PERCEPTIONS OF SUGAR SUBSECTOR ACTORS ON THE IMPACT OF POLICY ISSUES ON REVIVAL OF SUGARCANE FARMING IN THE WESTERN KENYA SUGARBELT.

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Award of the Degree of Doctor of Philosophy in Agriculture Extension Education of Masinde Muliro University of Science and Technology.

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DECLARATION

This thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award.

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CERTIFICATION

The undersigned certify that we have read and hereby recommend for acceptance of Masinde Muliro University of Science and Technology a thesis entitled**:**

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DEDICATION

To my late mother Priscah Machio and my caring father Shem Barasa and further to my loving family, supportive spouse Benlite Kombo and my lovely children; Billy Barasa, Vivian Barasa, Loicy and Ivyone. Thanks to the Almighty God.

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ABSTRACT

This study investigated the perception of sugar subsector actors on impact of policy issues on revival of sugarcane farming in the Western Kenya Sugar belt. The specific objectives were to evaluate policy issues that have constraining influence on provision of services for revival of sugarcane farming ,establish the extent to which policies drawn from the constitution enable provision of services for revival of sugarcane farming , determine policy-related challenges that limit compliance of sugar agencies with COMESA standards and to evaluate the capacity of Sugar Directorate and Sugar Research Institute to enable provision of services for revival of sugarcane farming . Nzoia and West Kenya sugar companies, Kenya Agriculture and Livestock - Sugar Research Institute and Agriculture and Food Authority-Sugar Directorate were used as baselines. It was guided by path-goal and transformative leadership theories and based on a sample size of 445 consisting of 21 managers, 15 regulators, 9 researchers and 400 farmers from a target population of 116, 000 farmers. It was based on cross sectional survey design and multi-stage sampling techniques particularly cluster, proportionate, purposive and simple random sampling. Data was collected using questionnaires, interview guides, Focus Group Discussion Guides and document analysis guide and analyzed using SPSS Version 25 yielding a response rate of 77.13%. Descriptive analysis was based on measures of central tendency. Inferential analysis was based on T-test and Chi-square tests at 95 % confidence level. for objective one the t-test score (2.341>.029) led to rejection of the null hypothesis indicating presence of policy provisions with constraining influence on revival of sugarcane farming. For objective 2 the t-test score (1.341> 0.032) led to rejection of the null hypothesis indicating presence of policy provisions with enabling influence. For objective 3 the Chi-square test score (X2-Test; 627.211>7.2311) revealed that there were policy-related challenges with statistically significant limiting influence on compliance of sugar agencies with COMESA standards. For objective four the score (X2-Test; 650.968>9.488) revealed that sugar agencies had no significant capacity to enable revival of sugarcane farming in the belt. The study concluded that there are policy issues related to Swynnerton Plan of 1954 , Land Act No 6 of 2012 , Tax amendment Act of 2012, PFMA Act of 2012, Import Licensing Act of 2012 , AFA Act No 13 of 2013 ,Crops Act No 16 of 2013, KALRO Act No 17 of 2013 , policy design, inappropriate reforms and policy gaps that have constraining influence , there are policy provisions from Articles 2, 10, 28 , AFA Act No 13 of 2013 ,Crops Act No 16 of 2013, KALRO Act No 17 of 2013 and 61 of the COMESA protocol that have enabling influence on revival of sugarcane farming, there are policy-related challenges related to AFA Act No 13 of 2013 , Crops Act No 16 of 2013, KALRO Act No 17 of 2013 , Article 61 of the COMESA protocol and policy gaps that limit compliance of sugar agencies with COMESA standards . The study established that due to limitations in policy provisions from Articles 113, 115 and 131, PFMA of 2012, AFA Act No 13 of 2013, KALRO Act No 17 of 2013, Science, Technology and Innovation Act No 28 of 2013 and Crops Act No 16 of 2013 sugar agencies lack capacity to enable revival of sugarcane farming. Overall, the study concluded that policy issues are an impediment to revival of sugarcane farming in the study area. It recommends for policy review and fill up of policy gaps, enhancement of stakeholders' adherence to enabling policy provisions, development of a policy enforcement mechanism by the national assembly, senate and the cabinet secretary of agriculture and for a review of the mandate and financial empowerment of AFA-SD and KALRO-SRI. It recommends for demand driven policy review towards public-private partnerships, duplication of this study in other sugar belts and another study on influence of Legal Laws on sugarcane farming in the study area.

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LIST OF ABBREVIATIONS AND ACRONYMS

AAIK	:	Action Aid International Kenya,
AFA	:	Agriculture and Food Authority
AFA-SD	:	Agriculture and Food Authority-Sugar Directorate
AFB	:	African Development Bank
AFC	:	Agricultural Finance Corporation
AGOA	:	African Growth and Opportunity Act
ASDS	:	Agriculture Sector Development Strategy.
ASGTS	:	Agriculture Sector Growth and Transformation Strategy
		Association
ATPAF-ESA	:	Agricultural Trade Policy Advisory Forum for Eastern and
		Southern Africa
BSM	:	Butali Sugar Mills
CEO	:	Chief Executive Officer
CET	:	Common External Tariff
CGD	:	Centre for Governance Development
CIF	:	Cost Insurance and Freight
COJ	:	COMESA Court of Justice
COMESA	:	Common Market of Eastern and Southern Africa
EAC	:	East African Community
ESRP	:	Economic Strategy Recovery Paper
EU	:	European Union
FARA	:	Forum for Agricultural Research in Africa
FECSSK	:	Forum for Employment Creation in Sugar subsector in Kenya.
FGD	:	Focus Group Discussion
FTA	:	Free Trade Area
GDP	:	Gross Domestic Product.
GIZ	:	German International Cooperation
GOK	:	Government of Kenya
IGAD	:	Intergovernmental Authority on Development
ILO	:	International Labour Organization
IPC	:	International Policy Council,
ISO	:	International Sugar Organization
ITA	:	Income Tax Act
KACC	:	Kenya Anti-Corruption and Ethics Commission

KALRO	:	Kenya Agriculture and Livestock Research Organization
KALRO-SRI	:	Kenya Agriculture Agriculture and Livestock Organization - SRI
KEBS	:	Kenya Bureau of Standards
KEPHIS	:	Kenya Plant Health Inspectorate Service
KESGA	:	Kenya Sugarcane Growers Association
KESGEA	:	Kenya National Sugarcane Growers and Employers
KESMA	:	Kenya Sugar Millers Association
KESREF	:	Kenya Sugar Research Fund
KIA	:	Kenya Investment Authority
KIPPRA	:	Kenya Institute for Public Policy Research and Analysis
KN FSF	:	Kenya National Federation of Sugarcane Farmers
KNA	:	Kenya National Assembly
KNBS	:	Kenya National Bureau of Statistics
KNTC	:	Kenya National Trading Corporation
KPA	:	Kenya Ports Authority
KRA	:	Kenya Revenue Authority
KSA	:	Kenya Sugar Authority
KSB	:	Kenya Sugar Board
MFN	:	Most Favored Nation
MSC	:	Mumias Sugar Company
NACOSTI	:	National Council for Science and Technology
NARC	:	National Rainbow Coaliation
NEPAD	:	New Partnership for African Development
NOCO	:	Nzioa outgrowers Company
NPM	:	New Public Management Theory
NSC	:	Nzioa Sugar Company
NTB	:	Non-Tariff Barriers
OECD	:	Organization of Economic Cooperation and Development
PAYE	:	Pay As You Earn
PCK	:	Privatization Commission of Kenya
PELUM	:	Participatory Ecological Land Use Management
PERP	:	Policy Paper on Public Enterprise Reform and Privatization
PFM	:	Public Finance Management
PPP	:	Public Private Partnership

PTA	:	Preferential Trade Area
R &D	:	Research and Development
ROO	:	Rules of Origin
SADC	:	Southern African Development Community
SAP	:	Structural Adjustment Programmes
SBCU	:	Sugar-Belt Cooperative Union
SCA	:	State Corporations Act
SCAC	:	State Corporation's Advisory Committee
SCOT	:	Strength, Challenge Opportunity and Threats
SCRP	:	State Corporations Reform Programme
SD	:	Sugar Directorate
SDF	:	Sugar Development Fund
SDL	:	Sugar Development Levy
SOE	:	State Owned Enterprises
SONY	:	South Nyanza Sugar Company
SPS	:	Sanitary and Phytosanitary Standards
SPSS	:	Statistical Package for Social Sciences
SRA	:	Strategy for Revitalization of agriculture
SRI	:	Sugar Research Institute
SSO	:	Sugar Settlement Organization
SSRS	:	Sugar Sub-Sector Restructuring Study
SUCAM	:	Sugar Campaign for Change
SUPAC	:	Sugar Parliamentary Committee
SWOT	:	Strength Weakness Opportunity and Threat
TIA	:	Tegemeo Institute of Agriculture
TRQ	:	Tariff Rate Quarter
UN	:	United Nations
UNECA	:	United Nations Economic Commission for Africa
UNIDO	:	United Nations Industrial Development Organization
USD	:	United States Dollars
USDA	:	United States Department of Agriculture
VAP	:	Value Added Products
VAT	:	Value Added Tax
WDR	:	World Development Report

WEDIA	:	Western Development Initiative Association
WEKO	:	West Kenya Outgrowers Company
WKSC	:	West Kenya Sugar Company:
WTO	:	World Trade Organization

OPERATIONAL DEFINITION OF KEY TERMS.

The following terms are used severally in the text and for the purposes of this

study, should be understood as stated below:

Cartelization: Refers to the process whereby prices of sugarcane and sugar increasingly become dominated by persons outside government.

Common Market: refers to an agreement between countries that provides for free movement or exchange of the factors of production across their boundaries.

Compliance: A state of conformity to specific obligations or rules as stipulated by authority.

Constitution: A set of legal laws designed to guide governance and development of a specific country or state.

Governance: The process of exercising administrative, economic and political authority in managing public or organizational AFAirs.

Liberalization: this sHall refer to the removal of laws and regulations that restrict market competition.

License: legal document provide mandate to specified actors to undertake specified transactions

Outgrowers Institution: Welfare organization for farmers affiliated to a specific agricultural company.

Policy framework: Interconnected and coordinated guidelines for directing the functions and services of an organization.

Policy implementation: Refers to actions directed at achievement of policy goals

Policy instruments: Refer to the ways or means designed and used to enable achievement of policy ends.

Policy intervention: sHall refer to special actions and programs undertaken to address a specific concern in government or organization.

Policy objectives: these are the "Ends" or long-term targets of a policy.

Policy strategy: refers to how a given policy is supposed to be implemented

Privatization: sHall refer to a political strategy used by the state to transfer public sector assets or financial control of a public enterprise to the private sector.

