationarity test

Stationarity was conducted using the Augmented dickey-fuller Test for Unit root test. In reviewing Stationarity, the hypothesis being tested for all the variables in the model are;

Null Hypothesis: The series contains unit root (They are non-stationary)

Alternative Hypothesis: The series does not contain unit root (They are stationary)

Rejection of the null hypothesis implies that *the series is stationary or converges to its mean over time.*

Table 4.2 Stationarity test

The output was as shown below;

	ADF level	ADF 1st difference	**Phillips Perron test**	Phillips Perron 1st difference	**Order of integration**
GDP	**-0.461**	-5.842	**-0.389**	-5.863	I(1)
Total Employment	**-1.99**	-5.266	**-2.359**	-5.267	I(1)
Agriculture GDP	**-0.494**	-6.591	**-0.405**	-6.756	I(1)
Manufacturing GDP	**-0.99**	-5.365	**-1.001**	-5.343	I(1)
Construction GDP	**-0.62**	-6.472	**-0.573**	-6.656	I(1)
Transport & Communication GDP	**-1.129**	-5.234	**-1.154**	-5.197	I(1)
Finance, Insurance & Real Estate GDP	**-0.967**	-6.335	**-1.013**	-6.465	I(1)

Critical Values for Augmented dickey Fuller unit root test

---------- Interpolated Dickey-Fuller ---------		
1% Critical value	**5% Critical value**	**10% Critical value**
-3.702	-2.98	-2.622

Critical Values for Phillips Peron Unit root Test

	---------- Interpolated Dickey-Fuller ---------		
	1% Critical value	**5% Critical value**	**10% Critical value**
Z(rho)	-17.676	-12.724	-10.34
Z(t)	-3.702	-2.98	-2.622

4.3.4 The correlation matrix

Correlations provides the existing relationship between two variables. Correlation is measured using a coefficient that ranges between +1 and -1 which is seen as a degree of linear

association. A correlation coefficient of +1 denotes a strong perfect positive linear relationship while a correlation coefficient of -1 denotes a strong perfect negative relationship.

A correlation coefficient of zero is used to imply no relationship exist between two variables. Running a correlation analysis on our data, we found the following correlation analysis;

The correlation between the sectors, Gross Domestic Product and employment levels generated the following matrix;

Table 4.3 The correlation matrix

	LogEMP	LogGDP	LogMAN	LogAGR	LogCONS	LogTRANS	LogFIN
LogEMP	1.0000						
LogGDP	0.9185 (0.0000)	1.0000					
LogMAN	0.9775 (0.0000)	0.9387 (0.0000)	1.0000				
LogAGR	0.9796 (0.0000)	0.9411 (0.0000)	0.9961 (0.0000)	1.0000			
LogCONS	0.9806 (0.0000)	0.9459 (0.0000)	0.9964 (0.0000)	0.9967 (0.0000)	1.0000		
LogTRANS	0.9807 (0.0000)	0.9428 (0.0000)	0.9984 (0.0000)	0.9962 (0.0000)	0.9962 (0.0000)	1.0000	
LogFIN	0.9862 (0.0000)	0.9311 (0.0000)	0.9969 (0.0000)	0.9975 (0.0000)	0.9962 (0.0000)	0.9973 (0.0000)	1.0000

The figures in parenthesis indicate the P values

In our first objective whereby, we were analysing employment intensity and GDP shows that the correlation, r, 0.9185 and it was significant. With a correlation of r= 0.9185 then the coefficient of determination is given as 0.8436 which implies that 84.36% of the variation in Employment intensity can be explained by variation in the GDP.

The second model regresses employment intensity against the real GDP in the 5 sectors. The correlation between the Employment and manufacturing sector was 0.9775, employment and Agriculture sector was 0.9796, Employment and Construction sector was 0.9806, employment and transport and communication was 0.9807 and the employment with Finance, insurance and real estate was 0.9862. All the correlations were highly significant. There was also very strong correlation between the sectors.

