

Growth and survival of small and medium-scale enterprises in Kenya – an empirical case study of Nairobi County

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by

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ABSTRACT

The main objective of this research was to determine which factors constrain the growth and survival of small and medium-sized enterprises (SMEs) in Nairobi County, Kenya. It is reasonable to expect that SMEs would be keenly supported financially and otherwise, given the worldwide consensus that such businesses are engines of economic growth. In studies around the world by Beck (2007) and Ayyagari, Demirguc-Kunt and Maksimovic (2011) report that SMEs constitute about 95% of all businesses in an economy, create over 60% of all jobs, contribute between 60% and 70% to a country's gross domestic product (GDP), foster industrial innovation and growth, and help to increase provision of services that meet local demand. However, statistics produced by the Kenya National Bureau of Statistics (KNBS) indicate that 71% of registered small businesses collapse within three years after starting operations; 72% of the owners use their own or family savings as sources of capital for starting their business while only 5.6% have access to formal bank finance. Given the apparent lack of support for SMEs and their reported rate of failure, this study used stratified random sampling to survey a multi-sector representative sample of 179 SMEs in Nairobi County to determine the exact causes of their demise. More specifically, this project sought to establish if poor infrastructure, failure to access formal finance, weak or absence of collateral, equity injection, poor provision of electricity, limited managerial skills, prevalence of crime or political instability could be the factors constraining growth and survival of SMEs. Data collected were mostly qualitative but converted to quantitative by use of dummy variables. Equity injection was quantitative, measured by the growth of equity from that at inception to the third year of operation. Employing multiple regression, the study established that lack of access to finance, level of equity injection/equity growth and crime were statistically significant explanatory variables. The study recommends that the government should strengthen its fight against crime and corruption, and work closely with development partners to facilitate the training and education of SME owners to embrace modern corporate governance practices. There is need for financial sector players to devise more innovative, risk-mitigating but business-friendly financial products that are accessible to SMEs. In addition, the government is advised to set up a specialist financial institution whose mandate is to provide financial and non-financial support to SMEs.

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DEDICATION

This dissertation is dedicated to my beloved wife, Alfreda, and my two daughters, Fadzai and Tinotenda, for being by my side and encouraging me to persevere despite the time and logistical challenges I faced throughout the years of my study due to pressure of work.

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OPERATIONAL DEFINITION OF TERMS, ABBREVIATIONS AND ACRONYMS

AFD	- Agence Française de Développement
AfDB	- African Development Bank
CBK	- Central Bank of Kenya
DFI	- Development finance institution
EIB	- European Investment Bank
IFC	- International Finance Corporation
KIPPRA	- Kenya Institute for Public Policy Research and Analysis
KNBS	- Kenya National Bureau of Statistics
NGO	- Non-governmental organisation
OECD	- Organisation for Economic Co-operation and Development
SME	- Small and medium-scale enterprise

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

In many developed and developing countries around the world, governments, non-governmental organisations (NGO) and financial institutions have come up with, and even implemented, various programmes to facilitate the start-up and growth of small and medium-scale enterprises (SMEs). (Hubner, 2000) observes that the results have been mixed, with most programmes ranging from moderate successes to complete failures. According to (Biggs, 1996), a few successes have been recorded in countries such as USA, Japan and South Korea, where technology was a key factor (due to innovation, efficiency and fall in cost of production); while in Turkey, Uzbekistan and Kazakhstan, natural resource availability played a critical role (due to cheaper raw materials, which reduce ultimate production costs and make the products competitive).

Significant volumes of research have been conducted over the years – by, among others, Beck & Demirguc-Kunt (2006), (Mead & Liedholm, 1998), (J.P. Morgan, 2012) and Ayyagari, Demirgüç-Kunt and Maksimovic, (2005) – on the importance of, as well as challenges faced by, most SMEs that, in turn, inhibit their potential to grow into big companies. These studies cite lack of or poor access to finance, low capital levels, low education levels, lack of skilled management, crime, political instability, poor infrastructure (including electricity and roads, water and sanitation) as some of the major impediments to SME growth.

In Kenya, SMEs make up over 70% of manufacturing firms in the country, account for 80% of the country's employment and contribute about 20% of its GDP, according to research by Raikundalia (2015) and national surveys by (KNBS, 2016) and (KIPPRA, 2016).

However, the (KNBS, 2016) reports that 71% of the SMEs collapse within three years of starting operations. Given the importance of this class of businesses, as indicated above, this study seeks to establish the exact hurdles to SME growth in Kenya by undertaking an empirical study of Nairobi County to generate evidence and critical information on how the challenges can be tackled to free up SME potential and, therefore, foster economic growth.

1.2 Definition of small and medium-scale enterprise

It is acknowledged that SMEs are not homogenous within and across countries around the world. As a result, different countries define them differently. Most definitions of SMEs are statistical, meaning that they are mainly defined by numerics such as, for example, the number of employees, the value of sales and/or value of assets and/or capital base. Many developed and developing countries in the Organisation for Economic Co-operation and Development (OECD) and European Union (EU) have 200-250 employees as the upper limit for the number of employees in an SME. Japan and USA are exceptions, with 300 employees and 500 employees respectively as their top limits.

The Kenyan definition of SMEs provides for three categories and defines these for the Manufacturing, Service and Agriculture sectors, as in the table below:

Table 1: Kenyan definition of SMEs

	Manufacturing			Services			Agriculture		
	Staff	Turnover	Assets	Staff	Turnover	Assets	Staff	Turnover	Assets
Medium	51-100	5-150	< 30	51-100	5-150	< 30	51-100	5-150	< 30
Small	10-50	0.5 -5	10-50	10-50	0.5-5	5-10	10-50	0.5-5	05-10
Micro	<10	< 0.5	< 10	<10	< 0.5	< 5	<10	< 0.5	< 5

Source: The Kenya Micro and Small Enterprise Act, 2012; Turnover and assets in KSh m

This study used the SME definition as applied in the Government of Kenya's Micro and Small Enterprises Act (Kenya, 2012) in the table above. That is to say, only companies with 10 to 100 employees and annual revenues of between KSh500,000 and KSh150 million were sampled.

See Annex 1 for SME definitions in other jurisdictions.

1.3 Statement of the problem:

If SMEs are important to an economy, why do they experience slow or declining growth?

SMEs are considered to be engines of growth for most economies. They create jobs, contribute to GDP, facilitate industrial development, help to satisfy local demand for services and innovate while supporting large firms with inputs and services. In June 2000, the OECD Bologna Conference, involving around 50 member and non-member countries, recognised the importance of SMEs in business activity, economic growth and employment creation, among other areas. Consequently, the conference adopted the Bologna Charter on SME Policies as a starting point for policy dialogue, knowledge sharing and continuous monitoring of progress on the implementation of the Bologna Charter (OECD, 2004).

According to (Beck, 2007) and (Ayyagari et al., 2011), SMEs are, by number, the largest type of businesses, constituting about 95% of all enterprises in the world and accounting for close to 60% of private sector employment. Even in the developed world, for instance in the EU, the (Edinburgh Group, 2012) estimates that in 2012, SMEs made up 99.8% of all enterprises in the region, and employed 67% of all workers while contributing 58% of gross value added. Globally, (Ayyagari et al., 2011) estimate that SMEs, both formal and informal, account for 60% to 70% of GDP.

On the African continent, Ghana, South Africa and Kenya show similar data for their SMEs. (Abor, 2010), quoting (Gumede, 2014), are of the view that SMEs represent approximately 92% of Ghanaian enterprises, contribute about 70% to the country's GDP and in excess of 80% to employment. In South Africa, SMEs account for almost 91% of registered businesses and generate between 52% and 57% of GDP, providing about 61% of national employment. The (KNBS, 2014) estimated that SMEs employed over 50% of Kenya's working population, accounting for 2.3 million people, and contribute about 45% towards GDP.

Despite the observed benefits that SMEs bring to their countries, many studies carried out by (Nkonoki & Ericsson, 2010), (Grunfeld, 2010) and Beck and Demircuc-Kunt (2006), among others, show that SMEs face significant financial and non-financial challenges in their quest to grow, more so in developing countries like Kenya. For example, the (KNBS, 2016) shows that three out of five SMEs fail within the first few months of operation and the causes range from internal factors, such as inadequate education and managerial skills, and lack of equity, to external factors including unfavorable government policies, corruption and lack of access to credit, among others.

It is a paradox that SMEs, which are generally viewed as an engine for economic growth, face such seemingly insurmountable challenges, leading to their early demise despite the fact that Government ministries, NGOs and development finance and venture capital firms in many less developed countries like Kenya have SME-focused support programs.

In the light of these factors, this study focuses on Kenyan small businesses in Nairobi County to investigate factors that constrain the growth and survival of SMEs registered in the county (equivalent to a province). The study set out to establish the significance/importance of each identified factor as a hurdle to SME growth.

1.3.1 Objectives of the study

The general objective of the current study is to find out the main factors hampering the growth and survival of SMEs in Nairobi County, Kenya, and determine how strong each factor is as an impediment to the SMEs. The specific objectives of the study are:

- a) To examine the SMEs' growth in sales revenue.
- b) To examine the factors that constrained SME growth and survival.
- c) To outline potential strategies that SMEs, policy makers and financiers can employ to mitigate against failure of small business and foster their growth and survival.

1.3.2 Research questions

Main research question

Given the grim statistics on the rate of SME failure within a short period of their formation, the fundamental questions that this research seeks to answer are;

- a) What are the factors inhibiting the growth and survival of SMEs in Nairobi County?
- b) What actions and strategies should SMEs employ to ensure their business growth and sustainability?

1.4 Justification for the study

The study into factors constraining the growth and survival of SMEs is important to policy makers, financiers and business people.

To government, this research helps formulate policies that are not punitive but are truly supportive of SMEs and to also consider provision of infrastructure and amenities that make it cheaper to do business. The study will guide the legislature and judiciary to create a legal environment, rules and regulations as well as incentives that can make doing business easier and alleviate the plight of SMEs.

The research study will be of importance to financiers, NGOs and some SME-centric initiatives for youth and women such as the Uwezo Fund in Kenya, which for a long time provided assistance based on the assumption that SMEs just need access to finance for them to grow. The result of this assumption is that less attention has been given to the suitability of such finance to SMEs or whether the finance providers are using the right approaches, strategies and instruments or correctly defining and categorising businesses. Instead of exalting access to finance as the panacea to challenges inhibiting SME growth, this study contributes to business knowledge that, in addition to lack of access to finance, there could be an array of other impediments that need equally close attention.

This study will help business people develop a broader business focus that goes beyond obtaining credit to also assess non-monetary needs such as their internal management systems and strategies that enhance their resilience when faced with harsh operating environments and lack of resources.

To academia, this study is valuable for the additional knowledge it brings to understanding why, despite the much-vaunted importance of SMEs to job creation, innovation and GDP, they still suffer significant drawbacks in their efforts to expand and keep operating for the foreseeable future. It will also help researchers look at challenges facing SMEs more holistically and even discover some gaps or weaknesses in studies conducted to date, therefore helping to develop more robust support mechanisms for small businesses.

1.5 Structure of the study

This study is organised as follows: the first section considers the hurdles that SMEs face in their operations and quest to grow despite their much highlighted economic importance. Both the theoretical and empirical underpinnings of the importance of SMEs as presented by various authors and practitioners are articulated in the literature review in Chapter 2. Through the use of descriptive statistics and regression modeling techniques, the author designs a research methodology in Chapter 3 to investigate how selected independent variables explain changes in the growth of SMEs in Nairobi County. Chapter 4 lays out the descriptive statistics graphics and outcome of applying regression modeling, then goes on to discuss the implications of these results. Tests are conducted to determine whether or not the observed outcomes are indeed statistically significant explanatory variables for the growth of SMEs. At the end, Chapter 5 discusses the conclusions reached as a result of the main findings of this research study as they relate specifically to Nairobi County, and what these conclusions mean for the plight and future of SMEs as applied to the whole country. In closing Chapter 5, the study makes recommendations to SME owners, to financiers and policy makers on actions that could be taken and measures that could be implemented to ensure SME growth and survival so that they can become the real engine of Kenya's economic growth as they are expected to be.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides an in-depth evaluation of historical, founding theory on SMEs and their development cycle, previous studies and current thinking as well as continuing research around the subject of SMEs. The chapter surveys literature on the important role played by SMEs in the economic sphere, the obstacles they face in their operations and in their quest to grow beyond the SME stage. The literature acknowledges that SMEs are not homogeneous and the country's level of development may influence the severity of impediments to SME growth. Chapter 2 goes on to assess empirical studies conducted on various countries around the world regarding the status, plight of SMEs as well as policy and practical interventions that have been employed in an effort to alleviate the challenges they encounter. Evaluation and critique of mechanisms that have worked or not worked and identification of research gaps will be presented in this chapter.

2.2 SMEs: theoretical perspectives

The groundbreaking research by David Birch in the USA titled *The Job Generation Process* in 1979 revolutionised thinking on the role of small businesses in employment creation. Analysing Birch's work, (Landström, 1998) and (Neumark, Wall, & Zhang, 2011), among others, agree that his research was anchored in the observation that SMEs were critical for employment creation in the USA. As quoted by (Erdevig, 1986), in some of his earliest studies (Birch, 1979) provided statistical results showing that small businesses with 20 or fewer employees accounted for 66% of all net newly created jobs in America between 1969 and 1976, while companies with 100 or less workers generated 81.5% of jobs. Further investigation by (Birch, 1987) indicated that the importance of small firms had continued to strengthen to the extent that between 1981 and 1985, SMEs with 20 or less workers contributed 82% to job growth as a result of expanding operations. This evidence was in line with the prevailing views on the importance of SMEs in generating employment and it was also in sync with the American government's established practice of assisting such firms. Subsequent work in the same area between 1981 and 2000 continued to shed more light on the importance of SMEs and spurred research into other areas in which SMEs were deemed to be making a significant contribution.

In retrospect, it is observed that the same theoretical underpinning must have influenced the launch of the Marshall Plan to rebuild post-war Europe and brought about new developments in the financial

services sector and availability of credit, which meant a sizeable portion of Marshall Plan funds were allocated to SMEs to help with the re-industrialisation of Europe. While this initiative was immensely successful in the now-developed world, it has not been easy to replicate the same outcome in developing countries.

To better understand the challenges faced by SMEs and, therefore, be in a position to develop solutions that work for them, it may help to look at and consider the SME development cycle.

2.3 The SME development cycle

Given their diverse economic activities, size and organisational structures, it is acknowledged that SMEs are not a homogeneous grouping. But the problems they face are very much the same. (Churchill & Lewis, 1983) in the Harvard Business Review presented a framework that categorises the challenges encountered by SMEs at certain stages of their growth path that makes it easier to understand them and, therefore, formulate workable strategies. The framework recognises that challenges faced by businesses vary as they move from one stage of growth to another in their life cycle, implying that strategies and tools to remedy their predicaments cannot be same. (Churchill & Lewis, 1983) defined the SME growth path as follows:

Figure 1: SME development cycle

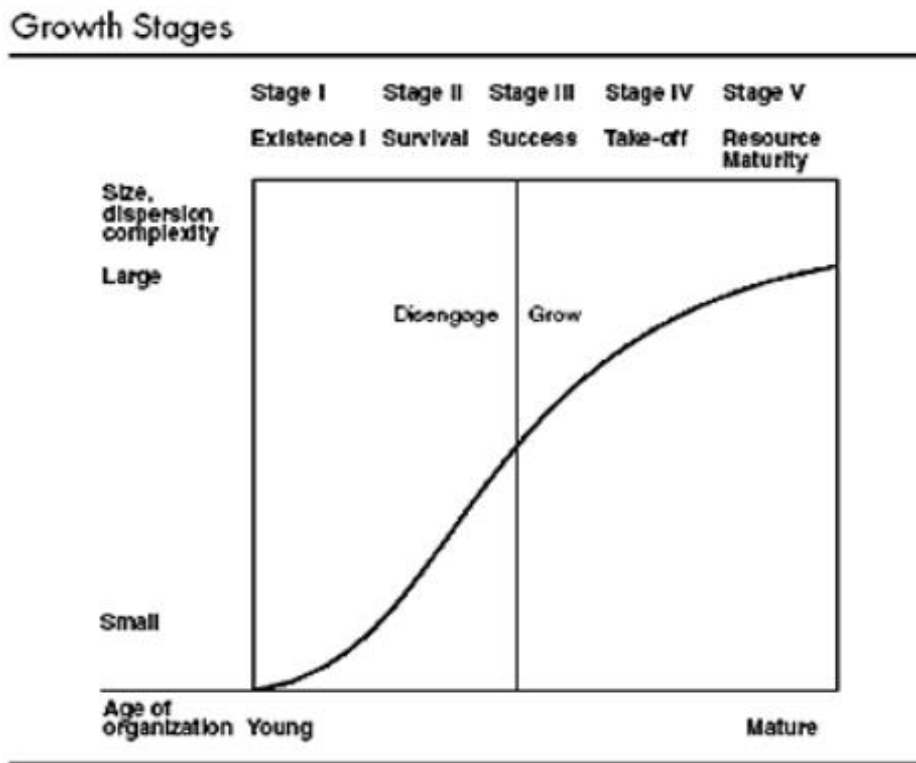


Source:(Churchill & Lewis, 1983), Harvard Business Review

There are five managerial aspects assigned to each growth stage and these are organisational structure, managerial style, extent of formal systems, major strategic goals, and the owner’s involvement in the business. The importance of each factor in the firm differs at each stage according to the size, diversity, and sophistication of the venture.