Protocol: Agreed procedure of engagement between and among Member states of an economic bloc

Public policy: Guideline made by government and operationalized through relevant legislatures to address a specified issue in the society.

Public Service: Public Service sHall refer to services provided by government to its citizens.

Revival: refers to the process of recovering the otherwise lost production capacity.

Risk: Probability of causing or leading to Harmful consequences.

Safeguard measure: Special dispensation that an economic partnership grants to a non-competitive partner so that this partner can enhance its competitiveness within a specified time period.

Service delivery: Provision of services in accordance with pre- specified standards.

Stakeholders: used intercHangeably in reference to actors who finance, produce, regulate, or consume sugar and related products.

State: A state sHall refer to a sovereign political entity with legal authority and power to direct and condition formal actions from its subjects.

Sugarcane Farming Contract: A legal agreement between a farmer and miller on joint obligations for the purpose of growing and supplying sugarcane to the latter.

Sugarcane Supply Contract: An agreement between a miller and sugarcane farmer to provide sugarcane to the miller within specific time.

Sugar regulatory policy: Government guidelines that give direction to domestic production and importation of sugar.

Tariff Barriers: Laws and policies that restrict cross border business

Transposing: Process of incorporation and alignment of the policies of integrated economic blocs into a nation's constitution.

CHAPTER ONE

INTRODUCTION

1.1 Background

In rural development discourse, sugarcane is a strategic contributor to the World economy (World Bank, 2016). It is the source of about 80 % of the sugar consumed in the world and occupies a significant position in global commercial agricultural circuit and covers about 2% of the World's Cropland (United Nations; UN, 2017). Continuos increase in sugar demand and trade in the World market had enhanced the significance of sugarcane farming (UN, 2017, Omondi, 2013). At the same time increase in per capita sugar consumption and absence of close substitutes in both domestic and industrial arena strengthens the strategic position of sugarcane farming in the international food regime and world economy (McmicHael, 2013). Additionally, the emergence of sugarcane as a versatile agro-resource and raw material for a wide range of products beyond nutrition increased the number of stakeholders and range of stakeholder networks making sugarcane farming a sensitive enterprise in economic and political perspectives (World Bank, 2016). This is the genesis of demand for policy and eventually policies for sugarcane farming.

Sugarcane farming nations have enacted and engaged policies and treaties like the World Trade Organization (WTO) and the Common Market of Eastern and Southern Africa (COMESA) protocol to guide sugar production and marketing functions (Muteshi & Owino, 2017). Policies for sugarcane farming and marketing are mainly domestic in nature or specific to individual nations while the ones for sugar marketing extent to regional and global levels because sugar is traded and consumed across nations (Ligami, 2015). In line with this, World class producers particularly the United States of America (USA), European Union (EU) and Japan protect their sugar sub-sectors with high profile tariff and non-tarriff barriers and strict import quotas (UN, 2017).

Atotal of 122 countries in the tropical regions of the World 28 of which are in Africa are engaged in sugarcane farmning (Kenya Sugar Board; KSB; 2013). Africa is responsible for about 5% of the global sugar production and 83% of this is from the sub-Saharan region (UN, 2017). However, sugarcane farming approaches in Africa differ from those of the developed world in terms of policy and practice because they are

highly skewed to smallholder out- growers (Muteshi & Owino, 2017). In spite of this, in the southern and eastern regions of Africa, sugarcane farming is economically and politically strategic (KSB, 2010). In fact in Kenya issues of sugarcane farming are politically contentious (GOK, 2019).

In Kenya, significant commercial sugarcane farming started in 1922 with the emergence of Miwani as a private mill (Muteshi & Owino, 2017). By the time of this study sugarcane farming was concentrated in 14 counties in the Western Region of Kenya and on a smaller scale in the former Rift Valley and Coast Provinces. Like in the rest of Africa, sugarcane farming in Kenya is dominated by small-scale farmers who own about 88% of the sugarland and supply up to 92 % of the locally generated raw materials (KSB, 2013).

In pursuit of trade among other benefits, Kenya's sugar subsector is economically integrated into the East African Community (EAC), Economic Partnership Agreements (EPA), World Trade Organization (WTO) and COMESA protocol (GOK, 2019). However, the sub-sector is too uncompetitive to survive in the COMESA market devoid of safeguard measures. Pursuant to this, Kenya acquired safeguard measures by invoking Article 61 of the protocol. However, these safeguards are by nature temporary despite the fact that they are extendable (COMESA, 2015; Ligami, 2015). By the time of this study, Kenya had exhausted the maximum allowable period for extension which means that now it must attain the prescribed standards of competitiveness as per Articles 10 and 28 of the protocol or otherwise lose the associated benefits (GOK, 2019; COMESA, 2015).

In the early years of establishment, sugarcane farming in Kenya was guided by a colonial policy whose target was discrimination against engagement of African farmers and later by Sessional Paper No 10 of 1965 which on the contrary allowed entry of African farmers (Muteshi & Owino, 2017). This was then followed by development of acts and articles particularly the Companies Act 486 and the State Corporations Act (CAP 1948), later the then stand–alone Sugar Act No 1 of 2001 and Sugar Act 2013 (repealed) were developed and adopted (GOK, 2019). The Constitution of Kenya 2010 is the over-arching law from which specific articles, acts and subsequent policies for the sugar sub-sectors were drawn (Muteshi & Owino, 2017). The relevant articles are 131 and 132 which confirs the powers and functions of the president, Article 115 for veto

powers to the presidency, Article 152 for appointment of cabinet secretaries and Article 155 for appointment of Principal Secretaries. The relevant Acts are the Devolution Act of 2012, Public Finance Management Act (PFMA) of 2012, State Corporations Act CAP 1986, Agriculture and Food Authority Act (AFA) No 13 of 2013, Crops Act No 16 of 2013, the Kenya Agriculture Research Organization-Sugar Research Institute (KALRO-SRI) Act No 17 of 2013, Import Licensing Act of 2012 and Article 2 of the constitution acording to which treaties ratified by the Kenya government are part and parcel of the laws of Kenya (PELUM, 2015 , GOK, 2010).

These sugar-specific acts are supplemented by other acts of a more general nature like the Standardization Act of 2015 and the Privatization Act No 5 of 2005 (KNA, 2014). Each of these acts gives operationalization powers to the relevant cabinet secretaries to develop and gazette regulations and rules as policy guidlines for day-to-day exigencies (PELUM, 2015). According to forum for employment creation in the sugarsubsector (FECSSK, 2016) the Acts provide baselines for formulation of mandates, organizational structures, service charters for each institution, strategic plans and operational policies and procedures that guide the day-to-day operations and performance of the entire sub-sector and stakeholders inclusive of millers and regulators.

Although still surviving marginally due to some favorable policies, the once vibrant, lucrative and highly organized domestic sugar industry of Kenya was constrained, chaotic and about to collapse. This was evident in low and reducing sugarcane productivity and production, excessive debts and increasing costs of production, re-allocation of land to alternative uses alongside continuous exodus of farmers from sugarcane to alternative crops especially maize (Onyango *et al.*, 2016; COMESA, 2012).

According to KNA (2014) chaos in Kenya's sugar industry are evident in numerous inter and intra-conflicts among stakeholders and in conflicts of interests, overlapping regulations, selective and biased policy implementation practices, opaqueness in nomination of the Board of Management and fraudulent transactions that point at legislative weaknesses. Additionally, several public mills are under receivership while others are operating far below established capacity as the subsector experiences an exodus of farmers (COMESA, 2012). This has significantly increased the national sugar deficit thereby providing a basis for partial dependence on importation an issue that opens windows for illegal influx of cheaper sugar from other nations. The resulting window is responsible for market

failures and the crisis facing the domestic industry (GOK, 2019). This is because the advantageous cheapness of imported sugar and disadvantageous weaknesses in policy stimulate over-importation, illegal influx and dumping of cheaper sugar in the domestic market to a level that threatens the survival of the once vibrant and lucrative domestic industry (FECSSK, 2016).

In spite of numerous regulatory and research interventions, Kenya's sugar subsector is occupying a risky position on the success-failure spectrum (COMESA, 2015). The poor performance and crisis facing the subsector ignite policy and academic interest in the subject. In view of all these, this study sought to interrogate the impact of policies drawn from different articles and acts of the Constitution of Kenya on revival or recovery of sugarcane farming in the Western Kenya Sugarbelt.The study focused on this region because it is dotted with public and private mills namely Miwani, Muhoroni, Chemalil, Mumias, South Nyanza Sugar Company, West Kenya Sugar Company (WKSC), Nzioa Sugar Company (NSC), Kibos Sugar and Allied Industries, and Butali and Kabras Sugar mills. Further to this, most of these mills are only surviving marginally and are therefore suitable candidates for policy studies in the perspective of revival.

However, although Kenya is an attractive destination for sugar from global and regional markets, revival of the otherwise shaky industry is feasible if the present market failures are addressed in the perspective of policy (Sugar Campaign for Change: SUCAM, 2003). In line with this, GOK (2019) asserts that revival of sugarcane farming requires policy interventions that can enable appropriate sugarcane development, promote entrepreneurial farming, protect and reshift the domestic sugar market in favor of local production and by extension farming.

The study used the Kenya Agriculture Agriculture and Livestock Organization – Sugar Research Inistitue (KALRO-SRI) and Agriculture and Food Authority-SD (AFA-SD) stations in the Western Kenya Sugar Belt together with NSC and WKSC as baselines. Nzioa and West Kenya Sugar Companies were used because they are the pacesetters of the public and private sugar subsectors respectively while AFA-SD and KALRO-SRI are the government agencies that have been mandated to deal with sugarcane and sugar subsector matters in Kenya in terms of research and regulatory functions respectively.

1.2 Statement of the Problem

Although the national sugar demand is satisfied by blending production and importation Kenya's sugar subsector has been inclined towards domestic production (KNA, 2015). However, in the last two decades a fast shift occurred in favor of importation and to the disadvantage of domestic producers (SUCAM, 2003). Prior to 2000, importation catered for about 26% of the national demand as domestic production catered for 74%. On the contrary domestic production only caters for 48% due to decline in sugarcane farming. In many sugar zones inclusive of the Western Kenya Sugarbelt sugarcane farming is still declining (Hoffmann *et al.*, 2013). At the same time the subsector is becoming more chaotic as reflected in court cases, disputes especially over the issue of cane poaching, conflicts, and conflicts of interests and complaints of high production costs across the value chain. This is in addition to the issue of market opportunities for the locally produced sugar getting more and more limited due to pressure from relatively cheap sugar sourced from other countries (GOK, 2019, Ton, Klerkx, De Grip & Rau, 2015). Further to this, as a member of the COMESA protocol Kenya has not yet improved significantly in spite of the COMESA safeguard measures (GOK, 2019).