4.3.5 Multivariate results

To analyse the employment elasticity to growth, the analysis was done using the two models. On the general level and using sectors GDP. In order to determine employment elasticity to growth, we had to transform GDP and Employment to fit a linear equation. The co-efficient of the equation can be interpreted as the elasticity of employment to GDP. The transformed log linear equations took the form;

$\ln L = \alpha + \beta \ln Y + \varepsilon$

Where ln L is the employment

α=Constant

β=Employment elasticity to GDP

ε=error term which accounts for other factors that accounts for employment other than GDP

Regressing the log Employment against Log GDP, we were able to generate the following table;

4.4 Overall employment elasticity analysis

The study sought to seek to understand and explore the impact that the different sectors were having on the employment elasticities. The sectors were chosen as a representative of the entire contribution to Gross Domestic Product. Interestingly this sector has both formal and informal employment intertwined into it. The transport sector is majorly dominated by private investors who control the industry and as such it is difficult to correctly ascertain the true figure of employments

The regression equation output;

LogEMP	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
LogGDP	0.4183	0.0323	12.9400	0.0000	0.3523	0.4842
_cons	3.1974	0.4241	7.5400	0.0000	2.3324	4.0625

The diagnostic statistics further revealed that the following table;

F(1, 31)	=	167.34
Prob > F	=	0.0000
R-squared	=	0.8434
Adj R-squared	=	0.8387
Root MSE	=	0.3084

The coefficient of determination was 0.8437 implying that 84.34% of the variation in the employment figures could be explained by variations in the GDP level. The model was very significant at a p value of 0.0000

Also from the table above we are able to reconstruct the logarithmic relationship that we had earlier indicated. The general equation to be constructed will assume the form;

$$ln\ L = \alpha + \beta lnY + \varepsilon$$

Replacing the equation above with actual co-efficient from the analysis we will have the logarithmic equation as;

$$ln\ L = 3.1974 + 0.4183 lnY + \varepsilon$$

In this particular case the elasticity of employment to changes in GDP is indicated by the coefficient 0.4183. The interpretation is that 10% incremental change in GDP will lead to a 4.1% increase in the employment rate in the country.

In 2018; the overall GDP growth in the economy was 6.3%; with this level of economic growth the expectation from the model is that 2.58 new jobs would be created. The summary below shows the Number of jobs generated to be from current level (given the elasticity) the expectation and actual GDP and employment for the year 2018.

	2018	'000 Expected new jobs	'000 Actual new jobs	% Variance
GDP	6.30%			
Employment rate	2.58 %	17594.6	17935.4	340.8

The employment increased more than the expectation the model had forecasted. However, the increase cannot be attributed to factors that outside this model.

4.5 Sectoral employment analysis

Our interest was drawn to check and review the elasticity within each sector and the magnitude of the contribution that they had within in terms of employment head counts. A regression was done on each sectors employment against its respective Real GDP. The coefficient on the respective regression equations produced were representatives of elasticities of employment to GDP in these sectors. The outputs were as follows;

A stata regression analysis of the relationship between employment head counts and the GDP from the sectors of interest in this analysis revealed the following output;

emp_log	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
agric_gdp	0.3598	0.1441	2.5000	0.0190	-0.6553	-0.0642
man_gdp	0.8832	0.1590	5.5500	0.0000	-1.2095	-0.5570
cons_gdp	0.4582	0.1376	3.3300	0.0030	0.1758	0.7406
fin_gdp	0.5587	0.1460	3.8300	0.0010	0.2592	0.8583
trans_gdp	0.4461	0.1583	2.8200	0.0090	0.1213	0.7710
_cons	7.2212	0.2833	25.4900	0.0000	6.6398	7.8025

Model diagnostics

Number of obs	=	33.0000
F(5, 27)	=	247.3900
Prob > F	=	0.0012
R-squared	=	0.9786
Adj R-suared	=	0.9747
Root MSE	=	0.1222

The output displayed above shows the relationship between the overall employment numbers and the specific sectors contribution. The general equation for the model can be written as;

$$L = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Where ln L is the employment

β_i *are the sectors corresponding elasticities.*

X_i *are the sectors being considered for the study (Agriculture, Manufacturing, Building and Construction sector, Finance, insurance and real estate sector, and finally the transport and communication sector)*

α=*Constant*

The model above was very reliable since we had a very high co-efficient of determination. The coefficient of determination was given as 0.9786 which implied that 97.47% of the variation in the employment numbers would be explained by variations in the levels of GDP within the sectors under consideration.