Graphically, the SME growth pattern is shown in Figure 2 (below):

Figure 2: SME stages of growth



Source:(Churchill & Lewis, 1983), Harvard Business Review

The growth stages and characteristics are described as follows:

Stage I: Existence

This is the inception stage, when the company has just started operations. Its main concerns are its ability to attract customers, expanding its customer base, delivering the required product or service and getting sufficient working capital to support the start-up. At this stage, the firm is synonymous with the owner, who provides capital, direction and undertakes all the major tasks with very little or no delegation. Many SMEs do not get sufficient funding at the start, never attract a critical mass of customers or their owners become overwhelmed and shut down. SMEs that survive this stage become Stage II enterprises and continue to grow.

Stage II: Survival

By reaching Stage II, the firm will have attained proof of concept. In other words: its business model works and its products or services have a market. The challenges facing the business are no longer about existing. Instead, they involve managing costs and revenues to enable the firm to break even, generate

sustainable cash flows to support business growth, earn a return on investment and engage in more medium- to long-term planning.

The business may still be small but growing rapidly in headcount and revenues. Its operational systems are simple but they may be getting stretched in scope and technical capacity and require upgrading while the owner-manager starts assigning limited responsibilities to others. During the survival stage, the business will grow successfully and transition to Stage III. Alternatively, it could remain stuck in survival mode for a long time after failing to expand its market or generate additional resources for growth and eventually collapse.

Stage III: Success

In the success stage, the business is earning healthy returns and is able to maintain its operating assets while meeting most of its working capital needs. Alternatively, it has fairly easy access to short-term bank financing on the basis of its performance while decision-making has become fairly devolved with the owner taking on more critical roles and delegating to others. The owner now has to decide whether to keep the firm at this level or – if they have the financial, managerial and technical stamina – take it to the next level of growth (sub stage III-G); or disengage by using this success as a base to venture into other business or non-business activities (sub stage III-D). Both options represent key decisions that may signal either the demise or major growth of the business, depending on the transition mechanisms put in place. These mechanisms might include major investment by the same or additional shareholders, with the owners stepping down from management roles; or the complete sale of the entity to third parties.

If the organisation is provided with sufficient financial and non-financial resources, independent professional decision-making structures and operational systems, it will be catapulted to Stage IV: Take-off, which is characterised by rapid, solid growth towards maturity. The owners would still be involved in shaping the company's long-term future growth trajectory.

Alternatively, the business can become a fully-fledged institution with governance systems independent of its owners, who have sold their shares or are no longer in management. In other words: they are disengaged, leaving the entity to chart its own development path with new decision-makers. Either-way, these two potential routes need to be carefully managed as they come with different challenges and require specialised skill sets.

Stage IV: Take-off

Stage IV involves solid and rapid growth as the business begins to attract the attention of competitors and others seeking acquisition opportunities. The main problems at this stage are how to sustain growth management-wise and how to finance that growth. Failure to manage growth may lead to overtrading, unsustainable indebtedness and possibly bankruptcy.

Therefore, it is incumbent upon the owners and senior management to ensure that roles and responsibilities are delegated to competent staff most suited for them.

Stage V: Resource maturity

Most SMEs fail to reach this stage or start failing upon reaching it due to reluctance by founders to let go of management control and their failure to recognise the company has outgrown their capabilities. Those that successfully navigate Stage IV and plan management renewal as well as systems control will consolidate and stabilise at Stage V.

With decentralised, experienced and empowered management and well-developed systems, the company will continue to grow viably but more slowly than before.

Important factors that may make or break an SME

According to (Churchill & Lewis, 1983), factors that determine the success or failure of SMEs over the life cycle are:

1. For the owner:

Clarity of vision and for the owner and for the business:

- Leadership quality and technical capacity to undertake significant roles such as strategic planning, marketing, production and distribution management and financial literacy
- Ability and willingness to delegate responsibility and separation between business and personal finances.

2. For the business:

- Optimal financial resources at inception and operationally going forward, including borrowing capacity

- Well-staffed with qualified, experienced and empowered people at the relevant levels
- Modern systems with the right degree of sophistication for the business
- Best practice business structure and resources, such as corporate governance, marketing, customer and supplier relations, technology and professional reputation.

(Churchill & Lewis, 1983) note that as the business transitions from its current stage to the next stage, the value placed on managerial factors changes. Management should recognise this and adapt accordingly. If this principle is applied diligently and SMEs grow and survive, their importance to the economy will be realised.

2.4 The role and importance of SMEs

According to the (Edinburgh Group, 2012), more than 90% of companies in less developed countries are SMEs and they account for over 50% of GDP, while in OECD economies, SMEs make up about 95% of firms and they contribute about 55% to GDP. The pattern is the same in similar country categories around the world. In Australia, for example, small firms contributed about 60% of the country's value addition in 2009-10 while similar firms, which constitute 93% of all companies in Morocco, contributed 38% to GDP and 30% to exports while making up 33% of investment. In South Africa, where SMEs make up 91% of all registered companies, they produce between 52-57% of national output. Lastly, SMEs in Ghana make up approximately 92% of all formal businesses and they contribute close to 70% towards the country's GDP.

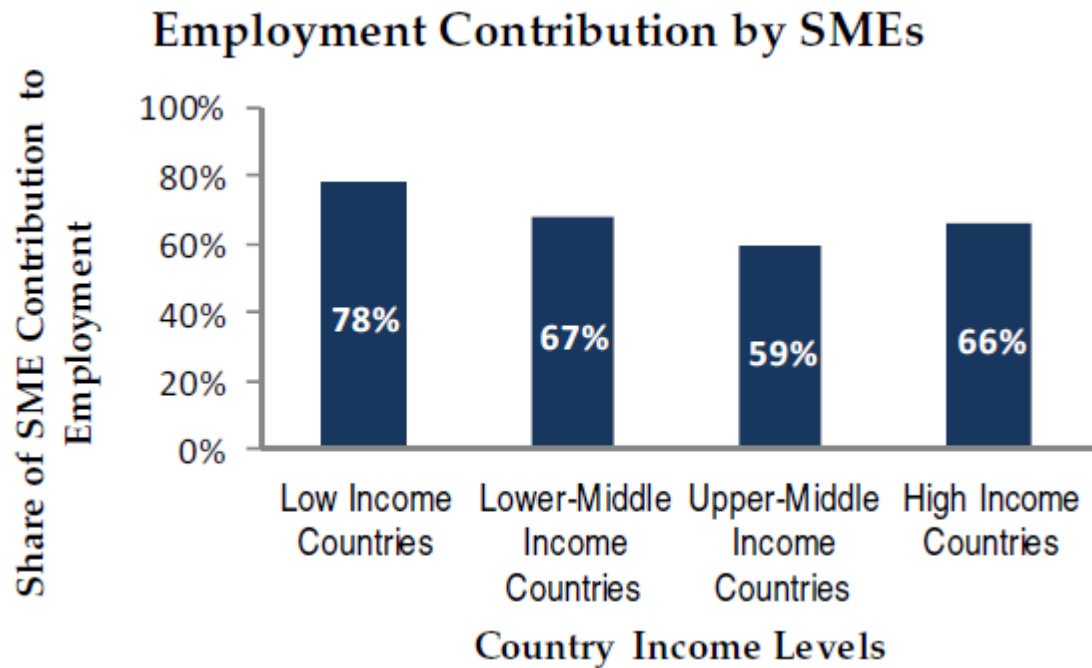
These statistics indicate that SMEs in developed or developing countries are important and play a key role in creating employment, generating GDP and export earnings. This is elaborated further in the sections that follow.

Employment creation

(Dalberg, 2011), an international strategy and policy advisory firm specialising in global development, found in a 2011 worldwide study that SMEs make up a bigger percentage of firms in the private sector in most developing countries and, therefore, create potential for significant private sector-led growth. It reports that the SME sector acts as the backbone of the economy in industrialised, high-income countries, but is less developed in low-income countries and requires a lot of support. (Dalberg, 2011) quotes the OECD in saying that 'more than 95% of enterprises in the OECD area are SMEs. These enterprises account for almost 60% of private sector employment, make a large contribution to innovation, and support regional development and social cohesion.' The Dalberg report also alludes to a study by

(Ayyagari, Beck, & Demirguc-Kunt, 2003) based on World Bank survey data and observes that in low-income countries, SMEs account for a sizeable contribution of up to 78% of employment (as shown in the figure below), with the percentage contribution declining as the economy becomes more advanced.

Figure 3: Contribution of SMEs to employment



Source:(Ayyagari et al., 2003), *Small and Medium Enterprises across the Globe: A New Database, World Bank 2003*

(Liedholm, 2002) reviewed various national surveys carried out on several African countries and concluded that between 17% and 27% of the working age population is employed in micro- and small enterprises, which is nearly twice the number employed by large scale enterprises and the public sector.

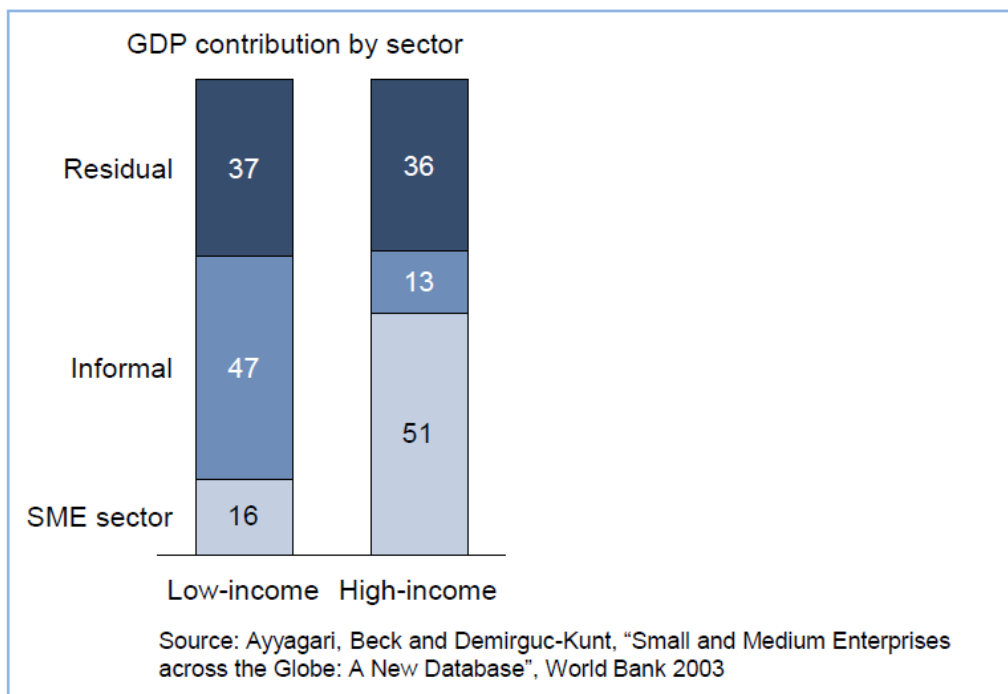
Contribution to GDP

The International Finance Corporation, IFC (2010) recognises the SME sector’s economic importance and asserts that it contributes significantly to GDP, especially by formalising the informal. The value of SME contribution to GDP is lower in less developed countries and higher in high-income countries, where they account for over half of the national output. In less developed countries, SMEs have a lower impact on GDP because these economies are dominated by informal businesses and many small, low-value companies.

Studies by (IFC, 2010) show that the value of SMEs' contribution to GDP increases with country income level and this is interpreted to mean that SMEs do influence or drive economic growth. This means that as SMEs become more formalised, their efficiency, production volumes and output value increase, contributing more value to GDP.

It is (IFC, 2010)'s assertion that since informality is associated with inefficiencies, it follows that transforming informal firms into registered SMEs can boost economic growth. This is depicted in Figure 4 (below) from (Ayyagari et al., 2003):

Figure 4: SME contribution to GDP



According to Raikundalia (2015), Kenyan SMEs account for 80% of the country's employment and contribute about 20% of its GDP, making them an important contributor to socio-economic development.

Slight variations aside, this resonates with studies by (KNBS, 2016) and (KIPPRA, 2013), which estimate that SMEs, defined as firms employing 10-99 employees, accounted for 75% of total employment in Kenya, making up over 70% of manufacturing firms in the country but contributing 18% of GDP, therefore supporting IFC's views.

Contribution to social, political and equality objectives

Support for SMEs, especially in developing countries, has been justified because of their potential for uplifting the poor through income generating activities and employment. Encouraging the formation and supporting the growth of SMEs is, therefore, seen as empowering the disadvantaged, which – if done on an increasing scale – will help improve the wellbeing of societies and, ultimately, lead to equitable income redistribution.

2.5 The counter-argument: the importance of SMEs is exaggerated

As is discussed below, some academics and practitioners in the business world have questioned whether SMEs really are drivers of economic growth or contribute significantly to a country's GDP while creating more jobs and alleviating poverty.

Do SMEs create more jobs?

(The World Bank, 2014) reports that findings from studies undertaken by (Ayyagari et al., 2011) show that, while there is more job creation by SMEs, the firms also cause more job destruction, especially through exit / closures.

Some studies, such as those on U.S. data by (Haltiwanger, Jarmin, 2008), indicate that if a control for the firm's age is introduced and firms exit over time, there is no systematic relationship between firm size and growth. (Ayyagari et al., 2003), employing models that allow for firm exits, and based on World Bank enterprise survey panel data in five sub-Saharan African countries, conclude that large firms account for most of the jobs created in four of the countries.

It is difficult to measure weight of SMEs' contribution

(Santos, 2003) believes that the actual contribution of SMEs to employment creation and GDP is not easily determined because the weight of SMEs in developing countries is difficult to measure due to the absence of, or insufficient, statistical data and research as well as the challenges of incorporating the informal sector.

Another viewpoint given in support of SMEs is that they boost job creation because SMEs are labour intensive. However, (Biggs, 1996) conducted empirical studies which showed that labour intensity is

more related to industry types rather than firm size which, in developing countries, translates into SMEs being more labour-intensive than large corporations due to the particular industry mix. Labour intensity results into a lower capital cost being associated with job creation and, therefore, SMEs end up being associated with higher employment generation, which is not necessarily the case.

SMEs may not alleviate poverty

On poverty alleviation and livelihoods, the argument is that SME owners and workers are unlikely to be in the poor category of society but possibly lower middle- to middle-income. For this reason, the provision of concessional financial support and the promotion of SMEs does not necessarily reduce poverty because these interventions go to those not at the bottom of the pyramid. It is, in fact, observed that most governments seek to promote SMEs more for political reasons and to a lesser extent for economic gains. In some countries, like India and Indonesia, or in traditional societies, establishing and running businesses is, or is perceived to be, the preserve of one gender or certain ethnic groups, usually in the minority. This exacerbates inequality in income distribution and the pauperisation of large segments of society.

This study's position on SMEs

This study is not seeking to establish the importance or contribution of SMEs to GDP, economic growth, job creation or poverty alleviation. It focuses on investigating factors constraining the growth and survival of SMEs in Nairobi County, Kenya, and then exploring various mechanisms to minimise these constraints and allow this category of business to grow. The study will assume, as the mainstream view, that SMEs are the engine of economic growth and contribute significantly to GDP generation, employment creation and poverty alleviation.

2.6 Obstacles to SME growth and survival

While many studies undertaken over the years show that SMEs make significant contribution to an economy's GDP, job creation, employment, investment and private sector development, other empirical studies and observations indicate that SMEs also face considerable challenges in their efforts to grow and remain in business.

Beck, Demirguc-Kunt and Laeven (2005) point out that there are many obstacles that inhibit SME growth and ultimately ensure their demise in less than five years. Obstacles range from macroeconomic

instability to inefficient functioning of financial markets, poor infrastructure, weak/inefficient regulation and taxation systems, inadequate security, lack of property rights enforcement and corruption.