This situation has raised public concern about the effectiveness of the policy guidelines for sugarcane farming in Kenya. To add to this, the cheap sugar that is interfering with the market is being sourced from integrated market frameworks where price determination is guided more by policy-based trade agreements than the standard forces of demand and supply (Omondi, 2013).

In response, the Kenya government has undertaken numerous policy reviews inclusive of the Economic recovery strategy (ERS) for wealth and employment creation, the Strategy for revitalization of agriculture (SRA) and the agriculture sector development strategy (ASDS) which particularly focused on legal and regulatory framework of the agriculture sector (GOK, 2019). Eventually this culminated into enactment of three Acts namely the Agriculture and Food Authority (AFA) Act No 13 of 2013, Crops Act No 16 of 2013 and Kenya Agricultural and Livestock Research Organization Act No 17 of 2013 that were directly focused on sugarcane farming among other enterprises. It is worth noting that Section 3 of the Crops Act, 2013 repealed the statutes that established KSB as the regulatory institution.

These sugar- specific acts are supported by Articles 2,10, 113 , 115 and 232 , Agriculture Act 318, AFA Act, 2013, Companies Act (CAP 486) Public Finance Management Act of 2012, State Corporations Act (CAP 1948),Tax Amendment Act of 2012, Kenya Bureau of Standards Act (CAP 496) , Land Act No 6 of 2012, Devolution Act of 2012, Science , Technology and Innovation Act No 28 of 2013 for agricultural research, Import Licensing Act of 2012 , Competition Act 2012 of the Kenya Constitution 2010 and articles 10, 28 and 61 of the COMESA protocol .

All these policy interventions were aimed at revival of sugarcane farming which however is still a challenge. This raises public concern and questions about the impact of the policies. However, sugarcane is not yet an orphan crop in the country (GOK, 2019, SUCAM, 2003). This implies that there exist some policy enablers that somehow sustains a low level of sugarcane farming. The government is also still keen on sugarcane farming except that it is equally questioning or debating the choice and capacity of the exiting policy design or framework to enable revival of sugarcane farming to the once vibrant and lucrative status (GOK, 2019). The Keenness of the government on revival of sugarcane farming was evidently expressed in the appointment of the presidential task force on state corporations in 2013 and the 'Sugar Industry Stakeholders' Taskforce'' as per the Kenya Gazette Notice No 11711 of 9th November 2018 (GOK, 2019). The issue of taskforce also pointed at and acknowledged the need for research interventions hence this study. In spite of all these sugarcane is not yet an orphan crop (GOK, 2019, SUCAM, 2003). This revealed that there exist some policy provisions that are sustaining a significant level of sugarcane farming in the country.

It is against this situation that this study sought to determine the impact of policies drawn from Articles 2,10, 113, 115 and 232 , Agriculture Act No 318,AFA Act 2013 ,Crops Act No 16 of 2013 , KALRO-SRI Act NO 17 of 2013, Companies Act (CAP 486), Public Finance Management Act of 2012 , State Corporations Act (CAP 496) of 2012 , land Act No 6 of 2012 , Devolution Act of 2012 , Science ,Technology and Innovation Act No 28 of 2013 , Import Licensing Act of 2012 and Competition Act of 2012 and further on arcles 10, 28 and 61 of the COMESA protocol on revival of sugarcane farming in the Western Kenya Sugarbelt . KALRO-SRI and AFA-SDstations locate in the sugarbelt plus NSC and WKSC were engaged and used as the baselines of the study.

1.3 Research Objectives

The objectives that guided this study were;

1.3.1 General Objective

To evaluate the impact of policy issues on provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt.

1.3.2 Specific Objectives

The specific objectives of the study were to;

i) Evaluate policy issues that had constraining influence on provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt

ii) Establish the extent to which policies drawn from the Constitution of Kenya enable provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt

iii) Determine the policy-related challenges that limit compliance of sugar agencies with COMESA standards for revival of sugarcane farming in the Western Kenya Sugarbelt.

iv) Evaluate the capacity of SD and SRI to enable provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt in the perspective of policy.

1.4 Hypotheses

On the basis of the specific objectives as in section 1.3, the study was further guided by the following Null Hypotheses (H_0):

i. Policy issues have no statistically significant constraining influence on provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt.

ii. Policies from the Constitution of Kenya 2010 have no statistically significant enabling influence on provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt.

iii. Policy-related challenges have no statistically significant limiting influence on compliance of sugar agencies with COMESA standards for revival of sugarcane farming in the Western Kenya Sugarbelt.

iv. In the percepective of policy SD and SRI have no statistically significant capacity to enable provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt.

1.5. Justification and Significance of the Study

The study has provided an information baseline for attraction and retention of farmers to ensure revival of sugarcane farming in Kenya towards meeting the national vision of sugar security. The findings of the study provide an informed baseline for guiding stakeholders in making decisions to enable revival of sugarcane farming, thereby save the country Kenya from the risk of losing up to 15% of agricultural GDP that originates from sugarcane farming. Application of the findingsl contributes to attainment of national development agenda and targets like Vision 2030 and the Big Four Agenda especially in the matters of food security, manufacturing and income from tax since the three are highly dependent on sugar.

The findings of the study provide an analytical framework for reshaping the existing sugar policies. It also identified the policy issues that are limiting Kenya's compliance with the COMESA standards for revival of sugarcane farming. It therefore generated information that minimizes the risk of Kenya losing recognition in regional and international economic arena with respect to sugar matters. It further provided an informed guideline for decisions on whether to engage in more economic partnerships or not.

The findings of the study also generated an information base or guide for COMESA Council of Ministers for decision-making .The findings provided a foundation for COMESA to understand the challenges facing Kenya in the endeavour to fulfil the terms and conditions of the integrated economic block in a local context. It also generated a logical framework for testing the feasibility of the COMESA standards of competitiveness and therefore a basis for positive modification of the COMESA protocol.

For the government, the study identified the challenges and strengths for revival of sugarcane farming towards competitiveness in the COMESA market. It also provided an informed mechanism for refocusing the Sugar subsector in favour of domestic production and in favour of more contribution to household income and GDP. Additionally, it provided a foundation for development of an appropriate policy design and framework for effective blending of sugar production and importation. The study

also identified challenges and strengths of the sugar agencies towards more strategic engagements.

For AFA-SD, NSC and WKSC; the findings will enable development of an informed policy framework to reduce chaos and thus enable revival of sugarcane farming. Further to this, the findings of this study may enable WKSC and NSC to develop context-specific policy framework and even provide a baseline for re-engineering of governance structures and services in the sugar subsector.

For the farmers and rural livelihoods, the study generated knowledge that is critical in improvement and sustainability of sugarcane farming towards wealth generation and hence a baseline for improvement of over 250,000 and rural households who were depending on income from sugarcane farming and millers' corporate social responsibilities.To the academia and researchers the findings generated addition knowledge on policy and revival of sugarcane farming thereby reduced knowledge gaps and formed a sound platform for further research.

1.6 Scope of the Study

This study was limited to evaluation of impact of policy issues on provision of services by the actors in the subsector for revival of sugarcane farming in the Western Kenya Sugarbelt. It used farmers and managers of NSC and WKSC for the period between 2009 and 2019 as baselines. In terms of service institutions it was limited to KALRO-SRI as research component and AFA-SD as the regulatory component of the sector. In terms of policy the study was based on policies drawn from Article 2,10, 113 , 115 and 232 , Agriculture Act 318, AFA Act, 2013, Crops Act No 16 of 2013, KALRO-SRI Act No 17 of 2013, Companies Act (CAP 486) Public Finance Management Act of 2012, State Corporations Act of 2012 ,Tax Amendment Act of 2012, Standardization Act CAP 496 for Kenya Bureau of Standards , Land Act No 6 of 2012, Devolution Act of 2012 , Science, Technology and Innovation Act No 28 of 2013 for research, Import Licensing Act of 2012 and Competition Act 2012 and further on the Articles 10, 28 and 61 of the COMESA protocol.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

2.1 Trends in Sugar Production and Trade A Global Overview

Sugarcane occupies a key position on the world agricultural map because it is produced in 122 countries. Geographically, sugarcane producing countries are located between the latitude 36.7° North and 31.0° South of the Equator in the tropics (FAO, 2012). Sugarcane accounts for about 80% of the sugar produced worldwide although it covers only 2% of the world's cropland (FAO, 2010).

The average annual worldwide production is 1252.91 million tons and the productivity is 64.69 tons per Ha (FAO, 2010). According to United States Department of Agriculture (USDA, 2012) about 50% of the global sugar production comes from three major producers, namely Brazil, India and the European Union (EU). Brazil is the largest sugar producer in the World followed by India then EU, China and Thailand respectively (Wagner, 2007). So far Australia has the highest productivity (85.1tons/Ha) (FAO, 2010). Russia is the biggest importer while Thailand is the second accounting for about 13% of the global sugar exports (USDA, 2012). China and India are averagely the largest consumers in the world (FAO, 2012). In terms of quantity in 2014-15, world sugarcane production was 1794.35 million tons. Brazil was the largest exporter followed by Thailand and then Australia while China, USA, Indonesia and EU were the major sugar importing countries in order of performance (USDA, 2016).

Brazil Has the the lowest production cost globally as reflected in the period between 2006 and 2010 (Dub, 2016). The ten lowest cost sugar producer countries in the world are Malawi, Brazil, Swaziland, South Africa, Zambia, Thailand, Australia, Tanzania, United Kingdom and Zimbabwe while the major producers were Brazil, India, China and Thailand (World of Sugar, 2010). Globally, Brazil, India and the European Union (EU) have sustained leading positions in production.

In 2003, the three top world sugar producers were Brazil, which produced 20.3 million metric tons (MT), India 19.9 million MT and the European Union (EU) 15.5 million MT (KSB, 2012). In terms of production costs, the ten lowest cost sugar producer countries

in the world for the period 2006-2010 were Malawi, Brazil, Swaziland, South Africa, Zambia, Thailand, Australia, Tanzania, United Kingdom and Zimbabwe ((Dub, 2016, World of Sugar, 2010). However, Brazil remains the lowest cost producer globally (KALRO-SRI, 2018).

World sugar production is characterized by wide and frequent fluctuations whereby during certain years overproduction depresses prices and discourages production especially among the importers (FAO, 2016). The sharp increase in price was attributed to faster growth of the world sugar consumption compared to production and more particularly due to the fact that sugar stocks worldwide dropped to less than 25% of the demand (Ward *et al.,* 2008). However, although rich in content, this empirical review established information limitation regarding fluctuations in sugarcane farming with regard to policy changes. This indicates that so far the extent to which policy influences sugarcane farming in different states or globally is largely unknown or yet to be established.