The general model after transformation would take the form;

$$ln\ ln\ L = 7.2212 + 0.3598\ Agr_{GDP} + 0.8832\ ManGDP + 0.4582\ ConGDP + 0.5587 FinGDP + 0.4461 TrspGDP$$

Table 4.4 The overall summary of the Sectoral elasticities

Sector	Elasticity	Number of Jobs Generated in 2017	Expectation using the elasticity given economic growth rate of 6.3% '000	Provisional employment numbers from 2018 Economics Survey '000	Variance
Manufacturing	0.8832	303.42	320.303	307.6	4%
Finance, Insurance & real estate	0.5587	78.9	81.677	79.9	2%
Transport and communication	0.4582	212.2	218.325	221.8	-2%
Building and Construction	0.4461	167.9	172.619	171.6	1%
Agriculture	0.3598	332.1	339.628	336.6	1%

The summary presentation above has used to the elasticities computed to investigate and generate the estimated number of jobs that will be created in each of each sector with the current growth levels and compared that with the provisional numbers provided for 2018 in the Economic Survey.

The interpretation of the model would be from;

The elasticity of employment in the ***manufacturing sector*** is positive and was the highest with an elasticity of 0.8832. The elasticity is high and can be interpreted as 10% increase in the GDP in the manufacturing sector will lead to 8.826% increase in the level of employment. Using the elasticity in the Manufacturing sector, the expectation for job creation in the year 2018 given an overall GDP increase of 6.3% the employment numbers in the sector was expected to move from 303,420 people to 320,303. This has been compared to the provisional numbers in the sector provided in the Economic survey which has a variance of 4%

The sector with the second highest elasticity was the ***Finance, Insurance and real estate sector*** employment elasticity is denoted by the 0.5587. The elasticity can be interpreted as 10% increase in the GDP in the Finance, insurance and real estate sector will lead to 5.587% increase in the level of employment within the Finance, insurance and real estate sector. The growth in GDP in the Finance, insurance and real estate sector in 2018 was 6.3%. The expectation was that the sector was meant to employ 81,677 which is slightly lower to the provisional numbers provided by 1%

The ***transport and communication*** sector is positive and is denoted by the 0.4461. Transport and communication elasticity is relatively higher than that of the agricultural sector and building and construction sectors. The elasticity can be interpreted as 10% increase in the

GDP in the transport and communication sector will lead to only 4.46% increase in the level of employment. We used the elasticity to compute the expectation on job creation in 2018 and found that 218, 325 number of people would be employed given the GDP growth rate of 6.3%. This was lower by 2% compared to the actual number of people employed in the sector.

The employment elasticity in the ***building and construction sector*** is positive and is denoted by the 0.4582. The elasticity can be interpreted as 10% increase in the GDP in the building and construction sector will lead to only 4.582% increase in the level of employment within the building and construction sector. Building and construction sector is both capital intensive and intensive labour in nature and compliments a lot of the other sectors. Using our model, the expectation on number of people employed in the sector in 2018 given a GDP growth rate of 6.3% would be 172, 618 thousand people which compared by the provisional numbers provided by our economic survey only varies by 1%.

Finally, the ***Agricultural sector*** has the lowest elasticity of employment compared to the other four sectors denoted by the 0.353. The elasticity can be interpreted as 10% increase in the GDP in the agricultural sector will lead to only 3.53% increase in the level of employment. Taking the year 2018 to give a picturesque of the employment growth, the growth in GDP in the agricultural sector and the overall economy increased but the total number of people employed in the sector did not increase by a very high proportion. The expectation in terms was 339,628 and this varies by 1% on the actual provisional numbers provided in the economic survey. The Agriculture sector is also the sector that has the highest number of people employed compared to the other sectors in our analysis.