While researching the role of financing in the business environment, (Ayyagari et al., 2005) regressed firm growth rates on these obstacles as well as inadequate collateral security. In doing so, (Ayyagari et al., 2005) employed GDP per capita and firm size as control variables, with each of the obstacles listed above substituted in turn in the regression equation:

$$\text{Firm growth} = \alpha + \beta_1 \text{obstacle} + \beta_2 \text{GDP/capita} + \beta_3 \text{firm size} + \varepsilon$$

Where: firm growth is defined as percentage increase in firm sales over the past three years. Firm size is expressed as the log of sales. Financing, political instability, inflation, exchange rate, judicial efficiency, street crime, corruption, taxes and regulation, anti-competitive behavior and infrastructure are general obstacles measured/coded by the ranking in the questionnaire with values 1 = not an obstacle; 2 = a minor obstacle; 3 = a moderate obstacle; and 4 = major obstacle.

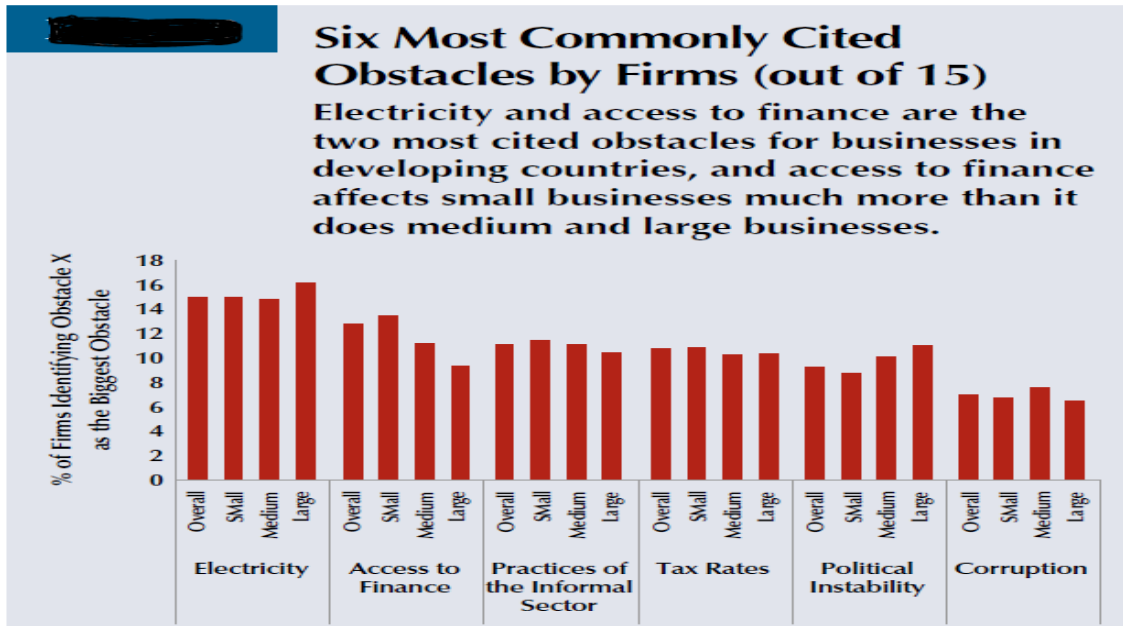
To determine whether an identified obstacle is a binding constraint – that is: whether or not it has a plausible impact on a firm's growth – (Ayyagari et al., 2005) tested whether β_i is significantly different from zero, with significant impact benchmarked as a situation where the obstacle has a value higher than one (1). (Ayyagari et al., 2005) observed that results suggest the importance of three obstacles as key impediments. These are financing, crime and political instability as they impact directly on firm growth while the other obstacles are transmitted indirectly via other variables or against the three above.

However, Ayyagari, Beck and Demirguc-Kunt (2003) acknowledge that although small businesses report facing many obstacles to their survival, not all these obstacles affect all businesses the same way. Some obstacles affect firm growth directly while others affect the firms indirectly through their impact on other factors. These studies established that lack of access to finance, crime and political instability affected the firms' growth rate directly with Finance showing the most significant impact. The results indicate that carrying out financial sector reforms to ease financing constraints, ensuring political stability and controlling crime are measures that can bring about SME growth and sustainability.

In a study conducted for the IFC by (Kushnir, K; Mirmulstein, M; and Ramalho, 2010) using Enterprise Surveys Dataset covering 98 countries, it was found that there were 15 key constraints to SME growth and survival. These were described as lack of access to finance, electricity, business licensing and

permits; corruption; poor legal and court processes; crime, theft and disorder; customs and trade regulations; inadequately educated workforce; labour regulations; political instability; practices of competitors in the informal sector; tax administration; tax rates and transport.

Figure 5: Obstacles to growth of SMEs



Source: IFC. 2009. *SME Banking Knowledge Guide*.

As depicted in the diagram above, even when faced with 15 possible obstacles to business growth, not all of them would affect firms equally or all the time. (Kushnir, K; Mirmulstein, M; and Ramalho, 2010) noted that electricity and access to finance were the two challenges most cited by firms in developing countries.

Although businesses of different sizes rank obstacles differently, it was noted that access to electricity was a significant constraint overall affecting all sizes of firms in the same way. More small businesses listed access to finance as their main impediment than medium enterprises did, while for large firms, access to finance was a lesser obstacle. However, more large firms identify political instability as the most important obstacle compared to small ones.

Non-provision of or poorly developed infrastructure such as roads, rail, telecommunications, water and sewerage discourage investment or where they already exist but have deteriorated, they impact negatively on business growth. In Nigeria (Akinyele, Akinyele, & Ajagunna, 2017) established that investment in infrastructure (defined as information and communications technology; roads, rail and transport; water

and sanitation; and electricity) had a positive impact on SME turnover, profitability and growth. It is observed that although p-values are significant at 90% confidence, the explanatory power of electricity on SME profitability is 33%, communication technology is 15% and transport is 12%, implying weaknesses and that other factors such as location and access to finance could be at play.

Scott, Darko, Lemma and Rud (2014) studied the impact of electricity on SME operations and growth in four countries – Bangladesh, Nepal, Nigeria, Uganda – and concluded that the impact of electricity insecurity (outage frequency and length) on SMEs was statistically insignificant contrary to popular perception. The perception of electricity as a major constraint was attributed more to frequency of outages and frustration of dealing with these rather than actual impact. While it is acknowledged that availability of electricity can boost productivity at macro-level, this is not the case at SME level because the small firms use electricity mainly for lighting, heating and communications and the energy source can be easily substituted with solar power and generators.

Lastly, a study of 2,500 UK SMEs across all sectors by (Hayton, 2015) showed that about 75% of all SMEs lack best practice leadership and managerial skills, a factor that hampers their operations and ability to grow. The study found that business education, good strategic management and entrepreneurial skills were strongly associated with higher productivity and business growth. (Hayton, 2015)'s research also established that skills are important but not all skills are required equally or at the same time. As a result, SME proprietors should ensure they recruit personnel with the necessary skills at the right time.

2.7 Does a country's development level matter?

(Kauffmann, 2011) notes that the development of the private sector has taken place at varied paces in different countries in Africa. SMEs have developed fairly well in South Africa, Mauritius and North Africa due to the existence of modern financial systems and clear government policies that support the private sector. Elsewhere in Africa, for instance the Democratic Republic of Congo, Sierra Leone, Somalia and South Sudan, growth of small businesses has been negatively affected by political instability or civil war. In other countries like Equatorial Guinea, Gabon and Chad, dominance of the oil economy has diverted all attention from non-oil businesses and, therefore, slowed the growth of SMEs in other sectors of the economy.

In Nigeria, SMEs account for about 95% of formal manufacturing activity and are considered important to the economy. However, corruption, insecurity and poor infrastructure hamper their growth. For some

moderate countries, for example, Senegal, Kenya and Uganda, the business environment is conducive to the private sector but the growth of small businesses is held back by inadequate financial systems.

2.8 Conclusion

The common thread in all the above research is that small businesses face a myriad of challenges in their operations and efforts to grow, but these impediments do not affect the businesses equally or to the same extent. Given the stated importance of SMEs and the widespread support they receive from DFIs, governments, NGOs and others, questions that arise include: why do SMEs continue to face serious challenges that hamper their growth? Are the authorities providing a conducive business environment? Have the development partners, advisory organisations and financiers properly defined and categorised SMEs and clearly identified their needs? What actions and strategies are small business owners putting in place to mitigate against vulnerabilities and ensure their firms grow and continue to prosper for the foreseeable future?

Noting the argument by (Churchill & Lewis, 1983) that ‘the problems of a six-month-old, 20-person business are rarely addressed by advice based on a 30-year-old, 100-person manufacturing company’, it is important for Kenyan consultants, SME business owners, financiers and policy makers to tailor solutions that match the context of the environment in which these businesses operate in order to produce successful interventions.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

(Kothari, 2004) presents that research involves ‘defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organising and evaluating data; making deductions and reaching conclusions; and, at last, carefully testing the conclusions to determine whether they fit the formulated hypothesis.’ This is in line with the Oxford Advanced Learner’s Dictionary (7th Edition, 2006) which defines research simply as ‘a careful study of a subject, especially in order to discover new facts or information about it.’

Chapter 3 of this study discusses how the research into factors inhibiting growth and survival of SMEs in Nairobi County was undertaken and articulates matters such as research design, the target population, sampling techniques used, data collection methods and instruments employed as well as how the data was tested, analysed and interpreted. The research methodology seeks to collect data in a credible, unbiased way and proceed to measure, analyse and interpret results that can be accepted as valid, reliable and replicable in similar situations elsewhere.

3.2 Data handling

(Selltiz, Jahoda, Deutsch, & Cook, 1967) and (Kothari, 2004) agree that a research design describes the manner and conditions for collection, tabulation and analysis of data in a way that brings out answers to the problems that the researcher sets out to investigate. To achieve this, the researcher must procure information relevant to the research problem by clearly specifying the type of evidence needed to test a theory with minimal bias while maximising the result’s explanatory power or reliability.

Accordingly, this study – which aims to establish the factors constraining the growth and survival of SMEs in Nairobi County, Kenya – primarily used a quantitative, experimental cause-effect method in tabulating, testing and analysing the data and interpreting the results. Some elements of the qualitative approach were employed in data collection and analysis. The data collected, tests conducted and results obtained were able to show the cause-effect relationship between several independent variables and the dependent variable – SME growth.

3.2.1 Sampling

Target population

(KIPPRA, 2016) reports that there were about 1.56 million licensed micro-, small and medium enterprises (MSMEs) and 5.85 million unlicensed businesses in Kenya as at end of December 2016. Of the licensed businesses, 268,100 were in Nairobi and only 16.2% (43,432) were in the SME category while the balance of 224,668 (83.8%) were micro-enterprises. There were 782,500 unlicensed businesses operating in Nairobi as at 31 December 2016.

Table 2: Distribution of licensed and unlicensed MSMEs in Kenya

	Licensed			Unlicensed (000)
	Total (000)	Micro %	Small %	
Total	1,560	92.2	7.1	5,850
Nairobi	268.1	83.8	14.8	782.5

Source: KIPPRA (2016)

It is obvious that in research, it is not possible to interview every member of the target population due to time and cost limitations. This study was conducted in Nairobi County and targeted the population of licensed SMEs (43,432) while excluding micro-enterprises and unlicensed businesses because they do not keep any discernible records that could be of use in this research.

3.2.2 Sample design, sampling technique and sample units

Since in practice, a researcher will not be able to undertake a census survey, one has to plan, using appropriate techniques, how to extract study subjects whose number and characteristics are large enough to be representative of the target population. This is called sampling design, while the method and process of selecting the subjects of observation is called the sampling technique.

This study on the challenges facing SMEs in Nairobi County will use as its sampling frame the records at the Office of the Registrar of MSMEs at the County Government, which has a full list of all formally registered businesses in the county.

The population from which the sample will be drawn is made up of all SMEs formally registered by the registrar of Nairobi County. Given the diversity of human and business settlements in Nairobi, and the fact that there is weak enforcement of zoning by-laws that stipulate businesses carrying out similar activities should be located in certain designated areas, means it is very difficult to find companies in the

same line of business located in the same area. At the same time, the target population is not homogenous as there is high variability in the nature of business undertaken by SMEs and the characteristics of one to the next.

For this reason, the research will employ stratified random sampling in building sub-population/strata from the sampling frame, comprising all companies in Nairobi County in different sectors of the economy, with a staff compliment of less than 100 people, earning annual sales of KSh150 million and below or having assets worth KSh50 million and below. This is in line with the definition of SMEs in Kenya. The individual respondents to be interviewed will be identified by using simple random procedures to draw the sample from SME strata.

To select specific sampling units, the sampling frame is divided into several economic sectors and the number in each sector noted. The study resolved to conduct its investigation on a sample size of 300 businesses, targeting a response rate of at least 75% (225 respondents), assuming some contacts will not respond.

Sectors of the economy into which the SMEs fall represent strata shown below. The number of subjects picked from each stratum was determined by multiplying the desired sample size by the proportion of number of units in each stratum to total population size. For example:

Economic sector 1 (Stratum 1): $\text{Desired sample size} \times (\text{no. of units in stratum 1} \div \text{population}) = X_1$

Economic sector 2 (Stratum 2): $\text{Desired sample size} \times (\text{no. of units in stratum 2} \div \text{population}) = X_2$

This means X_1 units were picked from Stratum 1 and X_2 units from Stratum 2 etc. The actual $X_1, X_2, X_3, \dots, X_n$ units were selected through simple random sampling. The total sample of 300 subjects comprised SMEs of all kind, so enabling the research findings to be representative of the SME population and, as such, can be generalised to reflect the factors influencing growth and development of SMEs in Kenya.

According to (KIPPRA, 2016), the majority of SMEs in Nairobi County are in the service sector, mostly in wholesale and retail trade (commercial trade), followed by manufacturing, while accommodation and food service activities come third.

Table 3: Distribution of licensed SMEs

SME Sector	Licensed SMEs		
	No. of SMEs in Sub-sector	% in Sub-sector	Sample size from sub-sector
Manufacturing	4,857	11%	34
Commercial trade	24,804	57%	171
Accommodation & Food service	3,832	9%	26
Financial & Insurance	1,823	4%	13
Education	1,052	2.4%	7
Admin & Support services	704	1.6%	5
Other	6,360	15%	44
Total	43,432	100%	300

Source: Author's calculation from KIPPRA (2016)

The sample size from each sub-sector = desired sample size x [total no. of SMEs in sub-sector ÷ total no. of licensed SMEs in Nairobi County.

It should be noted, however, that the 'Other' category is made up of a host of activities whose individual composition in the total is less than 1% of all licensed SMEs in Nairobi County. It is difficult to draw a sample from the category. For this reason, it will be excluded and the actual sample will be comprised of 256 firms from sub-sectors that make up 1.5% or more of the total licensed SME population in Nairobi County.

3.2.3 Data types and collection instruments

Both primary and secondary data were used. Primary data was collected by way of questionnaires with closed and open-ended questions designed to extract specific numeric information from the enterprises about their age, revenue growth, capital base and additional equity injected during the years they have been operating to generate measures for their growth. The questionnaire was also designed to collect qualitative responses from the businesses on what factors they consider to be hurdles to their growth and sustainability. Categorical questions of the dichotomous type were employed to obtain SME business people's views on the severity of factors they consider as hindrances to the growth and survival of their businesses. For example, business people were asked to express opinions in response to the question: 'Is electricity an obstacle to the growth of your business?' and a subject would provide a binary Yes or No response. The responses are allocated binary codes 1 or 0 so that feedback defining electricity as an obstacle will have a code of 1 while responses indicating it is not an obstacle will have a code of 0.

The questionnaire was preferred because it is efficient, cheap and easy to administer. Within Nairobi County, the questionnaires were physically administered through drop and pick to the selected subjects as this provided an opportunity for a brief explanation on the purpose and importance of the questionnaires. This also helped to enhance the response rate, as participating subjects felt obliged to provide a completed questionnaire and respond to questions rather than having to post or email their responses.

Secondary data – such as the database of registered SMEs, their locations and contacts – were obtained from the office of the Registrar of Micro and Small Enterprises under the Ministry of Industry, Trade and Cooperatives of the national Government of Kenya.

3.3 Analytical techniques

3.3.1 Econometric analysis

3.3.1.1 Model specification

The study used linear regression, commonly known as Ordinary Least Squares (OLS) multiple regression, in Microsoft Excel to establish relationships between the relevant dependent and several independent variables.