2.2. Sugarcane Farming in Africa: A Continental Perspective

Africa is known for producing sugar with Egypt as one of the oldest producing countries on the continent (International Sugar Organization: ISO, 2009). It is a sugar deficit continent consuming more than it produces in fact in comparison to other continents its contribution to worldwide sugarcane production is quite negligible (Blij & Muller, 2007). It accounts for 6% of the global sugar production with COMESA countries accounting for 52% of the production (COMESA, 2019).

According to the World of Sugar (2010), in Africa, sugarcane farming is concentrated in the SADC and COMESA regions. Similarly, FAO (2016) and UN (2013) observe that sub- Saharan Africa is responsible for 83% of the continent's sugar production due to the suitability of the tropical and sub-tropical climate. The largest sugarcane zones in sub-Saharan Africa are South Africa, Mozambique and Cameroon. So far South Africa is the leading producer in Africa followed by Sudan, Kenya and Swaziland respectively (FAO, 2016).

The continent has approximately 4 million hectares of land located in 28 countries under sugarcane farming and produces about 5% of the sugar consumed in the world. 30% of

the production is this from East Africa (Mnisi & Diamantine, 2012). In Africa the productivity is 54.9 tons per hectare an equivalent of 85 % of the average world productivity (Mnisi & Diamantine, 2012, KSB, 2012). In terms of sugar production costs, Zambia, Zimbabwe, Swaziland, Malawi, and South Africa have sustained positions amongst the lowest cost producers in the world especially in comparison to Brazil which is one of the world's lowest cost producers in the world (GOK, 2017, FAO, 2016, UN, 2013, Ashok, 2007). In 2012 Kenya was among the Africa's top nine major producers which in descending order were South Africa, Egypt, Sudan, Kenya, Swaziland, Mauritius, Zambia, Zimbabwe and Mozambique (FAO, 2016). Swaziland, Ethiopia, Madagascar, Malawi, Mauritius, Zambia and Zimbabwe are net exporters of at least 25% of their annual sugar production (Status paper on sugar cane, 2013).

Innes (2010) observes that sugar industries in Africa embrace a wide range of production systems over a large spectrum of climate and social - economic conditions and have a very strong developmental impact in terms of employment and income generation at the level of individual farmers, fiscal contribution to national economies and foreign earnings. Apart from this, Africa experiences sharp fluctuations in sugarcane cultivation and production when compared to South American, Asia and the EU due to poor farming methods and over dependence on rain- fed agriculture (FAO, 2007).

Although rich in content, this empirical review does not identify and associate fluctuations in sugarcane farming or production in Africa with policy changes or differences and further do spell out how policy can influence revival of sugarcane farming in the continent in the cases of decline as is the case of Kenya.

2.3 Trends of Sugar Production and Importation. Acase of Kenya

Although, Kenya's sugar industry is nowone century old, domestic production is still unable to meet the growing demand in the country, it is estimated that the deficit is around 300,000 metric tons annually (Odera, 2014). In Kenya, sugarcane productivity has gone down over the years as it goes up in competitor countries. It was around 130 tons per hectare in the 1980's and 80 tons in 2010 depicting a reduction of over 38% over the two decades (FAO, 2012). Generally, Kenya has experienced reduction in sugarcane production as reflected in a reduction of 22% from the 1999 level of 78.42 tons /Ha, 33%

from the 1996 level of 90.86 tons /ha and a reduction of over 38% between the 1980's and 2010 (KSB, 2012).

However, between 2011 and 2016 sugar production increased from 548,206 to 639,741 metric tons, the total area under sugarcane production increased between 2013 and 2014 from 206,809 hectares to 224,925 hectares and an average yield of 100 tons cane per hectare (TCH) but has since dropped to less than 50 tons (GOK, 2017). In spite of the private and government investments in sugar mills, self-sufficiency in sugar has remained elusive mainly because Kenya's sugar industry is highly inefficient and only survives due to high tariff and non-tariff protection (World Bank, 2013). Kenya is unlikely to achieve the state of net exporter of raw sugar unless it improves the conditions and efficiency of the industry. In Kenya mills are operating at only 60% of installed capacity (KSB, 2010).

Kenya's sugar sub-sector has always been positively skewed towards domestic production but recently a fast shift occurred in favor of importation. This was attributed to cheapness of imported sugar when compared to locally produced sugar (SUCAM, 2003). Domestic production is only 48% of the national demand of 1,000, 000 MT although there is potential of producing 1.09 million MT. On the contrary the Sugar subsector is facing imminent collapse (GOK, 2019). The major sugarcane varieties grown in Kenya are Co421, Co617, Co 945 and N14 which occupy 82% of the land under sugarcane production (Odera, 2014, Wawire *et al.,* 2006). For a long time, Kenya's sugar industry depended on sugarcane varieties with low sucrose yields (6-9%), however in the recent past new varieties with higher sucrose yields (12-15%) and shorter maturity periods (15-18 months) have been developed for adoption. According to the Kenya Gazette No. 7 of 2007, KESREF introduced four improved varieties D8484, Ken, 82-472, EAK 73-335, and Ken 82 – 62 (KESREF, 2007).

In the period between 1993 and 2000, Kenya's sugar importation averaged 26% of domestic consumption but from January 2001 the domestic market was flooded with cheaper imports from COMESA member states. This is because the domestic market was opened to foreign competition within the COMESA Free Trade Area (FTA) by dropping the tariff to zero for member states (Hoffmann *et al.,* 2013). Kenya was a net importer of raw sugar and a favorite destination for sugar imports from the COMESA member states because the locally produced sugar was more expensive than imported sugar and yet it

does not satisfy the market demand (KSB, 2010). This has made sugar importation to be highly lucrative leading to emergence of sugar cartels in the country (Kenya Anti-Corruption and Ethics Commission: KACC, 2010). According to SUCAM (2003) there is need for the government to reconsider the policy guidelines for the sugar sub-sector. In the period between 2005 and 2011 Kenya's sugar import was acquired from COMESA member states specifically Egypt (57%), Swaziland (30%) followed by Malawi and Zimbabwe at 3% each (GOK, 2009).

Although rich in content, this empirical review does not provide enough information or evidence for identification and ranking of specific policy issue s and or acts that so far hinder revival of sugarcane farming in favor of sugar importation and further what or which policy reforms are needed as drivers of the revival process.

2.4 International Sugar Trade Regimes and Regulatory Policies

On the international market, sugar is traded under four regimes specifically the Preferential and Quota Regime which is an outfit of developed Countries specifically the USA together with the European Union (EU), Preferential Sugar Arrangement where most of the supply is from the African Caribbean and Pacific (ACP) countries sugar protocols that includes Free Trade Agreements like EAC, COMESA and Southern African Development Community (SADC), the WTO and the ISO (COMESA , 2010, Krugman , 2000). However, internationally, the sugar market is one of the most highly distorted agricultural commodity markets due to several and yet unaligned trade policies such as guaranteed minimum payments for marketing procedures, marketing Quotas, state regulated prices, tariffs, export subsidies and import quotas (Geoff, 2009).

Although the world class producers specifically Brazil, India, USA, China and the EU have sustained high productivity, they are yet to satisfy the global sugar demand which is increasing at 1.82 % per annum while on the contrary more and more countries are experiencing fluctuations in production levels (Mendonca *et al.*, 2013). This is the foundation of sugar trade on the international arena. Sugar is one of the most traded commodities with exports accounting for a quarter of the global production though its market is one of the most distorted markets where there is no level playing field (FAO, 2016).

Globally, over 70% of sugar production is consumed domestically while 30% is traded (United Nations Economic Commission for Africa (UNECA), 2013). At the same time, 65% of the sugar traded on international market comes from only four countries specifically Brazil, Australia, Cuba and Thailand and the biggest importer is Russia (Muteshi *et al.,* 2017). From 2014 to 2015, Brazil was the largest exporter followed by Thailand and then Australia while China, USA, Indonesia and European Union (EU) were the major importers (USDA, 2016). Due to the political nature of sugar, the policy guidelines of different international sugar trade regimes influence sugar prices more than the forces of demand and supply (COMESA, 2010). Sugar prices are determined by the preferential and quota regimes offered by developed countries particularly the USA and the EU, international sugar agreements for protection and trading and free trade arrangements in regional trading blocs (UNECA, 2013). Price is also influenced by residual free market trading interventions like the WTO obligations (COMESA, 2010).

The major sugar producing and consuming countries in the world protect their markets from the lower priced sugar in the world market (COMESA, 2010). This meant that the issue of supply does not represent the best benchmark of determining the price for sugar in the world market (Muteshi *et al.,* 2017). Kenya's sugar prices are very high relative to international prices in fact between 2009 and 2012, Kenya's wholesale price was 149% above the international wholesale price. This is due to the additional costs like Value Added Tax (VAT), Sugar Develoment Levy (SDL), International shipping, port clearing charges and inland Transport incurred by sugar importers (KSB, 2010). The international sugar market indirectly influences domestic sugar industry of nations through policies on regional integration (GOK, 2019).

This empirical review provides little evidence on influence of international sugar trade on sugarcane production specifically the extent to which sugar trade policies influence sugarcane farming across the world.

2.5 Policy and Objectives of Sugarcane Farming in Kenya

Policy objective refers to the "ends" of a policy and reflects the overall purpose or long-term aim while policy instruments are the "means" of a policy, the actions used to carry it out and the methods by which objectives are achieved (FAO, 2013). Governments of

all countries regardless of sugar producing, importing and exporting Have policies that guide sugar matters because sugar is consumed all over the World (GOK, 2017).

However, each nation's objectives for sugar policies are unique with regard to income distribution, price mechanism, resource use efficiency, taxation procedures, economic development and food security strategies in addition to issues of power and local politics (Keerthipala & Dharmawardene, 2000). The national objectives for sugar production and trade then informed the development of policy objectives at regional and global levels which subsequently led to politicization of the subsector making sugar a key determinant of political leadership at national, regional and global levels (FAO, 2016). The policy objectives or drivers that guided policy formulation for Kenya's sugar sub- sector differ significantly from those of other producing countries in the world because Kenya's sector was largely designed towards the strategic economic principles of self-reliance with respect to domestic demand (FAO, 2016). It was therefore designed as a platform for wealth creation in the perspective of income and employment generation (Waswa *et al.,* 2012, Balongo, 2008).

The specific objectives of sugarcane farming were production for self-reliance and surplus for export, acceleration of socio-economic development, increment of citizen participation in the nation's economy, promotion of foreign investment through joint ventures, promotion of indigenous entrepreneurship and finally as a strategy for infrastructural and rural development (KSB ,2007)**.** The objective of self-sufficiency was based on the perception that domestic production is a viable alternative to dependence on importation while surplus production for export would facilitate earning of foreign exchange (GOK, 2017, FAO, 2016, KSB, 2010).