4.6 Formal and informal sector analysis

The elasticity of growth as discussed in previous chapters shifts the employment structure towards productive capacity and influences employment elasticity. This section provides two modes of analysis; Point elasticity of both the formal and informal sectors and a trend analysis on the growth patterns in both the sectors over the last 30 years.

4.6.1 Point elasticity in the formal and informal sectors

To calculate the elasticity of formal and informal sectors of employment we decided to use the arc elasticity method. This method was the most appropriate method due to the fact that there are limitations with obtaining data on real GDP from the informal sector. Our year of reference for the calculation of GDP was between 1987 and 2017.

The following equation was applied for point elasticity of each of the years.

$\eta \equiv (\Delta E / E) / (\Delta Y / Y) = (\Delta E / \Delta Y) * Y/e,$

where E denotes employment, Y denotes real output (value added) and Δx stands for change in the absolute number of the employees in that sector.

We then obtained an arc elasticity for each of the years and computed the average arc elasticity for formal and the informal sectors, we also eliminated any outliers. Refer to table 4.5 below.

Table 4.5 Summary of formal and informal employment elasticities

Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Formal	1.13	0.51	0.78	0.65	1.25	3.04	4.25	0.69	1.34	3.88	0.75
Informal	2.33	2.11	-1.76	9.98	5.87	310.7	75.43	7.32	9.68	17.69	5.53

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Formal	1.04	0.00	0.00	-0.00	2.41	0.54	0.41	0.43	0.41	0.39	-0.14
Informal	6.78	0.01	0.00	0.01	17.31	2.89	1.57	1.20	1.56	0.87	4.65

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average
Formal	0.02	0.35	0.56	0.76	1.02	0.84	1.16	0.57	0.86	**0.95**
Informal	0.07	0.95	1.01	1.27	1.01	1.18	1.08	1.02	1.22	**1.89**

The summary above implies that for the formal sector 1% change (increase in the level of GDP growth) will lead to a 0.95% increase in new jobs in the formal sector.
The informal sector analysis implies that that a 1% change (increase in the level of GDP growth) will lead to a 1.89% increase in new jobs in the Informal sector.

Table 4.6 Expectation on formal and informal employment generation

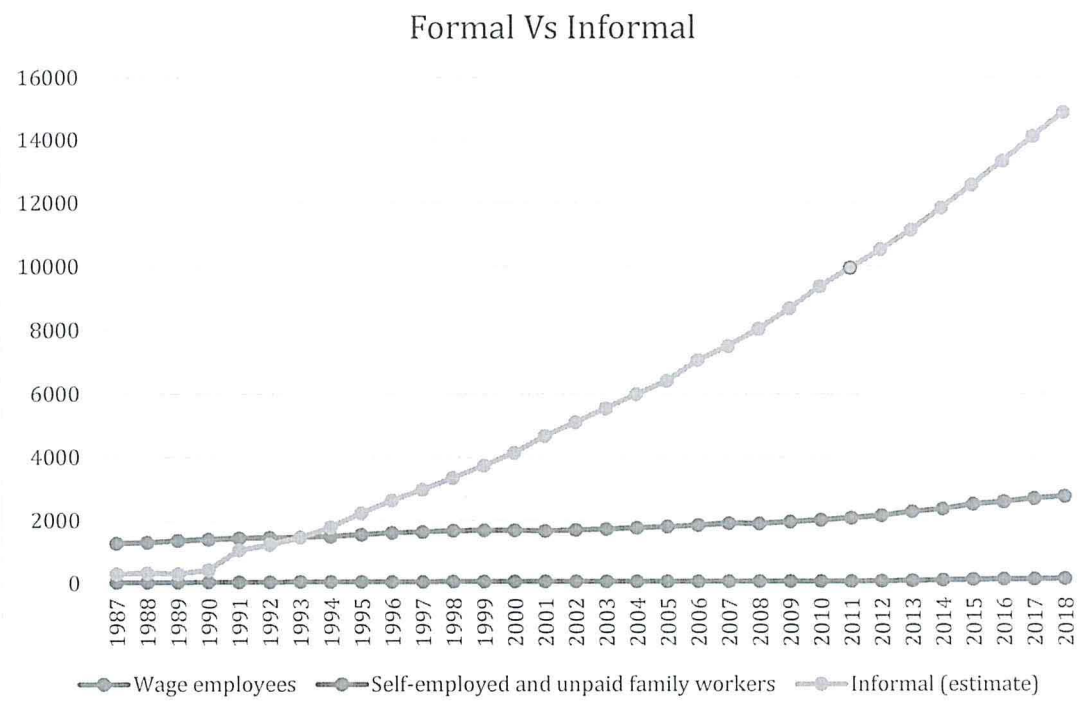
	Elasticity	2017 Employment numbers	Expectation given the Elasticity at GDP growth rate of 6.3% in 2018	2018 Provisional numbers from the economic survey	% Variance
Formal	0.95	2,838.90	3,008.81	2,917.30	-3%
Informal	1.89	14,243.30	15,938.25	14,865.90	-7%