OLS is preferred instead of, for instance, (i) Ordinal Logistic Regression (OLR) because OLR considers the relationship between an ordinal dependent variable and the combined effect of a number of explanatory variables, but in this study the dependent variable is not ordinal. (ii) Nominal Logistic Regression (NLR) could not be employed because it deals with the association between, on one hand, a nominal dependent variable and, on the other hand, several explanatory variables where the nominal explanatory variable is a categorical factor such as gender; yet in the current study, the dependent variable is not nominal but quantitative. In addition, (iii) Partial Least Squares (PLS) regression is suitable when there is high correlation among the explanatory factors or where the observations/study subjects are small in number compared to the total count of independent variables - this is not the case in the current study. Lastly, the current study has not applied (iv) Non-linear/polynomial regression, which refers to the association between the subject of study (explained) variable and an assumed set of explanatory variables whose power is higher than 1 and the curve produced is not a straight line but a curve.

Consequently, the current study has found OLS to be most suitable because: (i) the relationship between SME growth and the independent variables is assumed to be linear, easy to implement as it uses

commonly available algorithms from linear algebra; (ii) it has capacity to handle problems with multiple features, many independent variables and tens of thousands of data points at the same time; (iii) it produces solutions that are easy to interpret; and (iv) if the data being studied is linear, normally distributed and uncorrelated, then the regression will yield the most likely coefficients to estimate the relationship.

This study uses OLS in an equation of the form:

$$SME_g = \alpha_i + \beta_1 X1_i + \beta_2 X2_i + \beta_3 X3_i + \beta_4 X4_i + \beta_5 X5_i + \beta_6 X6_i + \beta_7 X7_i + \beta_8 X8_i + u_i$$

Where SME_g denotes SME growth measured as the growth of the SME measured by average percentage change in sales revenue over a consecutive three-year period. This is adopted from the existing definition of high growth proposed by Brown & Mawson (2016) that is: ‘a firm defined by the OECD as an enterprise with average annualised growth (in number of employees or turnover) greater than 20% per annum, over a three-year period, with a minimum of 10 employees at the beginning of the growth period’. SME_g and one of the independent variables are quantitative, while the rest are categorical dichotomous independent variables represented by dummy variables.

α = a constant

β_i = coefficient of a variable/obstacle X_i

$X1$ = limited firm access to finance

$X2$ = electricity (from national grid) as a constraint to SME growth

$X3$ = lack of collateral security

$X4$ = lack of infrastructure

$X5$ = limited skills of SME management

$X6$ = political instability

$X7$ = crime

$X8$ = equity injection compared to initial capital injected

u = error term, also known as the residual, disturbance or remainder term.

Several assumptions have to hold for OLS to yield the Best Linear Unbiased Estimators (BLUE) and these are:

- i) The regression model is ‘linear in parameters’
- ii) The observations are selected by random sampling
- iii) The conditional mean should be zero

- iv) The independent variables exhibit neither multi-collinearity nor perfect collinearity
- v) Spherical errors: the independent variables are homoscedastic and there is no autocorrelation.

Multicollinearity is said to occur when several explanatory variables in the equation are highly or moderately correlated. This phenomenon causes problems in estimating changes in the dependent variable as this can no longer be done independently. The problem can be corrected by removing some of the highly correlated independent variables or performing PLS regression.

To check whether or not the data is homoscedastic, one can make a scatter graph of the residuals (see Annex 3). If the plot displays random residuals (no patterns) that are uncorrelated and have no uniformity, then the data is homoscedastic. If the scatter graph has a pattern – for example: a fan or cone shape – then there is heteroscedasticity, which makes estimates less efficient and results less reliable.

Use of natural logarithms or weighted regression can help correct the data set and make it homoscedastic. The data used in this study is homoscedastic as depicted in Annex 3.

3.3.1.2. Measurement of variables

Since the sample – and, indeed, the population – is comprised of young, middle-aged, mature and declining SMEs, the growth rate varies from negative to small positive to large positive. For this reason, the equation will be a multiple regression model, where the components are defined as (i) dependent variable; (ii) nominal independent variable; and (iii) quantitative independent variable. These are measured as follows:

- i) **Dependent variable**, SMEg is a percentage growth rate expressed as a quantum and is a result of the combined model interaction of the independent variables.
- ii) Most of the **independent variables** are nominal in nature and a questionnaire was used to solicit binary/dichotomous responses from the study subjects. The feedback was then converted to quantitative form by coding so that it can be used in the regression equation. These independent variables are: limited firm access to finance, lack of electricity (from the national grid), lack of infrastructure, limited skills of SME management, political instability and crime.

In order to quantify the independent variables stated above, the questionnaire presented questions such as ‘Is the following factor X_i an obstacle to your company’s growth?’ and responses were given as Yes or No, where codes were then used to denote the qualitative responses as 1 = Yes and 0 = No. Specifically, the questionnaire sought to establish those businesses that identify these factors as constraints and those

that do not (a Yes or No type of feedback). The dummy variables created for these categorical variables were then applied as inputs of the linear regression model. Once the intercept and coefficients of the linear regression analysis were established, an estimated regression equation was produced, which can be employed to predict SME growth for any sample or location within Nairobi County. The importance or strength of an independent variable as a constraint is depicted by the relative size, sign and statistical significance of the coefficients in the regression equation.

According to (Ayyagari et al., 2011) if all dummy variables are included in the estimation, there could be perfect collinearity or a dummy variable trap unless the intercept is removed. However, since it is important to maintain the intercept to see impact on dependent variables if all independent variables are zero, then the model should drop one dummy variable, especially where some independent variables – and, therefore, dummies – are closely related. The rule is that there should be $(n - 1)$ dummy variables. That is: there should be *one less* dummy variable in the regression model than there are independent variables to prevent the problem of multi-collinearity, a situation where one predictor variable functions to predict another.

In the final modeling, the equation of interest presented in section 3.3.1.1 above drops one dummy, independent variable – in this case: lack of collateral security – as it is closely related to access to finance , and the final equation has seven independent variables X1 to X7.

Lack of access to finance (X1) describes the inability of SMEs to obtain medium- to long-term loans for capital expenditure comprising acquisition of physical assets and/or expansion of operational premises or short-term loans/trade finance for working capital purposes. As presented in Chapter 2, in studies by various authors, SMEs are seen failing to access finance due to lack of collateral security demanded by lenders to cover credit risk. In other circumstances, firms fail to access finance because of high interest rates charged to them by banks due to perceived high operational risk given weak accounting information. The owners of small firms have limited equity of their own to inject into the business. As a result, lack of access to external finance further limits their growth potential.

Lack of electricity (X2) is defined as highly unreliable or absence of power supply from the national grid. Modern businesses, regardless of their size, need a consistently reliable supply of electricity to power their factory machines, elevators, computers, points-of-sale equipment, refrigerators and lighting. Lack of electricity disrupts production, leads to spoilage of refrigerated products, discourages customers and slows down trade. While big businesses can supplement power by switching onto large-capacity,

diesel-powered generators to support their operations, SMEs are disadvantaged and their business fails to grow because they lack financial resources to acquire such generators. This explains the need for a reliable grid supply with wide coverage.

Lack of infrastructure (now represented by X3 after dropping the dummy variable, lack of collateral security, as explained above) describes poor provision or absence of modern roads, water, drainage and sanitation facilities. Good roads are important for physical accessibility to businesses premises by suppliers and customers while water, drainage and sanitation are key to preventing health hazards. Lack of these infrastructure facilities will result in suppliers and customers avoiding business premises and shopping centres that are in a poor state. This, in turn, means firms fail to grow.

Limited management skills of SMEs (the new X4) as an independent variable relates to weak or inappropriate corporate governance structures, positions held and/or managerial decisions made by people who are not well qualified to do so. Lack of managerial depth and absence of specialist skills where they are required leads to poor business strategies and decisions that hamper the SME's performance, preventing growth. The questionnaire sought information on the highest qualifications of the SME's owners and management to establish whether or not the company has the requisite skills. Yes would be represented by a 1 and No by a 0.

Political instability (represented by X5) is defined as events when political groupings frequently confront each other or the government, causing social strife that results in the destruction of property, disruption of business activity as well as injuries and/or deaths. Business income generation is curtailed during such events yet the company will still have financial obligations to meet. The more frequent and destructive these events are, the more negatively they affect businesses, which may be forced to close down. The questionnaire solicits information from the study subjects as to whether or not political instability has had such impact on the SME.

Crime (X6) in Nairobi County involves a host of activities such as acts of pilferage by employees, shoplifting by third parties, fraud through electronic or non-electronic means perpetrated by insiders and/or external parties, burglary, armed robbery and extortion by organised criminal gangs. SMEs lack financial, managerial and security sophistication to put in place mitigating measures to fend off various forms of crime resulting significant financial losses which bring down businesses. The study does not itemise statistics for each form of crime as this is not its focus. Instead, it simply establishes whether crime is prevalent enough to hamper SME growth and survival.

iii) There is one **quantitative independent variable**, equity injection (X7), which relates to capital growth, defined as percentage change in shareholder capital in year three compared to the initial capital injection in year one. Equity is the finance injected into the firm by the owner to start a business. Further equity injection into an existing, operating firm by ploughing back profits instead of taking out dividends, or fresh shareholder cash is then described as capital growth. This is deemed to positively influence SME growth as increase in capital enables a firm to invest in more stock for manufacturing or trade, refurbish or acquire new equipment or expand its operations.

Regression statistics

Running the regression model yields a set of key metrics that are useful in indicating whether or not the independent variables sufficiently explain the movements in the dependent variable. These measures are multiple R, defined as the multiple correlation coefficient, which indicates the linear correlation among the dependent (SME growth) and all the independent variables as a group. The value of R ranges from 0 to +1, and does not indicate statistical significance of the correlation.

Another statistic, the R – Squared, is used when there is one independent (explanatory) variable to the dependent variable. This is not considered in this study.

A variation of R-squared, the adjusted R-squared, is used when there is more than one independent variable. Adjusted R-squared represents the level of variation that is described only by the explanatory variables that actually influence the dependent variable, since not all the changes in the dependent variable are explained by every explanatory variable. In addition, Adjusted R-squared is a better measure than R-squared because the former penalises the addition of extraneous predictors to the model to prevent unnecessary inclusion of explanatory variables.

However, it is not enough to only indicate the explained and unexplained variation of the dependent variable. The validity and robustness of the regression model is examined through hypothesis testing, specifically through the F- test. The F-ratio metric explains whether or not there is a good fit between the conceptualised regression model and the data.

Null hypothesis: $H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$

This depicts that none of the independent variables has an influence on SME growth;

versus

Alternative hypothesis: $H_A: \text{at least one } \beta_i \text{ not equal to } 0$

The alternative hypothesis implies that at least one of the independent variables is responsible for the variation observed in the dependent variable.

The F-statistic conducts an F-test shown by the Significance F (the p-value), which tests the significance of the overall regression model at a chosen level of significance. If the calculated p-value is smaller than the chosen level of significance, then it can be concluded that based on the sample data, the conceptualised regression model fits the data better than the model with no independent variables. We reject the null hypothesis.

Coefficient analysis

Coefficients are the numerical values of the β_i and are also defined as the gradient of the regression equation or the rate of change of the dependent (explained) variable for a given change in the independent (explanatory) variable. The coefficient value indicates the impact of the explanatory variable, while the positive or negative sign of the coefficient depicts the direction of change.

While the size and sign of the coefficient are important in regression analysis, they do not show the independent variable's significance in the model. The results of the estimated regression model also present the outcome of significance testing on the independent variables as depicted by the p-value of each coefficient.

The p-value metric tests the null hypothesis $H_0: \beta_i = 0$ (that is: the coefficient equals zero) against the alternative hypothesis $H_a: \beta_i \neq 0$ (that is: the coefficient is non-zero). The null hypothesis implies that the explanatory variable does not explain any changes in the dependent (explained) variable while the alternative hypothesis assumes that movements in the independent (explanatory) variable influences movements in the dependent (explained) variable.

If the p-value for a variable is less than the selected significance level, the sample data provides enough evidence to reject the null hypothesis for the respective coefficient. We conclude that the respective variable is statistically significant as an explanatory item in the regression model. Alternatively, where a p-value is bigger than the selected level of significance, it means that the researcher fails to reject the null hypothesis, which stipulates that the respective coefficient is equal to zero ($\beta_i = 0$).

3.4 Conclusion

This chapter presented the approach, employed in the study as quantitative methodology, and went on to outline where it was to be undertaken and how the research was designed. This chapter also explained the target population and the sampling techniques used to identify the subjects of the study. Questionnaires were described as the main instrument through which data was collected while the data itself was both qualitative and quantitative. The mechanism for converting qualitative information to quantitative units was also presented here. Lastly, this chapter explained how the collected data would be tabulated and analysed using the descriptive statistical approach and regression modeling, whose outcome would be validated through hypothesis testing. The next chapter will present and discuss the outcome of the research study into what is affecting the operations and growth of SMEs in Nairobi County.

3.5 Limitations

Cost and distance: given the large area covered by Nairobi County and the large number of SMEs, it was not possible to interview them all. For respondents outside Nairobi County, more cost-effective mechanisms were employed. These include delivering and collecting questionnaires via email complemented by follow-up phone calls.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

The research study's aim was to establish what factors are holding back the growth and survival of SMEs in Nairobi County in Kenya. To reach a conclusion on this matter, the investigation's objective was to come up with answers to the questions:

- i) Have SMEs in Nairobi County experienced growth in sales revenue for the three years under consideration?

- ii) Which factors have acted as constraints to SME growth and survival over the last three years?

In this chapter, the research study employed the descriptive statistical tools and regression analysis developed in the previous chapter to provide answers to the questions of interest. Having identified the challenges faced by SMEs in Nairobi County, the study draws parallels with similar findings by authentic research organisations in Kenya to reinforce the outcomes of the current study. This is done in the hope that the SMEs, policy makers and financiers can derive solutions from this study to mitigate against failure of small businesses and foster their growth and survival.

4.2 Data quality

In conducting data collection, 256 questionnaires were sent out by a combined methodology of email to those with email addresses and those outside a 20km radius from the researcher's location; and physical distribution to those within a 20km radius. Of the total questionnaires issued, 179 subjects responded, which represents a 70% response rate and is considered highly satisfactory. (Nulty, 2008) and (Dommeyer, C. J.; Baum, P; Hanna, R. W.; Chapman, 2004) surveyed numerous studies around the world and confirmed that acceptable response rates for paper-based studies range from 55% to 75%, while for online-based studies, these rates range from 20% to 47%.

While there is no hard and fast rule on the acceptable response rate, a response rate that is too low will negatively affect the validity and credibility of the research. (Kiess, H. O. & Bloomquist, 1985) hold that at least 60% is regarded as a generally acceptable response rate. (Johnson & Owens, 2013) observed that a majority of top journals in America do not publish research papers that have a response rate below 60%.

In the current study, the high 70% response rate was made possible by the researcher going around to collect completed questionnaires at the time promised by the respondent, and following up by email and telephone with more distant respondents. Those that failed or did not respond cited varied reasons such as:

- Insufficient time due to other pressing commitments
- Absence of the key decision-maker to approve provision of information
- Reluctance to participate with no particular reason given.

The sample construction for this study is described in Section 3.2.1. In addition to the high response rate, the sample is considered sufficiently representative of the SME population because of the proportionate selection of respondents from each economic sector as shown in Table 3 in Chapter 3 (above).

4.3 Descriptive statistical analysis

4.3.1 SME growth pattern

Descriptive statistical methods were employed to assess the growth pattern of SMEs. It was observed that the sampled firms had experienced sales growth ranging from 12% to 74% in the three-year period between 2015 and 2017. The growth rates were compiled into classes such as 12%-18%, with the number of classes determined using the Sturge’s rule formula {Number of classes = $1 + 3.3\log(n)$ }, and the width of each class determined by the formula {(Largest observation – Smallest observation)/Number of classes}, then frequency levels established for each class. This process is then used to construct Table 4 (below), which shows the number and percentage of firms that experienced the sales growth under discussion.