Sugarcane farming was also focused as a basis for rural development in the perspective of road networking, rural electrification, housing, and health and then provision of education services (GOK, 2017). In the dimension of social-economic development, sugarcane farming was targeted as a strategy towards better living standards (Waswa *et al.,* 2012). This objective is the guideline for policies on tax and tariff aimed at generation of income for government (Waswa *et al.,* 2012: FAO, 2012).These national objectives of establishing sugarcane farming was specifically the desire to accelerate socio- economic development, address regional economic imbalances and increment of

citizen participation in the economy are yet to be achieved yet the domestic sugar industry is facing imminent collapse hence the logic of the struggle for its revival (Njeru, 2015).

2.6 Contractual and Non-Contractual Sugarcane Farming in Kenya

Contractual farming is a mechanism of integrating smallholder farmers into the growing market of processed goods and export commodities (Waswa *et al.*, 2009). In sub-Saharan Africa contract farming is designed to promote transition of smallholder farming to market oriented commercial production (Bulwing *et al.*, 2009). Contract farming is modeled on economic integration while non-contractual farming is modelled on market liberalization (Martens & Swinnen, 2007).

A critical issue of Kenya's sugarcane production model is that farmers and millers can get into sugarcane farming contracts to sHare risks and benefits (Waswa *et al.*, 2012). Engagement of contractual farming is provided for by the law of contracts as per CAP 23 of the Kenya Constitution (GOK, 2010). In contract farming a farmer agrees to supply a pre-determined quantity and quality of produce at a pre-agreed price and time to processors or market (Waswa *et al.*, 2012, Minot, 2007). Through contract agreements, farmers are able to access agricultural extension services, credit, agricultural inputs and reliable markets (Minot, 2007). Contract farming can provide opportunity for processing of goods based on appropriate technology and facilitate business management in terms of resource use and record keeping (Songsak & Wiboonpoongse, 2008).

Contracts enable the farmers to access credit and transport services, inputs and guarantees sugarcane markets while for millers' contracts facilitate access to more land for production and ensures delivery of raw materials in bulk for processing making them to benefit from the economy of scale (Boraras *et al.*, 2015: Kokeyo, 2013). In Kenya, contract or agreement farming is rising due to alteration in global markets in terms of competition, shopper demands, skill requirements, husbandry practices and emerging governance policies (Chidoko & Chimwai, 2011).

However, most farmers felt short-changed when the sugar millers bank the profits from both sugar and by-products and the farmer only earns from sugar cane. Contracted farmers also face institutional challenge of felt ing cheated due to being weaker in bargaining and negotiation of contractual terms (Waswa *et al.*, 2012). For example, in

most contractual agreements, farmers had no say even when payments were not delayed nor can they negotiate when the produce is sub-standard. Therefore, the farmers bear the brunt in costs as the miller still gets to deduct their inputs in seed cane, transport, harvesting services and fertilizer and the associated profits (Kokeyo, 2013). This makes Contract sugarcane farming to be costly business to the farmers especially for plant crops for instance in 2009 Waswa *et al* (2012) observed that deductions by Mumias Sugr Company (MSC) for the plant crop were responsible for up to 71% loss of each farmer's profits in 2009.

There are multiple benefits of contract farming, one of the critical ones being that the millers can obtain more land without actually buying or leasing it since it was still in the farmers' hands. In debates about alternatives to large scale land acquisitions, contract farming is brought forward as means to improve the situation of the local community (Forum for Employment Creation in sugar subsector in Kenya: FECSSK, 2015). At the same time, being on the contract makes individual farmers to be part of sugarcane supply chain giving them an opportunity to be recognized by financial institutions as business persons (FAO, 2012). Apart from this, during the growth of the crop, extension provision of services and inputs are made available by the companies for the farmers and then the costs of the services are deducted from the proceeds (Proterra foundation, 2016).

Contract farming is an inclusive method of production that involves the vertical integration between growers of an agricultural product and the buyers or processors (Kegode, 2015). However, the ownership of risk, voice and reward by the contracted parties account for the extent to which a particular contract is inclusive and beneficial for individual contract stakeholders (Veldwisch, 2015). Contracts between out growers and the companies come with privileges and obligations (FAO, 2012). Contractual farming can provide solutions in the agriculture sector specifically agricultural marketing, extension services, input supply and financing (Mansur *et al.,* 2009). However, it does not encourage farmers to begin any value-added activity like packaging, processing or marketing products (De Schutter, 2011). Unless farmers are well advised contracted farming causes food insecurity by misplacing food crops (Singh, 2008). Other disadvantages were farmer's indebtness and overreliance on contracted investments (Silva, 2005).

Although rich in content, this empirical review does not indicate the extent to which contractual or non- contractual interventions so far influences or can influence revival of sugarcane farming in the Kenyan context and more specifically in the Western Kenya Sugarbelt and further does not adequately justify any of the two in the context of Kenya's sugar industry.

2.7 An Overview of the Crisis Facing Kenya's Sugar Industry

The once vibrant and lucrative sugarcane industry of Kenya is in a crisis and facing imminent collapse (GOK 2019). It has and is experiencing a decline in production due to decline in sugarcane production and productivity leading to limited competitiveness in the region (COMESA, 2015). The sugar industry is both strategic and political but also suffers government interference (Odek *et al.*, 2003). Similar sentiments were expressed by KALRO-SRI (2018) according to which, the subsector suffers from political interference with regard to matters of sugar importation and agreements with regional and global economic partners.

Despite long history and economic significance, the sugar industry faces challenges of high input costs, declining land sizes, unreliable weather patterns, pest outbreaks, and limited access to credit services, ineffective extension services, cane fires, uncoordinated harvesting, delay of payments for cane deliveries, theft and high post- harvest losses to the farmers and even factory (KNA, 2014).

Kenya's sugar industry has faced several challenges inclusive of trade liberalization under the COMESA and WTO protocols, high costs of production compared to other countries in the region, dilapidated factories, poor governance and management, insufficient funding and inadequate research and extension provision of services (KESREF, 2009). These challenges have led to development of a new national policy strategy focused on industry privatization, improved access to credit, sector research and diversification (USDA, 2012; USDA, 2011). Over the last ten years, the industry has been experiencing decline in sugarcane yield due to high costs of inputs like fertilizers, poor Harvesting techniques and programs (KNA, 2014). Averagely, domestic mills are operating at only 60% of the installed capacity as the public mills experience inefficiency in operations due to mismanagement (KSB, 2010). This was due to the fact that as a

regulator, KSB had weak surveillance capacity, lacked investigatory and prosecutorial powers (KESREF, 2009).

Kenya's sugarcane yield is on a declining trend and the reasons for this include widespread use of low-quality sugarcane varieties, poor agricultural and land management practices and delayed harvesting of contracted crops (KSB, 2010). Long term monoculture was a challenge especially among the small -scale growers who by virtue of limited land sizes lack capacity of intervention through crop rotation (WDR, 2017). According to Kumar and Arora (2009) in Kenya uncoordinated sugarcane development, Harvesting and transportation affect the material (sugarcane) Capability and leads to a vicious cycle of shortage and surplus.

Sugarcane scarcity has generated several claims and counter claims of poaching (KSB, 2012). According to WKSC, sugarcane poaching emerged when Butali Sugar Miller (BSM) was controversially licensed and started sourcing for sugarcane within its zone (Leavy & Hossain, 2014; KNA, 2014). In 2014, a report by the management of NSC to the Agriculture Committee of Parliament indicated that WKSC was poaching sugarcane from farmers contracted by Nzoia, Mumias and Butali and further that NSC had instituted court proceedings against WKSC on the matter in 2012 (KNA, 2014). Similarly, WKSC took legal action against the Ministry of Agriculture, KSB and BSM for licensing BSM to operate within its designated zone as BSM claims that creation of too many weighbridges specifically by WKSC contributes to sugarcane poaching (Leavy &Hossain, 2014; KNA, 2014) and further that the industry regulator should come up with regulations in respect of contractual obligations of farmers and the respective millers to help address poaching (KNA, 2014). However, KSB confirmed WKSC as the main sugarcane poacher in the Western Kenya Sugarbelt (KSB, 2012). Observations and subsequently statistics indicate that poverty remains endemic in the sugarcane growing areas (Otieno et *al.,* 2003). The farmers are unable to meet their ends from the farming due to over taxation, one of the policy concerns (Odera, 2014).

According to FAO (2016) the sugarcane growing areas in Kenya are characterized by youth unemployment and high levels of poverty (FAO, 2016). Similar sentiments were expressed in the World Development Report (WDR, 2017) and by Otieno et *al (*2003). However, Leavy and Naomi (2014) established that the aspirations of young rural-based

people are dominated by desire for formal sector employment, modern urban lifestyles and a generalized reluctance to consider farming as an employment option. Similarly, Mtembu (2010) argues that household' succession planning relative to sugar farming remains a critical issue across the industry. Transfer of land that was previously under sugarcane production to alternative agricultural and even non-agricultural enterprises and withdrawal of some farmers from sugarcane farming further magnifies the crisis (SUCAM, 2003).

The Kenya sugar industry is facing technology capability challenges leading to factory underutilization **(**GOK, 2010). Public millers are facing challenges of inefficient factory operations, inefficient agronomic practices, state interference and most critically debt burden (Odek *et al.,* 2003). Kenya's sugar industry is too inefficient and only surviving due to high tariff and non-tariff protection (World Bank, 2013). This is evident in low farm productivity, low sugar recovery, high production costs, mismanagement of public mills and high debt pressure (Onyango *et al.,* 2016; COMESA, 2015). Additionally, a number of public millers inclusive of MSC are under receivership, Muhoroni and Miwani sugar companies have specifically remained under receivership for a long time while the rest even NSC that is focused in this study are operating far below factory capacity due to limited sugarcane availability (CGD, 2005). In fact, in general the public mills are technically insolvent (KNA, 2015; KSB, 2012).

Public mills also lose a lot of revenue through corruption deals like siphoning of funds from sugar sales besides the engagement of the mills in suspicious importation of sugar (KNA, 2014). Additionally, collusions involving the ministry of agriculture, the sugar regulator and the Kenya Revenue Authority (KRA) staff frequently and commonly instigate artificial sugar shortages creating a lucrative playfield for the sugar cartels in the country (KACC, 2010). According to KSB (2010) the major challenge in Kenya's domestic market is the fact that the locally produced sugar is more expensive and yet it does not satisfy the market demand making sugar importation to be highly lucrative business. This is the origin and playfield of the sugar cartels in Kenya (KACC, 2010). The critical challenges facing the industry are high production cost, heavy debts, declining productivity sugarcane shortage and limitation in value addition provision of services (Owiye *et al.,* 2016). All public-owned mills are heavily indebted and lack capacity to expand and modernize their services for the required efficiencies and

economies of scale (KSB, 2012, KSB, 2010). The debts are due to money owed to government, suppliers, banks, KSB and even farmers in fact as at 2014 NSC had a debt of 37 billion shillings (GOK, 2019).