From our model, we have been able to use point elasticity to find out which sector has contributed more to job creation given past economic growth trends between the formal and the informal sector. The informal sector has responded better in creating more jobs as the GDP increases. In addition, we used the elasticity to calculate how many jobs can be created with the current growth levels in the formal and informal sector

4.6.2 GDP and Employment trends

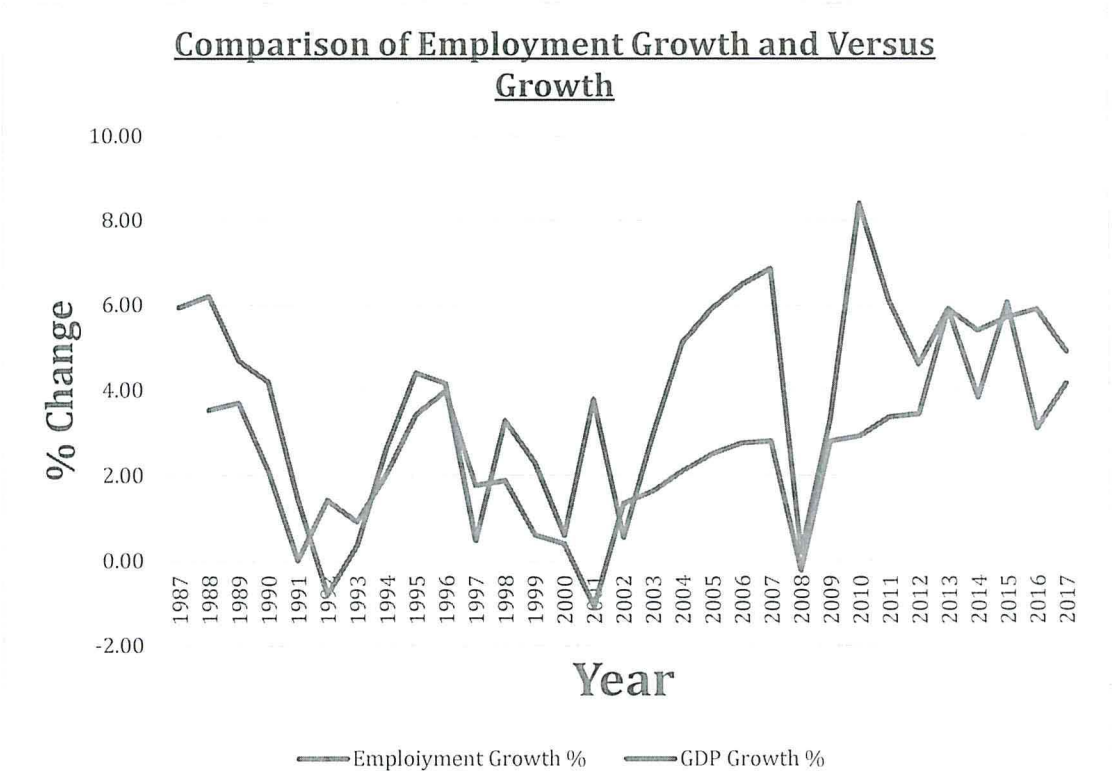
The graph below shows the trends between Informal and formal sectors in Kenya over the past 30 years.