Table 4: SME growth pattern

Level of sales growth (%)	Frequency (No. of firms)	Percentage
0-9	0	0
10-19	14	8
20-29	36	20
30-39	56	31
40-49	38	21
50-59	25	14
60-69	8	4
70-79	2	1
Total	179	100

Source: Estimates from survey data, 2018

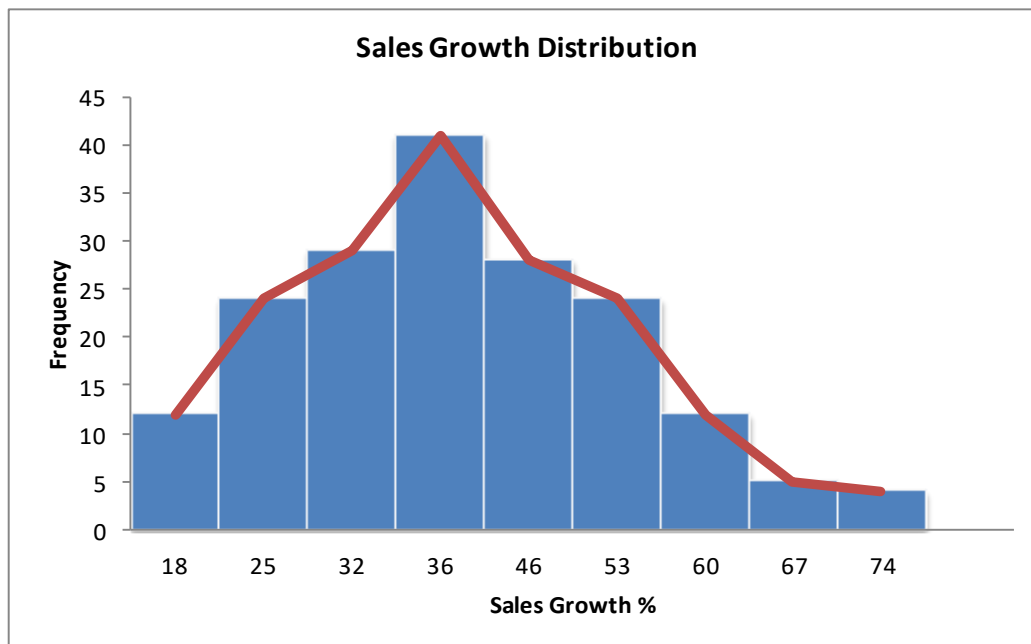
The mean sales growth is 38% and 96 firms (54%) recorded growth less than the mean. The table also shows that only 19% of the SMEs experienced sales growth of 50% or more in three years. This implies that most SMEs are struggling to grow and are vulnerable to economic and financial shocks.

In addition, a histogram such as the one in Figure 6 (below) was produced and a frequency curve superimposed from the survey statistics in this study. It is observed that the growth pattern shown by the 179 sampled SME respondents approximates a normal distribution, as depicted in Figure 6.

The statistics show that 68.2% of the SMEs have experienced sales growth of between 26% and 53% in the three-year sampling period, with the single largest group of 23% (41 firms out of 179) reporting growth between 33% and 39%. About 20% of the firms had growth of 25% and below, while only 11.7% of the SMEs had growth ranging between 54% and 74%.

The statistics above again confirm that fewer firms are experiencing growth above 50% and a majority of them could be wiped out in the event of negative developments in the operational environment.

Figure 6: SME growth pattern



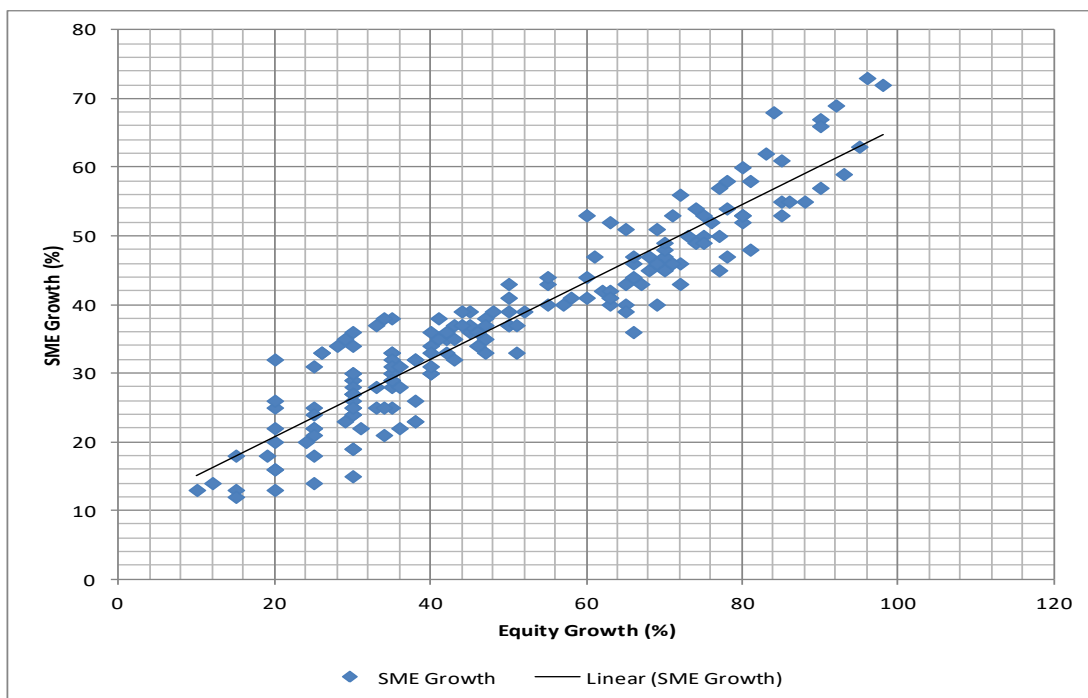
Source: Estimates from survey data, 2018

4.3.2 Equity impact on SME growth

Increases in shareholders' funds (share capital/equity plus retained profit) or increases in share capital/equity alone are often cited as a catalyst to business growth. The current study considered the impact of share capital/equity growth on SME growth. In this case, equity growth was defined as the percentage increase in capital injection during the three-year period over the initial capital at the start of the business.

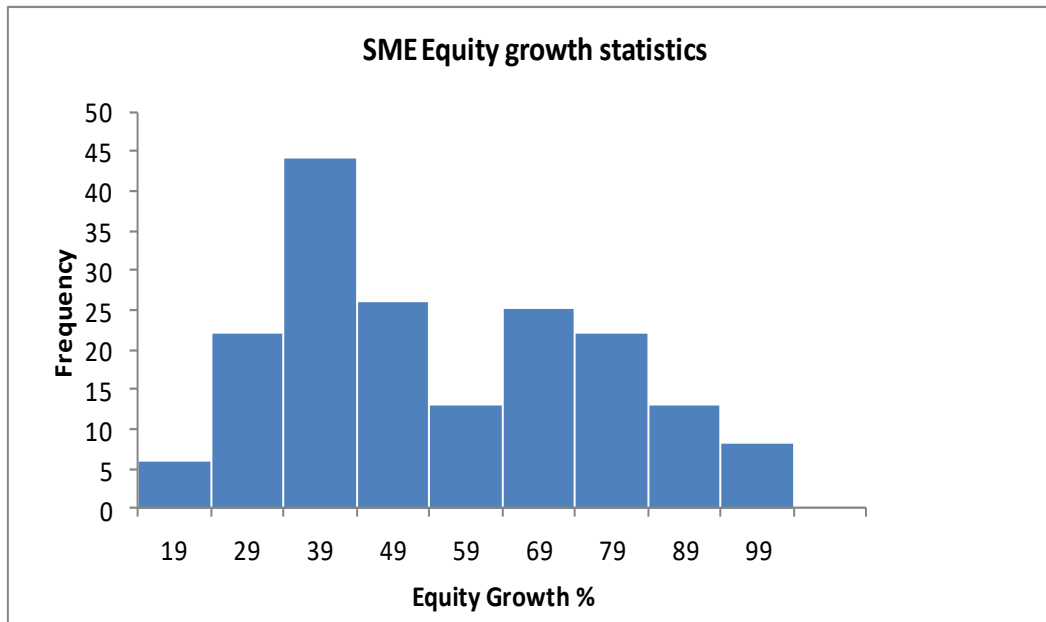
The study reveals a strong equity injection-SME growth association, which is shown in Figure 7 (below). Equity finance boosts a company's cash flow and has no immediate outflows, as the directors can decide not to declare dividends and, therefore, profits can be ploughed back to further strengthen the entity's operations. Equity growth, as a long-term investment, enables the SME to fund working capital, acquire new or additional equipment, refurbish or upgrade operational premises and systems to improve performance with no need to pay back the shareholders in the short-term. This is why it impacts positively on business growth.

Figure 7: Relation between equity growth and SME growth



Source: Estimates from survey data, 2018

Figure 8: SME growth and equity



Source: Estimates from survey data, 2018

Figure 8 (above) indicates that 55% of the SMEs in Nairobi County reported equity growth of 49% or less, while 45% of the firms had equity growth of between 50% and 99%. This situation supports the theory put forward by (Churchill & Lewis, 1986) in section 2.3 that continuous equity injection by the founders or additional shareholders at different stages of the SME’s life cycle will see it grow to the next stage. Otherwise, it will be starved of financial resources and collapse.

Of the 45% of SMEs that reported equity growth of between 50% and 99%, only 19% of them also experienced sales growth of 50% or more. For the rest, the indication is that sales growth was less than equity growth. This implies that there are other factors militating against the growth of SMEs that need to be investigated. Alternatively, this means equity growth alone is not sufficient to influence SME growth.

4.3.3 Impact of access to finance on SME growth

Table 5: Lack of access to finance

	No. of respondents citing factor as constraint	Percentage of respondents citing factor as constraint
Lack of access to finance	128	72%

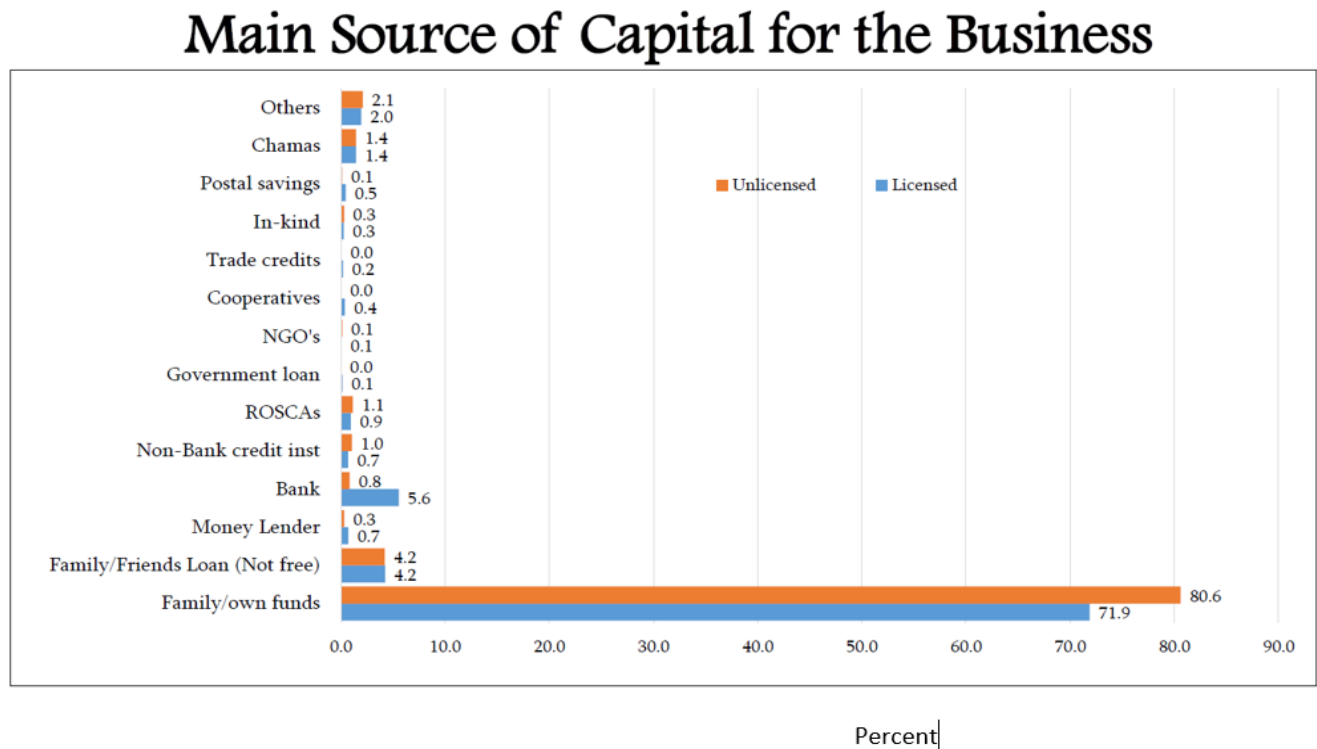
Source: Estimates from survey data, 2018

The study interviewed SMEs on whether or not they considered lack of access to finance to be a constraint to their business's growth. As the table above shows, 72% of the respondents identified poor access to finance as a significant inhibiting factor.

Formally, companies can borrow from commercial banks and microfinance institutions for clearly designated business activities under various financial instruments. Meanwhile, at Savings and Credit Cooperatives (SACCOs), members, who are mostly individuals, can also borrow in the form of personal loans for any purpose including financing their small businesses. Informal sources of finance come in the form of loans from family, friends and *chamas* (local vernacular for loan roundtables) among friends. However, finance from informal sources is often too small and short-term, while financing from formal sources requires the SME to provide a formal request in the shape of a business plan, no matter how basic, account books and security for the loan, requirements which most SMEs fail to meet.

Findings in this research paper that show failure to access formal finance is a significant stumbling block to SME growth align with studies in Kenya by (KNBS, 2016), which show that commercial banks, micro-finance, co-operatives and other financiers provide very little financing to SMEs. Figure 9 (below) shows the main sources of capital for SMEs are largely informal rather than formal banking channels.

Figure 9: Main sources of capital for SMEs



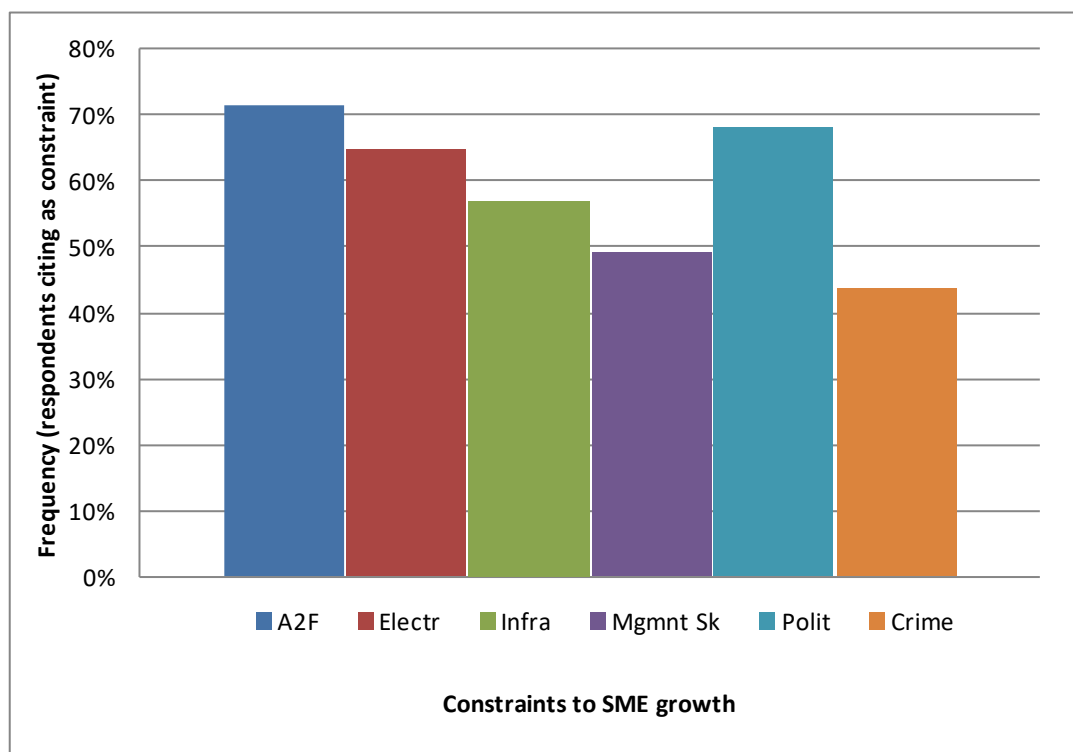
Source: Kenya National Bureau of Statistics (2016)

(KNBS, 2016), whose research is summarised in Figure 9 (above), shows that 5.6% of licensed SMEs and less than 1.0% of unlicensed SMEs in Kenya are financed by banks. On the other hand, 80.6% of unlicensed and 71.9% of licensed SMEs in Kenya obtain most of their capital from family or personal savings.

This also shows that government, NGOs and co-operatives are not doing enough to support SMEs despite their much talked-about status as an engine of growth for the economy. An additional challenge on access to finance in the country has been the imposition of an interest rate cap in 2016 by the Central Bank of Kenya (CBK). This means financial institutions are restricted to lending at no more than 4.0% per annum above the CBK rate, currently 10% per annum. The objective was to spare business the high cost of finance. However, the measure has resulted in unintended consequences and worsened the plight of SMEs because banks have become more stringent in allocating credit to the detriment of small business considered riskier than big enterprises.

The magnitude of responses to the rest of the independent variables employed in the current study are shown in Figure 10 (below) and discussed in the sections that follow.