Kenya is among the highest cost sugar producers in the world and therefore an attractive destination for both legal and illegal imports (KNA.2014). The high cost of domestic production is partially attributable to unfavorable policies like classification of sugar as a non-foodstuff an issue that attracts heavier taxes (GOK, 2019). Poor infrastructure increase production costs through spillage, heavy wear and tear on transportation units and fewer than optimal trips per day (KSB, 2010). Kenya is unlikely to become a net exporter of raw sugar unless it improves the efficiency of the industry (KSB, 2010). This is because in spite of the age of the industry, so far domestic sugar production does not meet the growing national demand, as reflected in an average annual deficit of about 300,000 metric tons (Odera, 2014). This deficit provokes importation aimed at supplementation (KSB, 2010). Eventually, this process of importation opens windows for influx of illegal and un-accustomed sugar that make the domestic market to suffer from the effects of cheap sugar from outside (KACC, 2010).

The imports from low-cost producers dampen sugar prices creating financial crisis particularly when the local millers cannot offload the locally produced sugar to the market (Owiye *et al.,* 2016). The cheapness of imported sugar creates a lucrative playfield for the importers due to high costs of local production (UN 2017). The criticality of this crisis lies in the imbalance between the profit levels of domestic production when compared to importation (Omondi, 2013). In response, NSC lobbied the government not to allow the cheaper sugar into the country because it negatively affects sales and payment to farmers (KNA, 2014).

KRA is by mandate expected to address such financial issues but then it lacks the capacity to verify every container of imported commodities (KNA, 2014). In addition, KRA does not have infrastructure at all border points especially in Eastern and North Eastern Kenya where sugar smuggling is rampant (KSB, 2014). The seepage of illegal sugar into the country comprises consumers' health since the standard or quality of such sugar are unknown (GOK, 2010A).

Although KEBS which was established that in 1974 under CAP 496 of the laws of Kenya is in charge of development and enforcement of standards it lacks capacity for enforcement and market surveillance and therefore cannot cope with demands like single window and 24-hour operations at the port of clearance, entry or exit (KNA, 2014). Uncontrolled influx, dumping of unlicensed stocks of sugar and non-sequenced trade liberalization treaties further contribute to sugar gluts that flood the market (Muteshi & Owino, 2017).

The state of Kenya's sugar industry points at inadequacy of legislations and lack of enforcement mechanisms for the existing legislations (KSB, 2012). Further to this, as a regulator, KSB had weak surveillance capacity, lacked investigatory and prosecutorial powers (KNA, 2014). The industry also suffers from false declaration with respect to the rules of origin of the COMESA protocol, for example, a lot of sugar from the open world market finds its way into Kenyan market through some companies' purporting to be sourcing it from Egypt (KACC, 2010). According to KNA (2014) most of the sugar purported to be imported from Egypt represents transshipments from Brazil and further that Egypt is among the nations that are net importers of sugar yet it purports to be a significant exporter of the same to Kenya. Additionally, there are several illegal points of entry that increase illegal influx while there is no clear mechanism of co-ordination between KSB, KRA, KEBS and the Kenya Port Authority (KPA) on matters of importation (KACC, 2010).

Kenya is a signatory to COMESA protocol (GOK, 2019). However, in spite of the many alternative economic benefits, particularly the fact that the COMESA protocol provides the market for up to 70% of Kenya agricultural export products the protocol is a threat to Kenya's sugar industry (Ligami, 2015). Comparatively, Kenya's sugar industry is relatively uncompetitive and unable to survive independent of Safeguard measures on the COMESA market (COMESA, 2015). This is a major concern because according to COMESA safeguard policy Kenya Has exhausted the allowable maximum extension period unless it rides on political goodwill for further extension (GOK, 2019, COMESA, 2015). The industry is uncompetitive within regional and international market perspectives due to technological limitations (Muteshi & Owino, 2017). Another technicality is that the state is supposed to revive the industry to competitiveness and yet the same state has dominated the industry implying that the current state of

uncompetiveness is more to do with state actions than actions of private stakeholders (Ellis & Singh, 2010).

The problems of Kenya's sugar subsector reflect serious policy flaws and inadequacy of legislations (KNA, 2014). According to Western Development Initiative Association (WEDIA), the crisis in the sugar subsector should be addressed from both policy and legislative fronts. This is because to save the sugar sub-sector from collapsing, the problems facing farmers need policy and legislative action measures (KNA, 2014). Otherwise, Kenya's sugar industry has limited gains to consumers, growers or millers but provides major gains for importers and bureaucrats (Onyango *et al.*, 2016).

Though ecologically suitable for sugarcane farming and accessible to adequate farm labor, the Nzoia and West Kenya sugar belts were not only producing below their agricultural potential but each one also lacks the capacity to produce enough sugarcane to meet its daily factory demands. Over the past decade, they have been facing major challenges specifically how to counter the challenges of diminishing yields, farmer dropout and transfer to the emerging millers like BSM and WKSC (KSB, 2011). Internally uncoordinated sugarcane development, Harvesting and transport to mills affect the material (sugarcane) Capability in Kenya which leads to the vicious cycle of shortage and surplus (Kumar & Arora, 2009).

Chisianga *et al* (2014) argue that a variety of factors inclusive of excessive government involvement and policy barriers interfere with sugar production in Kenya. According to Netondo *et al* (2010) the challenges of sugarcane production in Kenya include trade liberalization under the COMESA and WTO protocols while according to SUCAM (2003) there is need for the government to reconsider the policy guidelines for the sugar sub-sector. The poor performance of the sugar subsector is due to irrational implementation of policy, distorted import policy and excessive political interference (Institute of Economic Affairs; I.E.A, 1994). This empirical review is very comprehensive but had little information or evidence concerning the extent to which the crisis facing Kenya's sugar industry is influenced by or associated with policy interventions implying that relevant studies are yet to be undertaken.

2.8 Constraineds to Sugarcane Farming in Kenya: Farmers' Perspective

Kenya is experiencing decrease in sugarcane availability due to decline in production (COMESA, 2015). The indicators of yield decline are reduction in farm productivity reflected in low tonnage, recovery or sugar yield of less than 5 tons/ha and sugar extraction rate of less than 11% unlike the World class producers like Brazil that have sugar yields of up to 9.3 tons/ha and sugar extraction rates ranging from 11% to 13% (Onyango *et al.,* 2016).

Although occasionally, droughts could have played a role in the yield decline a substantial proportion of the decline is due to alternative challenges like the technological limitations specifically cultivation of poor ratooning varieties and improper ratoon management practices (Onyango *et al.,* 2016; KSB, 2012). The decline is also due to poor seed technology and over- dependence on ratoon cropping (GOK, 2019). It is also caused by continuous cultivation of low-quality sugarcane varieties characterized by limited disease resistance, late maturation and low sucrose content (Netondo *et al.,* 2010).

Selection and cultivation of ecologically incorrect varieties leads to low farm productivity which was reflected in low sugar recovery (COMESA, 2018). Observably, varieties with poor productivity especially low sugar content still occupy a sizeable area in Kenya though better varieties have been developed only that the level of adoption is still low (Solomon ,2016, Onyango *et al.,* 2016). In Kenya technology transfer and application were not yet adequate (Netondo *et al.,* 2010).

Poor agronomic practices also contribute to yield decline (KSB, 2010). According to SUCAM (2003) most farmers do not engage appropriate land preparation technologies as a majority still use hoes and ox-ploughs. Sole dependence on rain fed production limits the efficiency of fertilizer application because basically, right time and rate of application of fertilizers and other farm inputs is hardly attained or observed because circumstantially farmers could not match the crop's agronomic needs and fluctuations in rainfall patterns (KSB, 2012; Thorburn *et al.,* 2007).

Apart from rainfall issues sugarcane production was further complicated by other emerging climate changes and decline in soil fertility apart from the fact that farmers

in Kenya are particularly not choosing the right time for planting (Waswa *et al.,* 2012). Weed management was a challenge because most out- growers depend on hoe weeding of up to 5 to 7 times per production cycle which cannot effectively control some of the hardy weeds. Kenyan farmers unlike those of Brazil, rarely engage chemical control strategies (KSB, 2012). The same applies to soil management where by soil carbon content among other macro-nutrients are going down at an alarming rate as micro nutrient deficiencies become prevalent (Zuurbier & van de Vooren, 2008).

Further decline is due to sugarcane monoculture (Netondo, *et al.,* 2010). This is because the productive capacity of agricultural lands generally decreases after several seasons of sugarcane crop because it is a heavy feeder and yet over 50% of its body is taken away during harvesting (KESREF, 2009). Monoculture was a big challenge particularly among the small – scale growers who by virtue of limited land sizes lack the capacity to engage in crop rotation (WDR, 2017). On the average, millers in Kenya operate at only 60% of the installed capacity due to limited availability of sugarcane (KSB, 2010). This is partly due to increase in small scale growers who have autonomy in their operations an issue that leads to adoption of diverse farm practices some of which contribute to low sugarcane yields. Land subdivision and non- contractual farming also led to erratic supply and a steep increase in price (KNA, 2015).

Land fragmentation is a major challenge to out-growers because the land owned by individual out-growers continues to be subdivided into smaller parcels, decreasing the efficiency of farming activities (KESREF, 2009). The sugar industry is suffering from decreasing land sizes and increasing transfer of agricultural resources to alternative projects (Waswa *et al.,* 2012). At the farm level, there are challenges of high input costs, declining land surface under sugar cane, continuous withdrawal of farmers, unreliable weather patterns, and limited access to credit, ineffective extension systems, sugarcane fires, delayed and uncoordinated harvesting practices, and payment delays for delivered sugar cane, poaching, theft and post-harvest losses (SUCAM, 2003). In addition to this, farmers' Associations have also become middlemen further overburdening the farmers (KSB, 2012; KESREF, 2009).

Though ecologically suitable for sugarcane farming and accessible to adequate farm labor, the Nzoia and West Kenya sugar belts were not only producing below their agricultural potential but each one was also lacking the capacity to produce enough

sugarcane to meet its daily factory demands (KSB, 2011). These constraineds are basically related to policy and yet a number of policies exist. This raises public concern and subsequently need to evaluate the capacity of the policy interventions to revive sugarcane production as per this study.