Figure 2 Formal vs informal employment



The graph above indicates that as the number of new jobs continue to increase in Kenya over the years, majority of those go to the informal sector.

Figure 3; Overall trend on economic growth vs employment growth



The graph above shows the overall trends on employment growth and GDP growth. The patterns are similar to a great extent and this demonstrates that growth in GDP has an effect on creation of new jobs and a decrease in GDP also has an impact on employment.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Findings

Chapter 4 analysed the data using ordinary least squares. The variable of interest was the gross domestic product and the employment data. The chapter went ahead to examine the impact of the structure of the economy on employment elasticity by reviewing the Sectoral employment elasticity of growth. The period under consideration was between 1987 and 2017. The GDP figures were converted into logarithm as well as the employment figures so that they could bring out the linear relationship between the variables. Further analysis was also performed on the impact of the employment structure by performing further analysis on the formal and informal sectors by using point elasticity method.

The first objective of this study was to assess to what extent higher levels of economic growth are translated into creation of more job opportunities i.e. overall elasticity of growth. The transformation gave the elasticity of employment to GDP being the coefficient of GDP in the transformed equation. The interpretation is that 10% incremental change in overall GDP will lead to a 4.1% increase in the employment rate in the country

In addition, the data presented is useful because it shows which sectors are the most responsive in terms of creating jobs as GDP in those sectors continue to grow, they follow the following order; 1. Manufacturing, 2. Financial services and real estate, 3.Building and construction, 4. Transport and communication and 5. Agriculture.

The final analysis was to evaluate how the formal and informal sectors respond in terms of job creation as the GDP in Kenya increases. The informal sector is the sector that is creating most of the jobs in Kenya compared to the formal sector whose elasticity were 0.95% and 1.89 respectively.

5.2 Conclusions

The study confirmed that there is an overall positive relationship between economic growth and job creation. This then means that policy decisions affecting economic growth have implications on the type of jobs that are being created. Further analysis on Sectoral employment elasticity revealed that the structure of the economy, the employment structure, and macro-economic policies affect the employment elasticity and hence some sectors are able to create jobs more than others as the economy continues to grow.

5.3 Policy Recommendations

Kenya's goal in Vision 2030 is to achieve an overall increase in GDP of 10% p.a. each year and to grow jobs by 6% p.a. each year. Our analysis both at overall and Sectoral analysis has provided findings that are short of those targets. This therefore means that restoring and sustaining the high economic growth while generating gainful employment that will lead to shared prosperity for all citizens continues to be a challenge for the government and policy markers. Policy makers, researchers, scholars and the government should therefore focus on creating policies and pushing for reforms that will facilitate creation of jobs on the sectors that are likely to create jobs more than others. In addition to the above the underlying sectors under the economic pillar should be used to boost employment labour intensive initiatives.