Figure 10: Other factors affecting SME growth



Source: Estimates from survey data, 2018

4.3.4 Impact of electricity on SME growth

Table 6: Poor electricity supply

	No. of respondents citing factor as constraint	Percentage of respondents citing factor as constraint
Poor electricity supply	116	65%

Source: Estimates from survey data, 2018

Insecure electricity supply is seen as a hindrance to business growth and survival by 65% of the SMEs interviewed. However, (The World Bank, 2014) reports that Kenya had installed a total electricity generating capacity of 2,370 MW from all sources (hydro, geo-thermal, wind), while its peak electricity demand is 1,770MW, implying that there is potentially an excess supply. The problem in Kenya is not lack of power but an old and inefficient transmission network that causes frequent and, sometimes, long outages. Electricity is generally stable in upmarket, affluent areas where top government officials and the well-off live. However, its availability is erratic in slums/informal settlements, low-income and high-density locations. This could explain why unreliable electricity supply is an impediment to SME growth because these businesses are mostly located such non-affluent locations.

4.3.5 Impact of infrastructure on SME growth

Table 7: State of infrastructure

	No. of respondents citing factor as constraint	Percentage of respondents citing factor as constraint
Infrastructure	102	57%

Source: Estimates from survey data, 2018

Overall, 57% of respondents viewed the poor state of roads and the unsatisfactory provision of communications, water and sewerage services as significant constraints. The land question was not important as almost all shop owners used rented premises. Kenya’s record on infrastructure development and service provision is somewhat mixed. This is confirmed by a report from Business Sweden (2017) which observes that Kenya’s road network is about 160,886km long but only 14,000km are tarred Kenya’s roads are overstretched and traffic jams are intense, especially in urban areas. As a result, Nairobi County alone suffers US\$580,000 inefficiency costs through idle/underused man-hours. The country has, however, made significant investments in road, transport and communications infrastructure in the last decade. Examples include the US\$3,2 billion standard gauge railway from the port of Mombasa to Nairobi; the six-lane Thika superhighway from the Nairobi city center to Central province; and the northern and southern by-passes to ease congestion in town.

While major work still need to be done on sewerage and drainage, Nairobi, and Kenya in general, boast some of the best telecommunications connectivity (95% penetration) and mobile financial services penetration (68%) in Africa and the world, according to the Communications Authority of Kenya (2018).

4.3.6 Impact of management skills on SME growth

Table 8: Management skills

	No. of respondents citing factor as constraint	Percentage of respondents citing factor as constraint
Management skill	88	49%

Source: Estimates from survey data, 2018

Lack of management skills were taken to be an impediment to SME growth by 49% of the SMEs surveyed. The (KNBS, 2016) survey shows levels of education for licensed and unlicensed SMEs. The indication is that only 2.4% of owners/operators of licensed SMEs have a post-graduate degree whereas no such qualifications exist among unlicensed SME business owners/operators. At the same time, only 1.2% of owners/operators of unlicensed SMEs hold a degree. For licensed businesses, the figure is 9.8%.

Interviews with SME owners and managers reveal a potential chicken-and-egg situation, where lack of managerial skills negatively affects SME business growth but, at the same time, these businesses fail to hire skilled people because they cannot pay them adequately. In addition, the SME owners may not hire skilled people because it would mean laying off their children and relatives working for the firm. Alternatively, skilled employees are often frustrated out of the company by unprofessional conduct. This points more towards a need to educate owners on good corporate governance structures.

4.3.7 Impact of political instability on SME growth

Table 9: Political instability

	No. of respondents citing factor as constraint	Percentage of respondents citing factor as constraint
Political instability	122	68%

Source: Estimates from survey data, 2018

Apart from rare terrorist activity, political instability in Kenya is mostly observed once every five years around national elections or during by-elections. It was observed that this is the context that business owners used to describe how political instability affects their firms. Of the SMEs interviewed, 68% identified this factor as a threat to the growth and survival of their businesses as in some cases it results in outright destruction, closure or forced relocation. This was the case in 2007-08 and 2017, when post-election violence flared up and caused civil strife for months. Even in the run up to the elections, political uncertainty subdued business activity, consumption, bank lending and even the performance of the Nairobi Stock Exchange (NSE).

4.3.8 Impact of crime on SME growth

Table 10: Crime

	No. of respondents citing factor as constraint	Percentage of respondents citing factor as constraint
Crime	78	44%

Source: Estimates from survey data, 2018

Crimes reported most in the study were shoplifting by employees and third parties, burglary, robbery, extortion by crime syndicates/gangs and fraud. There was a major disparity between businesses operating in urban, formal commercial and upmarket centres, which reported very little crime (30% of respondents), compared to respondents operating in peri-urban and residential areas, especially high-density areas, and informal settlements, where 70% of respondents pointed to crime as a serious impediment to business. This tended to dilute the average observation to 44% of respondents reported in the study. However, crime as an explanatory variable to SME growth was found to be statistically significant. Operators in urban and formal settings reported more crime in the form of pilfering, fraud and financial impropriety while those in peri-urban and residential areas and informal settlements experienced more burglary, robbery, shop-lifting and gang-related activities.

4.3.9 Correlation analysis

The current study ran a correlation analysis to determine the level of association between the growth of SMEs, the dependent variable and the independent variables. The outcome of this investigation has been summarised as shown in Table 11 (below).

Table 11: Correlation coefficients – SME growth and independent variables

	<i>SMEg</i>	Access to Finance	Electricity	Infrastructure	Management Skills	Political Instability	Crime	Equity Growth
SMEg	1							
Access to Finance	-0.6014	1						
Electricity	-0.5555	0.0519	1					
Infrastructure	-0.1557	0.1176	-0.0260	1				
Management Skills	0.2334	-0.0271	-0.0311	0.0419	1			
Political Instability	-0.3484	0.0366	0.0386	0.0843	-0.0954	1		
Crime	-0.2096	0.1014	0.0195	0.0126	0.0373	0.2027	1	
Equity Growth	0.9374	-0.0058	-0.0546	-0.1118	0.1284	-0.1348	-0.1566	1

Source: Estimates from survey data, 2018

Table 11 (above) indicates a positive and strong correlation ($r = 0.94$) between SME growth (*SMEg*) and **growth in equity** injected in the SME. An increase in equity invested in the business enables the

company to acquire strategic resources and settle existing debt. Alternatively, it becomes easier to obtain more loans for business expansion or working capital if the SME has a bigger balance sheet that can support such loans. All this leads to business growth. It is also observed that the correlation between SME growth and **limited access to finance** is strong and negative, with $r = -0.60$. The association is negative because the more limited access to finance is, the more constraining this factor is to business growth. **Lack of electricity** also shows considerable negative correlation with business growth as indicated by ($r = -0.56$). Businesses need a constant and reliable electricity supply for lighting, refrigeration and operating their small manufacturing shops. For this reason, poor availability of electricity negatively affects SME growth while bigger corporates that have considerable financial resources can afford to buy and run generators big enough to power their entire operations.

On the other hand, association seems weakest ($r = -0.16$) between SME growth and **infrastructure** followed by **crime** ($r = -0.21$), **political instability** ($r = -0.34$) and lastly, lack of **management skills** ($r = 0.23$).

There is negligible correlation among independent variables, which is good for the explanatory value of the regression model. However, it should be noted that correlation only implies association but not causation. More robust, inferential techniques are required to establish and test for causation and its significance. This is when tools such as regression analysis become useful. As (Kushnir, K; Mirmulstein, M; and Ramalho, 2010) and (Ayyagari et al., 2005) observed: although they identified about 15 obstacles to SME growth, not all of them would affect firms equally or all the time.

4.4 Regression analysis of constraints to the growth and survival of SMEs

Multiple regression approach applied to the sample of 179 observations produced the estimated equation whose coefficients and validity test metrics are presented in the sections that follow. The outcome of the estimated regression equation is presented in Table 12 (below) and shows a constant known as an intercept and coefficients of the independent variables, which are analogous to the slope in linear regression equation. The combined effect of the intercept and regression coefficients works to estimate the value or magnitude of the predicted variable, in this case: SME growth. The suitability of the multiple regression model as a whole, as well as the strength of each coefficient, is also tested to check the strength of their explanatory ability.

4.4.1 Discussion of model results

After running the regression equation, the outcome is presented and explained below:

4.4.1.1 Overall model

Multiple R is 0.94 implying that 94% of the changes in the growth of SMEs is accounted for or explained by changes in the predictor variables. Overall, there is strong association between SME growth, on one hand, and the group of independent variables on the other. Adjusted R-squared at 0.89 shows that there is satisfactory goodness-of-fit between the observed values and the expected (fitted) value which is SME growth, given that the statistic has been adjusted for additional independent variables.

Analysis of variance (ANOVA)

ANOVA breaks down the dependent variable's observed total variation into two main constituent parts. In this respect, total variance is analysed as being made up of the amount of variability that can be attributed to chance and the amount that can be explained by specific causes. The analysis shows that the total sum of squares (total variation) amounts to 30,894. Of this, 27,563 (89%) of the observed change is explained by the regression model (sum of squares regression), and the balance of 3,331 (11%) is the error or residual sum of squares. This is good because to a large extent, it shows the assumed model's robustness, implying that movement in the independent variables account for most of the changes in SME growth.

Validity of the results

In the current study, the F-test is conducted at 5% significance level where the Significance F (p-value) = 3.22E-79, which is a very small value and can be described as zero in standard notation. Therefore, p-value is < 0.05, implying that the regression model is statistically significant and justifies the rejection of the null hypothesis. We concluded that the assumed regression model on SME growth better fits the data than the model with no independent variables.

4.4.1.2 Coefficients analysis

The regression model for determining the factors influencing the growth and survival of SMEs in Nairobi County is given in Table 12 (below), showing the intercept and the coefficients of the independent variables.

Table 12: Coefficients analysis

Variable	Coefficient	Standard error	t-statistic	p-value
Intercept	15.7	1.76	8.90	7.752E-16*
Access to finance (X ₁)	-2.1	0.97	-2.17	0.03*
Electricity (X ₂)	-1.3	0.91	-1.41	0.16
Infrastructure (X ₃)	-1.2	0.69	-1.71	0.09
Management skills (X ₄)	-1.1	0.71	-1.61	0.11
Political instability (X ₅)	-0.05	0.79	-0.06	0.95
Crime (X ₆)	-1.4	0.69	-2.10	0.04*
Equity growth (X ₇)	0.5	0.02	25.94	3.52E-61*
Prob>F	3.22E-79			
Multiple R	0.94			
R-squared	0.892			
Adj. R-squared	0.888			
Observations	179			

Note: * denotes significance at 5% level,

Source: Estimates from survey data, 2018

Estimated regression equation

Once the regression model is run, the coefficients produced for each independent variable reflects the magnitude of the impact that the variable exerts on the dependent variable. At the same time, the sign that the coefficient carries (positive or negative) indicates the direction of the effect, holding all other variables constant.

The estimated regression equation implies that if the predictor/independent variables are all zero, the growth rate of SMEs would, on average, be 15.7%. Assuming the predictor variables to be non-zero, the regression coefficients would imply a mean change in the predicted variable for a unit change in the predictor variable while holding other predictor variables constant.

Reading from the regression coefficients in Table 12, the results show that for:

Access to finance: a unit change in limitation of a firm's access to finance would reduce average SME growth by 2.1%. This implies that having sufficient finance is critical for the start-up, operation and expansion of a firm while the inability to access finance, whether debt or equity, will retard SME growth.

Limited availability of electricity: reduction by a unit negatively affects average SME growth by 1.29%. Electricity challenges were defined as unreliable power supply through frequent and/or long outages.

Lack of or poor infrastructure reduces SME growth by a factor of 1.18%. Communications, roads, sewerage, water and sanitation are important for a business's day-to-day operation. Lack of these would

render the business site unattractive or even a health hazard, making it difficult for the SME to grow or survive.

Limited management skills cause average SME growth to drop by a factor of 1.14%. It is known that most SMEs are formed by people who have worked in the same industry that their start-up business operates in. Therefore, they have the technical know-how but lack entrepreneurial and other managerial skills. This then hampers business growth.

Political instability and prevalence of **Crime** cause average SME growth to drop by factors of 0.05% and 1.44%, respectively. Political instability and crime are mostly external to the SME and beyond its control. Therefore, the frequency and intensity of these factors have a negative impact on business growth and survival.

Equity injection has a positive relationship with business growth with a unit increase in equity injection resulting in an increase in average SME growth of 0.52%. An increase in equity enables the SME to raise its volume of trade or acquire bigger premises or even set up another branch in a different geographical location, so facilitating SME growth.

It is worth noting, however, that regression analysis, as an inferential tool, shows association or the mathematical relationship between each independent variable and the dependent variable as depicted by the coefficient. This does not imply that the independent variable is, therefore, significant.

Metrics called p-values are calculated for each coefficient and weighed against the chosen level of significance, in this case 5% or 0.05, to determine whether or not the established relationships are statistically significant. This determination is presented below.

Validity of coefficient results and significance

Hypothesis testing on coefficients

Table 12 (above) shows the independent variable coefficients and their p-values tested at 5% significance level for $H_0: \beta_i = 0$, the null hypothesis, and $H_a: \beta_i \neq 0$, the alternative hypothesis.

The outcome of the regression model shows that p-values for coefficients β_1 , β_6 and β_7 are less than the selected level of significance. That is: $p < 0.05$. For this reason, we conclude that the coefficients are statistically significantly different to 0 (zero). This means the independent variables **X1** (limited access to finance), **X6** (crime) and **X7** (equity injection) are statistically significant explanatory variables for changes in the average growth rate of SMEs in Nairobi County. The size and direction of such impact is discussed under Estimated Regression Equation in Section 4.4.1.2 (above).

The challenges imposed on SMEs by limited access to finance have been discussed at length in Section 4.3.3 (above) and supports the finding here that lack of access to finance is a statistically significant variable.

The fact that crime is a significant explanatory variable for SME growth helps to reinforce the observation by the Kenya (National Crime Research Centre, 2012) that prevalence of various forms of crime, especially organised crime, is detrimental to the growth and survival of businesses including SMEs because its tentacles have the capacity to influence and pull in politicians, law enforcers and big business, resulting in cartels that kill enterprises. The National Crime Research Centre established that 55% of Kenyans were aware of at least one criminal gang in their area or elsewhere; 39% knew of such an organisation by name; and 59% were afraid to mention it or indicate their base for fear of reprisal. Crime is difficult to expose and eliminate but strong measures to minimise it can go a long way towards alleviating its negative impact on business and society. The Overseas Security Advisory Council (OSAC, 2017), a U.S. Government agency that seeks to promote security co-operation between American business and private sector interests worldwide, reported that Kenya is rated Level 2 – exercise increased caution for crime overall, while Nairobi is rated a high-threat location for political, terrorist, economic, religious and ethnic crimes and violence. OSAC further reports that about 3,000 incidents of cybercrime occur in the country every month, while the value of the country’s counterfeit trade stands at about US\$805 million and is linked to organised crime in Kenya and Somalia.

In a study on Tanzania, (Olomi & Mori, 2010) noted that equity investments in SMEs in the country were largely confined to the founders of these companies who, even when faced with a dire need for additional funding, were not keen to open up to third party investors, fearing loss of control. They also lacked awareness of the various ways in which equity deals could be structured. For those that were more enlightened and managed to structure deals with private equity firms, venture capital companies, crowd funders etc., the results were encouraging. The researchers studied ten SMEs, eight of which were set up by university graduates and professionals, a factor that may have contributed to their success. Six of the companies recorded growth in equity, turnover and profitability over three years, one collapsed and the other three remained financially weak.

Table 12 also indicates that the p-values for the coefficients β_2 , β_3 , β_4 and β_5 are bigger than the level of significance. That is: $p > 0.05$ and we interpret this to mean that the coefficients are not statistically significantly different to 0 (zero). In other words: **X2** (availability of electricity), **X3** (lack of

infrastructure), **X4** (limited skills of SME management) and **X5** (political instability) are not significant explanatory variables in growth of SMEs in Nairobi County.

The fact that reliability of electricity supply is not a statistically significant determinant of SME growth aligns with studies undertaken by (Scott et al., 2014) in Bangladesh, Nepal, Nigeria and Uganda. These found out that: (i) poor power supply affects productivity of manufacturing SMEs negatively, but such impacts are statistically insignificant; and (ii) electricity insecurity influences investment by SMEs, especially the location of such investment, although evidence that it constraints investment is mixed.

According to this study, lack of infrastructure is insignificant when it comes to slowing SME growth in Nairobi County because, according to (Sweden, 2017): (i) SMEs do not need sophisticated premises to operate from; (ii) except for manufacturing SMEs, most SMEs do not need modern tarred roads or large quantities of power and water; in most cases they improvise with diesel generators, solar panels and buy bulk water from vendors etc.; (iii) their customers already live in locations where infrastructure is poor anyway, so they will not avoid a business in their neighborhood for that reason.