This empirical review is very informative in fact it has helped to notice a knowledge gap in that so far identification and ranking of the policy constraineds as a baseline for prioritization of mitigation interventions to revive sugarcane farming is yet to be undertaken.

2.9 Constraineds to Sugarcane Farming in Kenya; Millers' Perspective

Mills as sugarcane markets frequently delay farmers' payments which discourages and eventually affects their investment and re-investment in sugarcane farming (Waswa *et al.*, 2012). On numerous occasions delay in payment leads to farmers' dropout which further reduces sugarcane supply (SUCAM 2003, Odera, 2014). Some millers have been discouraged from investing in sugarcane production due to poaching (SUCAM, 2003). Additionally, complaints from the millers indicate that most of the sugarcane varieties give a very low sucrose yield and recovery rate because of poor cane variety and poor timing of harvesting (KSB, 2012). Generally, sugar millers in Kenya are suffering from high cost of production and delay Farmers' payments (KESREF, 2013; KSB, 2010). For public mills this is worsened by heavy debt burdens (KESREF, 2013). This is a major disincentive to farmers some of whom end up re-allocating their land that to alternative enterprises or withdrawing from sugarcane farming (Waswa *et al.*, 2012; Netondo *et al.*, 2010). Kenya's sugar industry experiences technology capability challenges which are a major limitation to the efforts to increase production of sugarcane and sugar (Obonyo, 2014). Public mills in Kenya are victims of inefficient factory operations because of aging machinery associated with frequent breakdown and irregular maintenance (KSB 2012).

The industry also suffers from financial was constraining as manifested in insufficient funding for research and extension provision of services and the dilapidated state of most factories (GOK , 2019).This is in addition to state interference and debt burden for public millers (Odera , 2014, 2018).This causes delay in farmers payments which makes some farmers to dropout of sugarcane farming (Odera, 2014, SUCAM 2003).Apart from

this delay,sugarcane farming was constrained by low sugarcane prices in comparison to the rising costs of farm inputs and field operations specifically weed, disease and pest control (KSB, 2012). This empirical review is rich in relevant content. However, the content is too limited to enable ranking of the policy constraineds as experienced at the factories and further to enable anybody to establish to what extent each mill is constrained by policy.

2.10 Cost Issues in Sugarcane and Sugar Production in Kenya

The cost of sugarcane production in Kenya is high due to high costs of land preparation services, seed cane, fertilizer supply and transport services compounded by high interest rates charged by financial institutions on agricultural loans (KSB, 2010). Another factor that hikes the cost of sugar production is overdependence on low sucrose yielding sugarcane varieties as reflected in low sucrose recovery (COMESA, 2015). Sugarcane harvesting is expensive because it is labour intensive, requiring an average of 71 Man-days per hectare. Additionally, sugarcane is a bulky crop, which adds on transport costs (KSB, 2009). These costs are eventually incurred by farmers, as they are deducted from their gross income except for cases of a few resource-rich farmers who engage their own transport services (KSB, 2010). Harvesting and transportation which are often considered jointly are very critical because sugarcane must be transported to processing facilities within hours of harvesting to forestall spoilage and they account for about 45 percent of the production cost (KSB, 2010).

The production costs are high due to too much taxation and high costs of inputs, services and credits in addition to CESS charged by county governments. The high cost of production does not only render the industry uncompetitive but also makes Kenya an attractive destination for sugar from other countries (GOK, 2019). Transport-related costs include losses and costs occasioned by poor road infrastructure (Chisianga *et al.*, 2014; KSB, 2010). This is why the government undertook to improve the road network as part of the COMESA safeguard conditions through funding from the Sugar Development levy, Local Authorities' Access Resources and the Kenya Rural Roads Authority (KSB, 2012).

According to SUCAM (2003) costly inputs, sugarcane procurement, harvesting and handling charges are responsible for the high cost of sugar production in Kenya although

according to Chisianga *et al* (2014) the high cost of sugar production in Kenya is due to a combination of low-capacity utilization due to limited cane supply and over-investment in milling services against the economies of scale (Chisianga *et al.,* 2014; KSB, 2010). According to COMESA (2006) the production cost is high due to poor infrastructure in the sugar zones, inappropriate seed technology, excessive land sub-division and poor organization of out grower institutions.

In Kenya, the sugarcane sector is highly concentrated therefore the largest players have significant power over the prices (KSB, 2010). The combination of a concentrated market and a high level of protection limit price competition (Kibimi *et al.,* 2011). More competitive prices have a larger effect on the poorest household in both urban and rural areas (Urzua, 2009). The principal determinants of the ex-factory price of sugar are the cost of sugarcane as the raw material, processing costs in addition to agricultural overheads and margins.

The high cost of domestic production is partially due to over taxation due to classification of sugar as a non-foodstuff and yet it is one of the most consumed foodstuffs (KSB, 2012). This was further contrasted by the fact that the sugar millers in Kenya only manufacture table sugar for nutritional purpose (KSB, 2009). Due to this classification, sugar is subjected to Value Added Tax (VAT) of 16% as per CAP 476 of the Value Added Tax Act for millers and for farmer's income at 30 % as per Income Tax Act (ITA) CAP 470. Additionally in 2002, the government introduced 16% VAT on transport services which is normally passed over to the farmers in addition to CESS further increasing the overall cost of sugar production (GOK, 2019). The high levels of taxation discourage both farmers and millers (KSB, 2012).

In Zambia the price of sugar is set by millers while in Kenya a cane pricing committee under the SD sets the prices of sugarcane and sugar (Muzorori *et al.,* 2013). Kenya's sugarcane pricing mechanism is based on weight and not quality as per sucrose content and therefore fails to promote development of quality production and industrial competitiveness (SUCAM, 2003). The Sugar Act No 1 of 2001 provided for a pricing formula based on agreements between farmers through their out growers' associations and the millers' associations instead of a market pricing mechanism (Njeru, 2016). In India sugarcane price is decided according to a revenue-sharing scheme between growers

and millers (Arjchariyaatong, 2006). However, the agreements are always skewed in favour of the millers representing extra costs on the farmers' side. Apart from this, Kenya's pricing mechanism rewards middlemen more than farmers and millers (Coughlin *et al.,* 1986).

This review is very informative, however, information as provided in the review does indicate to what the extent policy works through the various causal factors to affect the cost of sugarcane and sugar production in Kenya or to what extent policy is facilitates the identified causal factors.

2.11 Sugarcane Farming and Tax Issues in Kenya

Tax is a compulsory levy or payment that citizens of a country pay to the government to enable provision of public goods, deliver merit goods and services, promote broad-based development and economic growth (Abdinasir, 2013). Palil (2010) defines a tax as a compulsory levy imposed by government or government authorized body on income, expenditure or capital assets, for which the taxpayer receives nothing specific in return.

The main objective of imposing taxes on the public is to generate revenue for the government towards public expenditure (Odek *et al.,* 2003). The general objectives of taxation are to raise revenue for government operations, assist in redistribution of income/wealth and to control or regulate economic activities (KIPPRA, 2006). However, extreme levels of taxation affect citizens' economic performance for example in Pakistan the high rate of taxes and duties imposed by the government on the sugar industry affects the industry negatively (Memon & Saeed, 2011). Differences in tax services exist across the World due to variations in tax base of each country (Bird & Gendron, 2007). Generally, the tax structure of every country is composed of direct taxes which are paid by the factors that generate income and indirect taxes that are paid by the consumers of the taxed items (Lemos, 2004; Obwona & Muwonge, 2002). Indirect taxes are typically charges that are levied on goods and services according to consumption levels, this meant that customers who purchase more pay more and normally these indirect taxes are the determinants of the prices of the taxable items (Lymer & Oats, 2009).

The prices of goods and services provide the tax base of a country and a country's tax revenue can be increased by expanding the tax through introduction of new taxes. For

imported goods, the tax base comprises the Cost, Insurance and Freight (CIF), import duty, excise and any other taxes (Schenk & Olman, 2007). Kenya is one of the nations that have a narrow tax base (Mmanja & Morrissey, 2005). In spite of this, for Kenya, taxation is the biggest source of government's revenue accounting for over 70% of the national revenue collection (Moy and Ronge, 2006). In fact, Kenya is a high tax-yield country with a tax to GDP ratio of over 20 percent (KIPPRA, 2006).

Direct taxation means the burden or incidence of tax is only borne by the specific entity that pays it and is not transferable to another entity (Palil, 2010). The direct taxes include income tax also referred to as Pay as You Earn (PAYE) which is charged on income from business and salary, other types of direct taxes include withholding tax, rental income tax and corporate tax (Fredrick *et al.,* 2013*).* Corporate tax is similar to individual income except that it is levied on companies, in Kenya it is 30 % for resident companies and 37.5% for non-resident companies (Njeru, 2012). Generally, Income tax tends to discourage investment because it includes income that is saved and the income from savings while taxation at consumption level tends to encourage saving.

However, this is not observed in Kenya's tax system because Kenya's income tax is 30 % while VAT is 16% (Njeru, 2012). Although VAT has developed a worldwide reputation as a government "money machine", the revenue raised through it depends on standard tax rates and classification of taxable goods (Bickley, 2011). In Kenya, sugar is classified as an industrial product and not foodstuff and therefore subjected to a VAT rate of 16% (SUCAM, 2003). Additionally, in 2002, the government introduced 16% VAT on transport services which is normally passed over to the farmers in addition to CESS further increasing the overall cost of sugar production (GOK, 2019).

In most countries indirect taxes contribute a greater share of the overall tax revenue, for example for Kenya in 2009/2010 tax year, the highest contribution came from VAT charged at 28%, personal income tax at 22% and corporate tax at 18 % (Njeru, 2012). This shows that in Kenya the main tax is VAT which was introduced in 1990 (Moyi and Ronge, 2006). VAT is a tax on the value that a business firm adds to the things it buys from other firms in producing its own product (Ebrill *et al* (2001) and Thuronyi (1996). However, in Kenya, VAT is charged as a tax on consumption. This is partially because in Kenya VAT replaced sales tax (Adari, 1997). According to KIPPRA (2004), VAT has become a cornerstone to Kenya's tax and economic system. It is the instrument of choice

for dealing with unexpected expenditures and is used as part of Kenya's Industrial Development Strategy (Karingi *et al.*, 2005).

Kenya's sugar industry is a tax base for income tax from farmers, corporate tax from the sugar companies and VAT from sugar consumers in addition to import duty and excise taxes from sugar importers (KSB, 2010). However, in accordance with the Sugar Act of 2001 which has since been repealed Kenya had an extra and a special tax called SDL that was only and specifically charged on sugar (GOK, 2019). According to KSB (2010) in 1992 the government introduced SDL of 7% on locally manufactured and even imported sugar as a revolving fund to finance development of the sugar subsector but reduced it to 4% in 2007.