The manufacturing sector was the most responsive to job creation with an elasticity of 0.88%. This means that as the country continues to work on its industrialization agenda more effort and policies need to be created to boost job creation in the sector. The government recently identified key economic deliverables within Vision 2030 which are meant to boost the economic and social welfare of the country referred to as the 'Big 4 Agenda' sector. One of the sectors within the Big 4 is Manufacturing. In addition, there are policy initiatives targeting the sector and identified in the Medium term plans such as establishment of Special Economic Zones (SEZ) in Mombasa, Kisumu and Lamu, other initiatives in the sector include building clusters for meat and leather products, a stronger dairy sector and development of Small and Medium Enterprises (SME) and Industrial Parks which provide linkages to other sectors such as Agriculture and Financial Services and real estate sectors (Ministry of Devolution and Planning, 2013). This will lead to growth of the sectors, jobs and the initiatives have positive complimenting effects to other sectors of the economy such as financial services, building and construction and transport and communication. This is a good choice for government as indicator as it is aligned to the sector that has potential for growing both the economy and jobs. The education institutions can also play a critical role in designing training programs that impart technical skills required in this sector.

The second sector is the Financial Services and Real Estate sector which has on elasticity of 0.55%, some of the reforms in Financial service and real estate sector include the enactment into law of the Kenya Credit Guarantee Scheme Bill to further support access to credit by SMEs and guide structured implementation and development of a vibrant Credit Guarantee Scheme that embrace a Public Private Partnership Structure. In addition, there is effort by government to facilitate the expansion of mortgage finance to boost home ownership in urban centres. The service industry in Kenya is therefore one of the best sectors for policy makers to

find innovative ways to boost expand it through the different products offered to the market and because of its cross cutting nature, growth in the sector boosts all the other sectors of the economy.

The third sector from our analysis is the Building and Construction sector which has an elasticity of 0.44%. The government Big 4 Agenda includes providing affordable housing, this will boost labour absorption in the market as the sector is a labour intensive sector.

The forth sector from our analysis was the transport and communication, the government should continue with its plans to expand and modernize the existing infrastructure as the sector provides direct employment and enables a good environment that boosts and promotes business. In addition, Kenya has continued to grow as an ICT hub in Africa through upgrading of the National ICT infrastructure, upgrading ICT capacity through boosting ICT incubation hubs for the youth and ICT Industry development through development of the development hub in Africa. All the above initiatives also complement the building and construction industry (Ministry of Devolution and Planning, 2013) (The National Treasury and Planning 2018).

Finally, the Agriculture sector ranked 5th with an elasticity of 0.36 %. n the Agriculture sector, the government has been focusing on increased acreage under irrigation to boost food security and address the issue of the country's dependence on rain, other initiatives include taking measures for mechanization of the sector, reviving co-operative unions, exploit green employment opportunities in organic products industries (Ministry of Devolution and Planning, 2013) (The National Treasury and Planning 2018). In order to boost productivity in Agriculture, technology plays a key role in maximizing the output in this sector, this may not necessarily be aligned to the job creation agenda but this will have complimenting effects on the overall economic growth, transport and communications sectors and financial services sectors.

As regards the informal sector, Total employment in the sector is estimated at 14.9 million persons. The un-licensed enterprises contribute a bigger share of the employment at 8.6 million while the licensed enterprises employ 6.3 million persons. As such, the Micro, Small and Medium Establishment (MSME) sector therefore, arguably provides the highest employment opportunities in Kenya. Overall, the MSME sector makes key contributions towards improving the economic and social sectors of the country through nurturing large scale employment across the country. (KNBS, 2016)

This therefore means that the government should focus on labour intensive initiative that will transform the unemployed youthful population (85% of the unemployed in Kenya are below 35 years (KNBS, 2010) or transform those already in the informal sector.

The education institutions can also play a critical role in designing training programs that impart technical skills in order to provide the labour market with people who can be absorbed in the Transport and communication industries, manufacturing, building and construction as they had the highest elasticities from our analysis

5.4 Limitations and suggestions for further research

There were limitations obtaining data specifically on the retrospective data on real GDP from the informal sector and Sectoral contribution in the informal sectors. The structure of the sectors as presented in the Economic Survey changed along the way, this required further analysis of the data.

Further research work can be done in reviewing what are the other determinants of employment elasticity. In addition, research can be done on estimating the productive elasticity (productivity) in Kenya to determine to what extent this improves job creation in Kenya.

The relationship between Employment and growth is an endogenous relationship with a demand –supply element on it. Our research focused on the demand side of the cycle, further research can be done on the Supply side of the equation.