The research in Nairobi County revealed that limited managerial skills were an insignificant explanatory variable for inhibiting SME growth. There are two possible reasons for this: (i) most of the respondents were successful business people already and felt whatever skills they have had brought about that success; or (ii) most of the respondents belonged to certain ethnic communities, such as the Kikuyu and Somali, who follow family business lines from early childhood and grow up working in their parents or relatives' businesses until they set up their own. By contrast, (Perks & Smith, 2017) studying South African SMEs and (Daudu, Olowu, & Aliyu, 2015) in Nigeria, found that inadequate managerial skills hamper SME performance and, in the process, negatively impact on the company's growth and survival prospects. The researchers encourage training and development to improve skills among SME staff and owners.

This study shows that political instability has no impact on SME growth because it is not a constant feature in the business's life. It only occurs infrequently – for example: once every five years around election time or when there is a by-election – or never at all in some places (see Section 4.3.7 above). Terrorist activities also follow the same pattern. They may slow down commercial and tourist activities in their immediate aftermath, but not continuously.

4.5 Conclusion

Chapter 4 has presented the outcomes of sampling, data collection, tabulation as well their analysis using descriptive and econometric quantitative tools. Of the seven independent variables modeled in the regression, the study found out that three of them – limited SME access to finance, crime and equity injection (equity growth) – were statistically significant explanatory variables for changes in the average growth rate of SMEs.

It was also observed that poor access to electricity, lack of infrastructure, limited skills of SME management and political instability were not significant constraints (explanatory variables) in growth of SMEs in Nairobi County.

The findings align with several studies and contradict other studies undertaken by researchers around the world, as noted in section 2.6 of this study. It is evident that not all obstacles to SME growth and survival affect the SMEs equally or all the time, and that the significance of their impact may be situational (level of development, social or political circumstances) or geographical (location, as in urban, rural, informal settlement, high-density, low density). The significance of the findings from this study for businesses, financiers, development partners and government is presented in Chapter 5, together with recommendations for possible action.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS OF THE STUDY

5.1 Introduction

Chapter 5 focuses on the conclusions reached following analysis of the sample data and provides recommendations on what should be done by respective stakeholders to alleviate the plight of SMEs and improve their growth and survival prospects.

The purpose of this study was to identify the factors hampering the growth and survival of SMEs in Nairobi County, Kenya. Having identified lack of access to finance, lack of collateral, equity injection/equity growth, lack of infrastructure, lack of electricity, lack of managerial skills, prevalence of crime and political instability as potential constraints, the study set out to establish, with hypothesis testing, the significance/importance of each identified factor as an actual obstacle to SME growth.

It was observed that SMEs contribute significantly to GDP growth and are important in creating employment and sustaining livelihoods across urban and rural areas. The major findings of the study were that lack of access to finance, crime and equity growth have significant impact on SME growth. The study's conclusions are presented in the following sections.

5.2 Conclusions to the study

5.2.1 Limited access to finance is a major constraint to SME growth

Both descriptive and regression modeling confirmed that failure by SMEs to access finance was a significant drawback to their efforts to grow their ventures in Nairobi County.

The difficulty of accessing finance by SMEs manifests in a number of ways. These include: (i) requirements by financial institutions for documentation – such three years of audited financial statements and multi-year financial projections – which SMEs are not capable of providing; (ii) requirement for collateral security which covers at least 1.25x the value of the loan the business needs; (iii) unfavorable terms and conditions, including debt-equity (leverage) ratios that restrict the amount a business can borrow; (iv) high transaction costs in the form of appraisal, legal and security registration fees; and (v) high cost of finance in the form of interest rates, because SMEs are viewed as high-risk clients by financiers.

5.2.2 Crime is prevalent and difficult to manage

Unlike political instability, which is intermittent, crime is ever-present and can be pervasive in society, which is the case in high-density residential areas and informal settlements. Insecurity is a major concern for businesses and residents in Nairobi and jeopardises the viability of businesses as they rarely recover lost value even when the criminals are apprehended and jailed. In the case of gang-related extortion by crime syndicates – such as the notorious Mungiki across Nairobi and SuperPower in Eastleigh – businesses have no recourse because the police appear powerless to stop these criminals and reporting them can lead to serious reprisals. Most SMEs lack formal security measures at their business premises. If it is in place, security is often inadequate and not very professional, and can easily be overpowered or compromised. As a result, SME owners often disinvest from one area and try in another. Or, if they cannot bear the cost of crime, their businesses collapse altogether.

5.2.3 Equity injection (equity growth) is key to business growth but needs to be substantial and should be complemented by other supportive factors

It has been observed that continuous fresh equity injection and/or re-investment of profits has a strong positive correlation with SME growth and is one of the key statistically significant explanatory variables established in the current study. This is supported by the (KNBS, 2016) report, which shows that SMEs in Kenya spent between 63.4% and 69.7% of their net income on re-investment, significantly improving their chances of growth.

It is important however, that SME business owners make an effort to facilitate their growth by injecting substantial equity in their firms by inviting other investors with means rather than depending only on family and friends. Equity injection does have a positive impact but should be complemented by an improvement in corporate governance, strategic planning and operational systems to use the equity efficiently.

5.2.4. Lack of electricity from the grid is not a significant constraint

Lack of electricity is not a major impediment to SME businesses because with 95% connectivity, Nairobi County is the most electrified of all counties in Kenya as reported by (Kenya Power & Lighting, 2018) publication. Among counties in East Africa, Kenya was observed to have a 56% access rate to electricity while the figure in Tanzania is 32.8%, in Rwanda 29.37%, in Uganda 26.7%, and in Burundi 7.5%. Kenya had forecast to increase its access to electricity to 73% by end of April 2018 through several electrification projects implemented by the national utility, Kenya Power & Lighting Company (KPLC). But this did not happen because of under-investment in the distribution network.

While 65% of SMEs cited unreliable supply of electricity from the national grid as a constraint to their business growth (sub-heading 4.3.4, Table 6), it is not statistically significant because 57% of the SME businesses in Nairobi County are in the Commercial/Trading sector, which primarily needs power for lighting and refrigeration. Businesses use diesel or petrol-powered generators and solar systems as alternatives to grid power, which means commercial activity goes on.

The challenge with electricity in Kenya is associated more with cost and power outages than unavailability. Kenyan companies pay US\$0.15 cents per kilowatt of electricity compared to Ethiopia (US\$0.4 cents), Egypt (US\$0.6 cents), Tanzania (US\$0.9 cents) and Uganda (US\$0.12 cents) according to (KNBS, 2016).

5.2.5 Lack of infrastructure is not a major issue

Roads around Nairobi County have been in constant development for the last five years including major highways and ring-roads which, in a big way, has improved transportation within and outside the city. While there is still some major works to be done on sewerage and drainage, Nairobi in particular and Kenya in general boast one of the best telecommunications connectivity (95% penetration) and mobile financial services penetration (68%) in Africa and the world, according to the (Communications Authority of Kenya, 2018). Roads around Nairobi city have been in constant development, and in any case most SMEs are located in low- income to poor neighborhoods, where physical infrastructure is already bad (see Section 4.4.1.2). For these reasons, it is understandable that lack of infrastructure is not a statistically significant explanatory variable for SME growth in Nairobi County.

5.2.6 There are limited managerial skills in SMEs but technical skills exist

Most SMEs are family-owned and would have been conceptualised by a person with work experience in the same line of business. For example, someone who worked as a chef at a hotel would go on to set up a restaurant; someone who worked as a stores manager would go on to establish a retail business etc. The sole founder/owner performs all the firm's managerial functions during the business's formative stages. But as it grows, these functions become increasingly difficult to handle and require specialist skills in keys areas. While the founder/owner may have had specific knowledge about their job responsibilities as a worker, this may not translate into sound overall management of other areas of their business such as marketing, human resources, accounting and corporate governance. Such businesses also tend to employ family members and relatives with little regard to qualifications and skills. It is not surprising,

therefore, that lack of managerial skills is not statistically significant as an explanatory variable for SME growth. This is because the challenge is not lack of such skills, but structural issues in the set-up of SME ownership, which fails to appreciate the need for more sophisticated skills, preferring instead to focus on control.

5.2.7 Political instability is not widespread

The study found that political instability was not statistically significant as an explanatory variable in growth of SMEs in Nairobi County for several reasons. Although 68% of the respondents in the study indicated that political instability harms their businesses and affects their growth, it is noted, however, that this is location-specific and situational. That is: political instability occurs during a given event. While urban centres, especially Nairobi and its environs, are the hotbed of political activity, they are never in a state of continuous political turmoil that constantly decimates businesses. Disturbances occur once every five years around election time, around by-elections or when protests over certain issues take place. But these incidents are few and far between and cannot account for a widespread collapse of SMEs.

Ultimately, this study agrees with (IFC, 2010), (Kushnir, K; Mirmulstein, M; and Ramalho, 2010) and (Ayyagari et al., 2005) that, while there may be more than 15 obstacles to SME growth identified in their studies, not all of them would affect the firms equally or all the time.

To implement successful intervention mechanisms for SMEs, the study makes several key recommendations in section 5.3 (below).

5.3 Recommendations

5.3.1 Improve access to finance for SMEs

The study observed that SMEs experience challenges obtaining funds from financial institutions because of – among other factors – their corporate governance structures, lack of transparency and poor or absence of financial record keeping.

This study recommends that in conjunction with development partners such as AFD, AfDB, EIB, IFC, NGOs and business representative organisations, the government should play an instrumental role in facilitating capacity building development for SME management and owners on how to set up and run

professional firms to prepare for future growth, even if they are currently small. This will enable SMEs to attract capital and improve access to bank finance.

Most lending financial institutions in developing nations, including Kenya, place emphasis on provision of collateral by the borrower when considering extending credit, sometimes with little or no regard to an entity's cash flows. This approach is restrictive and excludes most SMEs from accessing formal financial channels as the majority of them do not have tangible assets, especially in the formative years.

The authorities and financial sector players should be encouraged to devise more innovative, business-friendly financial products that are adaptable to different circumstances and foster inclusion of the marginalised class of firms. Financial instruments that support SMEs should be promoted in Nairobi County and Kenya in general. Examples include risk-sharing facilities; credit guarantee schemes supported by government and guarantee companies; group lending schemes with cross-guarantees among borrowers; credit insurance; warehouse receipt financing; leasing and factoring. All these instruments help reduce risk for banks when lending to SMEs without requisite collateral.

The high cost of credit is also cited as a deterrent to SMEs accessing credit.

The risk mitigating instruments described above could be complemented by the Central Bank of Kenya extending incentives to financial institutions to make it commercially attractive to lend to SMEs on less punitive terms.

The government should sponsor a deliberate statutory instrument that sets up a semi-commercial financial institution whose mandate is to offer financial as well as non-financial support to SMEs, including micro-enterprises. The institution would provide blended financial products to SMEs and micro-enterprises that after they undergo training in all areas of business management. The funding for such an institution would come from government, development partners and related entities on the concessionary side, and banks on the commercial side.

It was a noble idea for government to establish in 2013 organisations such as the Uwezo Fund, whose mandate is to facilitate access to finance in the form of interest-free loans, grants and mentorship to women and youth. But the fund's effectiveness is muted because it is easily encumbered with government bureaucracy, lack of transparency, financial impropriety and lack of accountability.

5.3.2 Enhance sources of capital for SMEs

SME growth is stunted because of limited equity re-investment for expansion of the business to enable it graduate from micro to small to medium and, eventually, to large (KNBS, 2016).

To facilitate the organic growth of SMEs, this study recommends that the semi-commercial statutory financial institution proposed above could require all SMEs to pay a small mandatory levy that helps to build resources that would be used to invest as equity in established SMEs in a venture capital fashion to facilitate their growth. On their own, SMEs owners and operators should be encouraged to open up shareholding to potential local and foreign partners who can inject equity to speed growth.

5.3.3 Strengthen crime fighting capacity

To instill a sustainable and conducive environment for investors and businesses, particularly SMEs, which have limited capacity to protect themselves, this study recommends that the government (i) reforms, retrains and equips the police and intelligence services with best practice skills to fight crime, which is getting more complicated in all forms; (ii) instills much needed discipline and increases the operational budget to remunerate the security forces to minimise the temptation to accept corruption (Transparency International ranks Kenya at 143 out of 180 on the Corruption Perception Index); (iii) depoliticise and empower the Ethics and Anti-Corruption Commission (EACC) to effectively prosecute corruption, nepotism and other acts of misconduct in high places; (iv) improve independence and resource allocation to the judiciary so it can operate efficiently and effectively.

5.3.4 Other key recommendations to foster SME growth

This study further recommends that Nairobi County and national government should put in place supportive structures for training, research and development/information sharing, networking and enabling SMEs to flourish in their chosen sectors.

5.4 Recommendations for further research

The current study focuses on seven independent variables to establish which ones impacted more significantly on growth of SMEs in Nairobi County. Studies undertaken by (IFC, 2010), (Kushnir, K; Mirmulstein, M; and Ramalho, 2010) and (Ayyagari et al., 2005) elsewhere around the world are key to investigating what hampers SME growth in developing countries like Kenya. It is recommended that

further studies consider covering all 15 obstacles to SME growth identified by the authors listed above to test the extent to which they also apply to Kenya and Africa in general.

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Annex 1: How other countries define SMEs

It is acknowledged that SMEs are not homogenous within and across countries the world over and, therefore, different countries define them differently. Most definitions of SMEs are statistical, meaning that they are mainly defined by numerics such as, for example, the number of employees, the value of sales and/or value of assets and/or capital base. Many developed and developing countries in the OECD and EU have 200-250 employees as the upper limit for the number of employees in an SME. Japan and USA are exceptions, with 300 employees and 500 employees respectively as their top limits.

According to (Katua, 2014), an enterprise of a certain size in one jurisdiction or sector may be classified as small where the market is large with many competitors, while a firm of similar proportions may be defined as large in another jurisdiction or sector which has fewer operators and/or generally smaller firms within it.

The European Commission (EC) (EuropeanCommission, 2017) defines SME businesses using three categories such as micro, small and medium scale (MSMEs) as follows;

Table 13: EC definition of SMEs

Firm category	Staff headcount	Turnover	or	Balance sheet total
Medium-sized	< 250	≤ €50m		≤ €43m
Small	< 50	≤ €10m		≤ €10m
Micro	< 10	≤ €2m		≤ €2m

Source: The European Commission (2017). *Applies only to individual companies, not groups.*

The (IFC, 2010), (IFC) defines the same three classes as the EC using similar indicators but with lower thresholds, which makes the companies smaller than EC standards. See Table 14 (below).

Table 14: IFC definition of SMEs

Firm Category	Staff headcount	Turnover: US\$m	or	Balance sheet total: US\$m
Medium-sized	$50 < S < 300$	$3 < T < 15$		$3 < BS < 15$
Small	$10 < S < 50$	$0.1 < T < 3$		$0.1 < BS < 3$
Micro	$S < 10$	$T < 0.1$		$BS < 0.1$

Source: IFC (2012). *Interpretation Note on Small and Medium Enterprises*

In a supply chain analysis of Kenya’s MSMEs, the UNDP, (2015) notes that the Micro and Small Enterprises Act (Kenya, 2012) was promulgated to operationalise oversight of small businesses by establishing relevant institutional bodies such as the Micro and Small Enterprise Authority (MSEA) within the Ministry of Industrialisation and Enterprise Development. Mechanisms that govern the legal and institutional frameworks for the promotion, development and regulation of MSEs were set up through various sub-units of the authority. These are the Office of the Registrar of MSE associations, to formalise and register MSEs; the MSE tribunal, for conflict resolution; and the MSE fund, to address issues of financing. The authority is tasked with:

- Providing an enabling environment
- Formalising and upgrading informal MSEs
- Promoting a culture of entrepreneurship
- Promoting representative associations.

Annex 2: Research questionnaire



A. General Information:

1. What is the name of your business?

2. What is the nature of your business?

3. Gender: Male [] Female [] Prefer not to answer []

4. How old are you?

Below 20years []; 21-30yrs []; 31- 40 years []; 41- 50 years []; Above 50 years []

5. Level of education: Primary []; Secondary []; College []; University []

6. How old is your business?

Below 6 months []; 6 Months-1 Year []; 1-2 Years []; 2-4 Years []; 4-6 Years [];

6-10 Years []; Above 10 Years []

7. No. of years worked in the enterprise

Below 6 months []; 6 Months-1 Year []; 1-2 Years []; 2-4 Years []; 4-6 Years [];

6-10 Years []; Above 10 Years []

8. What is the total number of employees in your company, including you? Please tick one

Less than 10 []; 10-50 []; 51-100 []; Above 100 []

B. Growth

9. How much capital did you invest to start your business? Ksh

10. What was your company's shareholders' funds (capital + revenue reserves) as at the latest financial year End? KSh.....

11. Indicate the level of each of the following for the past financial year ends below:

	2016	2015	2014	2013
	KSh	KSh	KSh	KSh

Sales/revenue

Net profit after tax

Total assets

Number of employees...

12. What is your company's growth strategy? Tick relevant box(es).

Increasing the revenue of the company []; To expand the business []; To hire more employees []

13. How do you measure growth in your company? Tick relevant box(es).
 By using net income []; By using sales []; By using total asset value []

C. BARRIERS TO BUSINESS GROWTH

14 Financial barriers to business growth (FB)

Rate each of the following issues by marking with a single X for each item.

Is lack of the following an obstacle to your company's growth?

	No	Yes	Unsure
Access to finance			
Access to collateral			

14.1 What was the source of capital with which you started your business? Tick all those applicable:

- i. Own funds
- ii. Partnership with family members and/or friends
- iii. Borrowing from family members and/or friends
- iv. Commercial banks
- v. Microfinance companies or SACCO
- vi. Others (specify).....

14.2 Have you ever applied for a loan from a bank and/or any financial institution?

- i. Yes
- ii. No

14.3 Was your loan application successful?

- i. Yes
- ii. No

14.4 If not, state the reason

- i. high collateral requirement
- ii. high bank charges and fees
- iii. high cost of credit
- iv. lack of outside equity and venture capital

15. Electricity and infrastructure

15.1 Do you use grid electricity in your business?

	No	Yes	Unsure
Use electricity			

15.2 Is availability/reliability of electricity an obstacle to growth of your business?

	No	Yes	Unsure
Availability/reliability of electricity supply			

15.3 Is the location of your premises served by all-weather roads and is their status an obstacle to growth of your business?

	No	Yes	Unsure
All-weather roads			
Status of roads an obstacle			

15. 4 Is the location of your premises served by good water and drainage systems?

	No	Yes	Unsure
Water supply system			
Storm water drainage system			

15. 5 Is the location of your premises served by good sewerage systems?

	No	Yes	Unsure
Sewerage system			

15. 6 Is access to land an obstacle to growth of your business?

	No	Yes	Unsure
Access to land			

- In what respect is access to land an impediment to your business?

Land not available []; Land too expensive []

16 Education and training

16.1 Is lack of educated workers an obstacle to growth of your business?

	No	Yes	Unsure
Inadequately educated workforce			

- Indicate the number of workers who have the following as their highest qualification;

No qualification []; Ordinary Level []; Advanced Level []; Diploma []; Degree []

17. Registration process, licenses and policy

17.1 Is registration process an obstacle to growth of your business?

	No	Yes	Unsure
Business licensing and permits			

- How long did it take you to register your business by getting a licence? Number of:

Days:.....; Months:.....; Years:.....

- How much did it cost you to get the licence? KSh

17.2 Are customs and trade regulations an obstacle to growth of your business?

	No	Yes	Unsure
Customs and trade regulations			

18. Macroeconomic, crime and political

18.1 Is the following issue an obstacle to growth of your business?

	No	Yes	Unsure
Economic instability: inflation			
Economic instability: exchange rate fluctuation			

18.2 Is Crime an obstacle to growth of your business?

	No	Yes	Unsure
Crime (robbery, fraud, shoplifting, gang-related)			

18.3 Is political instability an obstacle to growth of your business?

	No	Yes	Unsure
Political instability			

18.4 Is corruption an obstacle to growth of your business?

	No	Yes	Unsure
Corruption			

19. Government policy and SME support structures

19.1 Does the county government have clear policy on supporting and motivating small enterprises?

- i. Yes
- ii. No

19.2 State one or more programs that you are aware of focusing on supporting SMEs:

- Run by government:.....
- Run by NGOs:.....

19.3 Which of the abovementioned programs have you had access to?

.....

19.4 Has your company benefitted from these programs?

- i. Yes
- ii. No

If yes, how?

19.5 What actions do you think SMEs should undertake to strengthen themselves?

THANK YOU VERY MUCH FOR YOUR TIME.

Consent section:

I, the undersigned, confirm that I have read and understood the information about the project, as provided in the questionnaire by the student from University of Cape Town. I voluntarily agreed to participate in the project and I understand that my name will not be revealed to anyone.

Signed by participant: _____.

Annex 3: Residuals analysis

Having conducted regression modeling and produced the estimated regression equation, the goodness-of-fit of the estimated model can also be tested by considering the deviation (if any) of the estimated outcomes from the original observations. This is called residual analysis. The residual is the actual (observed) value, Y less the predicted (estimated) value, \hat{Y} .

Residual = Observed value - Predicted value or $e = Y - \hat{Y}$

The e is the difference between the observed value, Y and the predicted or estimated value, \hat{Y} .

Residuals are positive for points where the actual value is more than the estimated value. Residuals are negative for points where the actual value is less than the estimated value. Residuals are zero for points that fall exactly along the regression line. Both the sum and the mean of the residuals should be equal to zero. That is: $\sum e = 0$ and $\bar{e} = 0$, respectively.

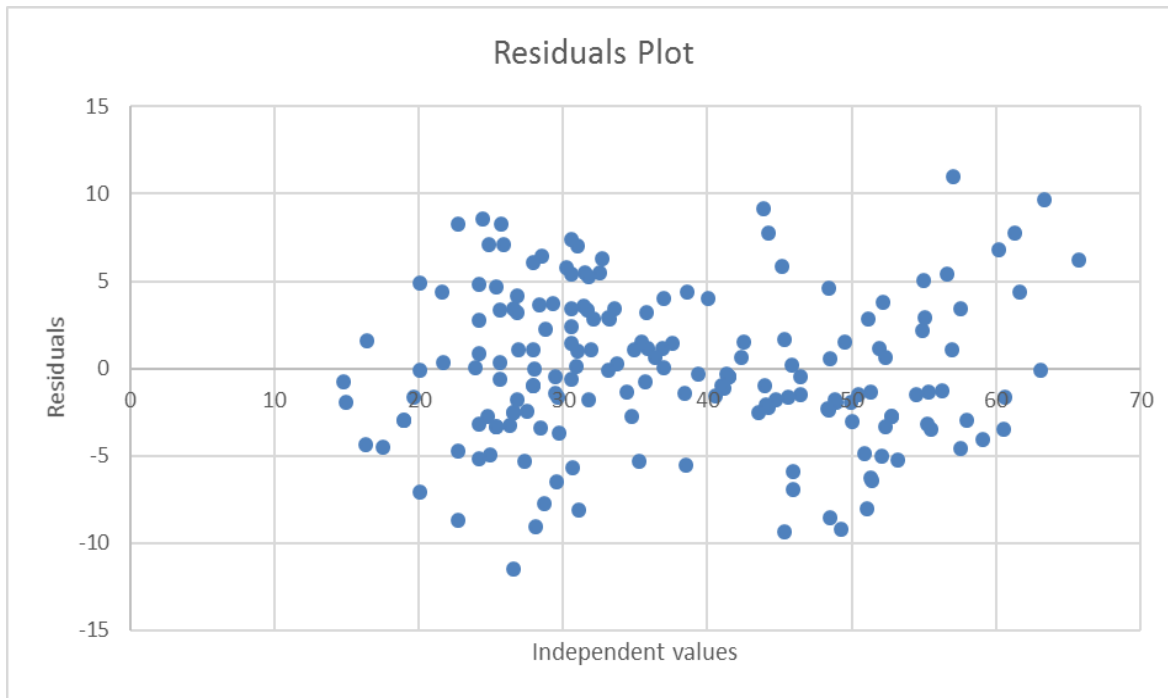
From the regression model for the constraints on growth of SMEs in Nairobi County:

- the sum of residuals, $\sum e = -1.20792E-13$
- the mean of residuals, $\bar{e} = -6.74817E-16$

In practical terms, the sum and mean of residuals are both zero although sometimes these may not be exactly zero due to cumulative round off errors.

The residuals can also be plotted on a graph with the residuals on the vertical axis and the independent variable on the horizontal axis. The more random and centered around zero the residuals appear to be, the more likely it is that the regression equation is valid. That is: the linear regression model is appropriate for the data.

Figure 11: Residuals plot



Source: Estimates from survey data, 2018

Figure 11 shows that the bulk of residuals are clustered around zero in a random fashion, implying that the regression model on SME growth fits the observed data for its constraints.

Annex 4: Cleaned and codified regression data

Factors constraining the growth and survival of Small and Medium Enterprises in Nairobi County of Kenya –								
SMEg = $\alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + u$								
Observation Count	% SME Sales Growth in last 3 years Sales (SMEg)	Is this factor a hurdle to business growth?						
		Access to finance	Electricity Supply	infrastructure	Management Skill	political instability	crime	% Equity Growth
	SMEg	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇
1	20	1	1	1	0	1	1	20
2	25	1	1	1	0	1	1	20
3	19	1	1	1	1	1	1	30
4	30	0	1	0	0	1	0	40
5	40	0	0	0	1	1	0	65
6	34	1	1	1	0	1	1	40
7	39	0	1	1	0	1	0	50
8	42	0	1	0	1	1	1	62
9	29	1	1	1	1	1	0	30
10	47	0	0	1	1	0	0	70
11	36	1	1	1	0	1	1	45
12	50	0	1	1	1	0	0	75
13	52	0	0	1	1	1	0	80
14	48	0	0	1	1	1	0	70
15	36	1	1	0	0	1	1	66
16	30	1	1	0	0	1	1	40
17	40	1	0	1	0	1	0	55
18	45	0	0	0	0	0	0	68
19	37	1	1	0	0	1	1	50
20	37	1	1	0	0	0	0	45
21	29	1	1	1	1	1	1	30
22	41	1	1	1	1	1	1	63
23	32	1	1	1	0	1	0	38
24	33	1	1	0	0	1	0	26
25	34	1	1	1	0	1	0	28
26	30	1	1	0	0	0	1	30
27	38	1	1	0	0	1	0	35
28	38	0	1	1	0	1	0	34
29	41	0	1	1	0	1	0	58
30	40	0	1	0	0	1	1	63
31	22	1	1	0	0	1	0	25
32	33	0	1	0	1	0	1	51
33	35	0	0	1	1	0	0	29
34	32	0	1	0	0	0	0	20
35	33	1	1	0	0	1	1	26
36	36	0	0	0	1	1	0	30
37	18	1	1	1	1	0	1	15
38	13	1	1	0	1	0	1	10
39	14	1	1	1	1	1	1	12
40	26	1	1	1	0	0	0	20
41	25	1	1	1	0	1	0	25
42	16	1	1	1	1	1	1	20
43	13	1	1	0	1	1	1	15
44	18	1	1	0	1	1	1	19
45	22	1	0	1	1	1	0	20
46	33	1	0	0	0	0	0	35
47	24	1	1	0	0	1	1	30
48	30	1	1	0	0	1	0	35
49	40	0	0	0	1	0	1	69
50	39	0	0	1	1	0	1	65
51	12	1	1	1	1	1	1	15
52	16	1	1	1	1	1	1	20
53	22	1	1	0	0	1	0	25

54	27	1	1	0	0	1	0	30
55	33	1	0	1	0	0	1	35
56	25	1	1	1	0	1	0	30
57	24	1	1	0	0	1	1	30
58	28	1	1	1	0	0	0	35
59	28	1	1	0	0	0	0	30
60	21	1	1	1	0	1	0	25
61	20	1	0	1	0	0	0	24
62	30	1	1	1	0	1	1	30
63	43	1	0	0	0	0	0	55
64	36	1	1	1	0	1	1	40
65	43	1	0	1	0	0	0	50
66	32	1	1	0	0	1	0	35
67	47	0	0	1	1	0	0	61
68	50	0	0	0	1	1	0	73
69	46	0	0	1	1	0	1	66
70	47	0	1	0	1	1	0	68
71	45	1	0	1	1	0	1	70
72	33	1	1	0	1	1	0	42
73	30	1	1	1	1	1	1	35
74	27	1	1	0	0	1	0	30
75	38	1	1	0	0	1	0	47
76	31	1	1	1	0	1	1	25
77	26	1	1	1	1	1	0	30
78	39	1	1	0	0	1	0	45
79	51	0	0	1	1	0	0	69
80	44	1	0	1	1	1	0	55
81	53	0	0	0	1	0	1	75
82	49	0	1	0	1	0	1	70
83	43	0	0	1	1	0	0	72
84	37	1	1	1	0	1	0	43
85	23	1	1	1	0	1	1	38
86	29	1	1	1	0	0	0	35
87	24	1	1	0	0	0	1	25
88	32	1	1	1	1	1	1	38
89	35	1	1	1	0	0	0	47
90	37	1	1	0	0	1	0	50
91	51	1	1	0	1	1	0	65
92	53	1	0	0	1	0	0	60
93	61	0	0	0	1	1	1	85
94	60	0	0	0	1	0	1	80
95	38	1	1	1	0	1	0	41
96	46	0	1	0	1	1	0	72
97	57	0	0	0	1	0	0	77
98	44	1	1	1	0	1	0	60
99	47	0	1	0	0	0	0	66
100	52	0	0	0	0	0	0	76
101	53	0	0	0	0	0	0	80
102	58	0	0	0	0	0	1	78
103	39	1	1	1	0	1	1	44
104	43	1	1	1	0	0	1	67
105	36	1	1	0	0	1	1	46
106	46	1	1	1	0	0	1	69
107	29	1	1	1	0	1	1	35
108	49	1	0	0	0	0	0	74
109	50	1	0	1	0	0	0	77
110	23	1	1	1	0	1	0	29
111	32	1	1	0	0	1	0	43
112	34	1	1	0	0	1	0	30
113	37	1	1	73	0	0	1	47

113	37	1	1	0	0	0	1	47
114	41	1	1	0	0	1	1	50
115	28	1	1	1	0	1	1	33
116	25	1	1	1	1	1	0	30
117	63	0	0	1	1	0	0	95
118	57	0	0	1	1	0	0	90
119	55	0	0	0	1	0	0	85
120	53	1	1	1	1	0	0	85
121	53	1	1	1	1	0	0	80
122	55	1	0	1	1	0	0	86
123	55	0	0	1	1	0	1	88
124	59	0	0	1	1	0	1	93
125	48	1	1	0	0	1	1	81
126	44	1	1	1	0	1	0	66
127	46	1	1	0	0	1	0	69
128	33	1	1	1	0	1	1	40
129	31	1	1	1	1	1	0	40
130	35	1	1	0	1	1	1	42
131	42	1	1	1	0	1	0	63
132	49	1	0	1	1	1	0	75
133	47	1	0	1	1	1	0	78
134	35	1	1	1	0	1	1	43
135	37	1	1	1	0	1	1	51
136	52	1	0	1	1	1	0	63
137	56	0	0	0	1	1	0	72
138	62	0	0	0	1	0	1	83
139	34	1	1	0	1	1	1	46
140	31	1	1	1	1	1	1	35
141	37	1	1	1	1	1	1	44
142	31	1	1	1	1	1	0	36
143	35	1	1	1	1	1	0	41
144	54	1	0	0	1	1	0	74
145	43	1	1	1	1	1	0	65
146	46	1	1	0	1	1	0	71
147	45	1	1	1	0	1	0	77
148	58	0	0	1	0	0	0	81
149	36	1	1	0	1	1	0	42
150	28	1	1	0	0	1	1	36
151	25	1	1	0	1	0	0	33
152	40	1	1	0	1	1	0	57
153	41	1	1	1	1	1	0	60
154	33	1	0	1	1	1	1	47
155	26	1	0	1	1	1	1	38
156	22	1	1	1	1	0	1	31
157	39	1	0	0	1	1	0	48
158	39	0	0	1	1	1	0	52
159	54	0	0	0	1	1	0	78
160	53	1	0	1	1	1	0	71
161	27	1	1	1	1	1	1	30
162	41	1	1	1	1	1	1	63
163	67	0	0	0	1	0	1	90
164	66	0	0	0	1	1	0	90
165	69	0	0	0	1	0	1	92
166	13	1	1	1	0	1	1	20
167	72	0	0	1	0	1	0	98
168	18	1	1	1	0	1	1	25
169	25	1	0	1	0	1	0	35
170	68	0	0	1	0	1	1	84
171	73	0	0	0	1	0	1	96
172	14	1	1	1	0	1	1	25
173	21	1	0	1	0	1	1	34

174	23	1	0	1	1	1	0	38
175	19	1	0	1	0	1	0	30
176	15	1	1	0	0	1	1	30
177	37	0	0	1	0	1	0	33
178	25	1	1	0	1	1	1	34
179	22	1	1	1	1	1	1	36