APPENDIX 1

Summary example of studies, variables and some determinants of employment elasticity

<table>
<tr><th>Study</th><th>Variables</th><th>Measurement/ Proxy</th><th>Expected relationship</th><th>Methodology</th></tr>
<tr><td>(Kapsos, 2015)</td><td>1.Employment

2. Growth</td><td>1. Quantity of employed persons

2. GDP</td><td>
<table>
<tr><th></th><th colspan="2">GDP Growth</th></tr>
<tr><th>Employment elasticity</th><th>Positive GDP Growth</th><th>Negative GDP Growth</th></tr>
<tr><td>$\varepsilon < 0$</td><td>(-) employment growth
(+) productivity growth</td><td>(+) employment growth
(-) productivity growth</td></tr>
<tr><td>$0 \leq \varepsilon \leq 1$</td><td>(+) employment growth
(+) productivity growth</td><td>(-) employment growth
(-) productivity growth</td></tr>
<tr><td>$\varepsilon \geq 1$</td><td>(+) employment growth
(-) productivity growth</td><td>(-) employment growth
(+) productivity growth</td></tr>
</table>
</td><td>A multivariate log-linear regression model with country dummy variables, Di, interacted with log GDP for generating the point elasticity.</td></tr>
<tr><td>(Leshoro, 2014)</td><td>1.Employment

2. Growth</td><td>1. Absolute values in thousands of workers
2. Real GDP at 2005 prices was measured in millions of dollars, and values added of the agricultural sector, mining sector and the services sector were measured in</td><td>Total GDP was found to be negatively related to employment growth, but the Sectoral employment elasticity of growth was positive and quite low.</td><td>Point elasticity of employment, which uses econometric technique
- Test of Stationarity.
-Co-integration and Error Correction Model (ECM)</td></tr>
</table>

		millions of dollars (2005 prices).		
(Aydiner-Avsar & Onaran, 2010)	1.Employment 2. Real Wage 3. Openness to trade	1. Annual % change to employment 2. Annual % change in real wages 3. Export/Output ratio Import/Output ratio	A 1% increase in real wage in total manufacturing leads to a 0.49% decrease in employment. The respective long-run coefficients are 0.52% and 0.40% for HMS and LS groups, respectively. Real output has the expected positive long-run effect, where a 1% increase in output creates a 0.64% increase in employment in the total manufacturing industry. The long-run output elasticity of labor demand in the HMS and LS groups are 0.62	The analysis is based on a fairly simple model of a profit-maximizing firm with a Cobb-Douglas production function where the derived demand for labor is obtained.
(Slimane, 2015)	**Country** 1.Employment 2. Growth **Cross Country elasticities** 1. Employment 2. Growth 3.Macro-Economic Variables 4.Demographic variables	**Country** 1. Level of employment at time t. 2. level of real GDP at time t **Cross Country elasticities** 1. Level of employment at time t. 2. level of real GDP at time t 3.Macro economic variables i) Openness (log of GDP's share of total export and imports) ii)Export performance (log of GDP's share of total export)	1. Elasticity estimates vary considerably across countries. Comparison reveals wide variation in employment elasticities with the highest estimates. In contrast, employment elasticities have been modest in other countries: 2. Employment elasticities tend to be higher in more advanced and closed countries. 3. Macroeconomic policies aimed at reducing macroeconomic (price) volatility are found to have significant effect in increasing employment elasticities. 4. Employment intensity of growth tends to be higher in countries with a larger service sector 5. Countries with a higher share of urban population are typically characterized by larger employment elasticities. In contrast working age population growth is negatively correlated with employment output elasticities.	Time-series regressions

		iii)CPI based inflation rate FDI inflows (% of GDP) iv)Credit to private sector Services' value added (% GDP) v) Gross Capital Formation (% of GDP) <u>4.Demographic variables</u> i) Working age population growth ii)Population density iii)The share of urban population iv) Total labor force		

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