It was meant for funding of sugarcane development, factory reHabilitation, roads and infrastructure, R and D and for KSB administration and was levied on both domestic and imported sugar (KSB, 2010). However, during the financial budget of 2009/2010 SDL was degazetted by the finance minister. Although this was procedurally in line with Section 77 of the Public Finance Management Act (PFMA) which empowers the cabinet secretary in-charge of finance to waive a national tax, fee or charge imposed by the national government it seriously threatened the sugar industry (KSB 2010). SDL grew and became the single largest funding for the sugar; therefore, its de-gazettement negatively affected the subsector (GOK, 2019). In 2002, the government introduced 16% VAT on transportation increasing the overall cost of production as this is eventually passed to the farmers (GOK, 2019).

The Kenya Constitution of 2010 contains Tax Procedures Acts particularly the tax laws Amendment Act of 2018 with CAP 470 for Income Tax, CAP 476 for Value Added Tax and CAP 480 for Stamp Duty (Global Tax Alert, 2018). However, little has been done to form and implement policies that can widen the tax base due to increase in international tax competition (GOK, 2019). In terms of sugar importation, Kenya as a member of COMESA is exposed to relevant taxes and at the same time excempted from others as per the tax procedures of the COMESA protocol (Global Tax Alert, 2018). Any imported sugar originating from member states is not subjected to customer duty like that from non- member states although a value added tax of 16% is charged on each (Styhre, 2015). According to KSB (2010) as from 2011, the tax regime of imported sugar was as in Table 2.1.

Table 2.1: Taxation of sugar imported from COMESA market to Kenya

Specific Tax	Members				Non-Members			
	Mill White Sugar	Brown Sugar	Raw Sugar	Industrial Sugar	Mill White Sugar	Brown Sugar	Raw Sugar	Industrial Sugar
Customs Duty	0	0	0	0	100	100	100	100
VAT	16	16	16	16	16	16	16	16
SDL	7	7	7	7	7	7	7	7
Total Tax	**23**	**23**	**23**	**23**	**123**	**123**	**123**	**123**

Source: KSB (2013).

2.12 Disputes in Kenya's sugar Sub-Sector; an Overview

In Kenya, the sugar sub-sector has always been contentious and controversial due to disputes originating from legislative limitations as most government interventions meant to streamline the sub-sector are received with reservations (KNA, 2014). In fact from 1990 the industry is characterized by strikes, shutdowns and political name calling in and out of parliament (KNA, 2015; COMESA, 2015).According to KNA (2014) government's failure or delay to draw and gazette policies from the parliamentary acts have increased disputes in the subsector because different players in the industry are circumstantially engaging different policy options. The policy options under dispute include contractual versus non–contractual production, de-zoning (oligopsony) versus zoning (monopoly) of production areas, privatization versus public ownership of millers, poaching versus side selling, liberalization versus restriction of markets, inclusion versus exclusion of millers in sugar importation plus exclusion and versus inclusion of county governments in sugar and sugarcane matters (GOK, 2019).

At same time farmers continuously blame the millers for exploitative terms of engagement alongside poor and delayed payments among other issues (Odek *et al.,* 2003). On the contrary sugar millers have been accused of helding the view that sugarcane farming is a business on their part and not for the farmers and yet the Sugar Act No 1 of 2001 although now repealed, specifically Article 40 specifies the farmers as

the owners (KNA, 2014). In a report to the Sugar parliamentary committee in 2014, the management of MSC observed that due to policy limitations there is no fair competition in the subsector an issue that causes numerous conflicts in the sub sector (KNA, 2014). Sugarcane scarcity has generated several claims and counter claims about sugarcane poaching (KSB, 2012). In 2014 report to KNA, NSC indicated that WKSC was poaching sugarcane contracted by Nzoia, Mumias and Butali while according to WKSC; sugarcane poaching emerged when BSM was controversially licensed and started sourcing for sugar within its zone.

In the same forum KSB confirmed that WKSC was the main sugarcane poacher in the Western Kenya Sugarbelt while WKSC denied as Butali Sugar Mills (BSM) attributed the vice to too many weighbridges (KNA, 2014). According to BSM the industry regulator should come up with regulations in respect of contractual obligations of farmers, respective millers and poachers while NSC had instituted court proceedings against WKSC in 2012 on the matter of sugarcane poaching (KNA, 2014). This is in addition to several Court Litigations. For example, High Court Petition No. 187 of 2016 between the County Government of Bungoma and four others versus Privatization Commission of Kenya and another before the law court in Bungoma and the High Court Juridical Review No. 3 of 2013 between the Republic versus KSB and WKSC Limited as ex-parte before the law court in Kakamega (GOK, 2019). Similarly, WKSC took legal action against the Ministry of Agriculture, KSB and BSM over the legality of licensing BSM within its 40 km operating band (KNA, 2014).In line with this, several stakeholders have accused the government of failure or lack of enforcement of the existing legislations although on the contrary, Kenya police have severally arrested and prosecuted several suspects with respect to sugar smuggling but the courts often release them due to legislative limitations (KNA, 2014).

Millers have several complaints against the state specifically over undue and excessive interference, over taxation, weak corporate governance and failure to develop transport infrastructure while the government blames them for failure to deliver taxes on time (Odek *et al.*, 2003). They have also blamed the government for excessive influx of cheap imports for example NSC had severally lobbied the government not to allow cheap sugar into the country because it affects sales and eventually payment to farmers (KNA, 2014). Within the COMESA protocol the Kenya Government accuses some of the member

states like Egypt of capitalizing on the COMESA Rules of Origin (ROO) to dump sugar from the rest of the open world into Kenyan market (KACC, 2010). For example, according to statistics, 57% of the sugar imported to Kenya between 2005 and 2011 originated from Egypt and yet just like Kenya, Egypt is a net sugar importer (GOK, 2009).

Conversely, COMESA member states that are sugar importers accuse Kenya of blocking full utilization of the COMESA quota due to non-tariff barriers (NTB) like clearing fees and other informal payments that allow blocking of sugar imports discretionally causing disputes between Kenya and the COMESA partners (Monroy *et al.,* 2012).Additionally, the condition of pre- import approvals to importers before issuance of import licenses for shipment of the specified consignments makes most COMESA member states to complain about the bureaucracy of sugar importation (COMESA, 2013; Kenya Investment Authority; KIA, 2012). In Kenya, the sugar subsector experiences several distortions specifically tariffs policy, non-tariff barriers, uncompetitive behavior by millers and state interference (World Bank Group, 2015). The problems of the sugar subsector reflect serious policy flaws and inadequacy of legislations. The chaotic state of the sugar industry points at selective implementation and lack of enforcement of the existing legislations (KNA, 2014).

Even though this empirical review articulates the magnitude and intensity of disputes in the sugar sub-sector, it does not provide evidence for any causal relationships between the existing policies and the disputes or any justification for the co-existence of the disputes and the policies since ideally policies should automatically clear disputes.

2.13 Governance Issues Versus Performance of Kenya's domestic Sugar Industry

In Kenya's sugar industry weak governance structures, overlapping regulations, opaque board nomination processes and fraudulent transactions lead to inefficiency (Otieno, 2009). The situation is more acute in public sugar mills. According to USDA (2012), the sugar sub-sector is a victim of weak governance, gross mismanagement, insufficient incentives and excessive political interference especially in matters of sugar importation relative to agreements with regional and global economic partners (Otieno, 2009).

Kenya's sugarcane value chain is ailing from governance constrains worsened by excessive government interference (COMESA, 2015; Odek *et al.,* 2003). The main challenge for Kenya's sugar industry is how to strategically, manage the various stakeholders in the value chain (GOK, 2019). The sub-sector further suffers political interference during appointment of the managers of public mills leading to lack of professionalism and accountability in the Boards of Management (KESREF, 2012). This is majorly due to policy issues that also cause uncoordinated and irrational engagement of key institutions like SD, KESREF now KALRO-SRI, KESGA, SUPAC, SDG and millers besides poor organization of out grower institutions exuberated by pressure from World trade regimes (COMESA, 2012).

A major challenge for public mills is poor governance characterized by resource mismanagement, blotted workforce, dysfunctional organization structure and non-adherence to public procurement laws. In fact, even the boards of directors have been politicized leading to engagement of inexperienced persons (GOK, 2019). Additionally, in Kenya, devolution arose out of the need to limit the powers of the executive by devolving some powers to the counties in order to ensure equitable resource distribution and efficiency in service delivery (Kilelo *et al.,* 2015). Kenya's sugar industry differs significantly from the majority of its counterparts in the world because practically Kenya is both a producer and an importer of sugar (GOK, 2007). This position presents governance challenges especially with respect to protection given the high costs of domestic production (Kenya National Bureau of Statistics; KNBS, 2007).

The sugar subsector is performing poorly due to irrational implementation of policy, distorted import policy and excessive political interference. Another factor on the list of all challenges facing the industry is bureaucracy (Njeru, 2016). Further to this, the policy for sugar production in Kenya Has made the locally produced sugar very expensive but still failed to enable satisfaction of sugar demand (KNBS, 2007). This had created a situation where the survival of the domestic market depends on protection measures. However, the policies that aim at shielding the domestic industry from competition keep Kenyan sugar prices considerable above the world prices at the expense of the consumers (KSB, 2010). Restrictive trade policies were not only depriving families of welfare gains but also disrupting incentives for increased efficiency (Chisianga *et al.,* 2014).

The subsector also suffers from excessive political interference especially in matters of sugar importation and agreements with regional and global economic partners as political elites continually focus on political and economic gains while disregarding the agricultural implications of policies ((KSB, 2010). Connivance occurs between the Ministry of Agriculture, KSB now AFA-SD and Kenya Revenue Authority (KRA) to instigate artificial sugar shortages for the benefit of sugar cartels in addition to influx of illegal and un-accustomed sugar (KACC, 2010). Consistency of policy recommendations to domestic production and marketing is fundamental in successful farming (Benson *et al.,* 2008). However, the Kenya government just like many African governments tends to promote and support policies selectively such as infrastructure development and debt waivers in coffee and tea growing areas and not in sugarcane farming areas without exposing the motives behind the policy action and the limited political will (FAO, 2016). The state of the sugar industry points at selective implementation and limited enforcement of most the existing legislations (KNA, 2014).

Although rich in content this empirical review indicates that so far information regarding the extent to which governance challenges in Kenya's sugar subsector are associated with policy issues is yet to be established.

2.14 Dynamics of Public and Private Sugar Mills in Kenya

During the colonial era Kenya's sugar industry was dominated by the private sector in fact Miwani the first sugar factory was owned by the Collies from India and by then sugarcane farming was a preserve of Indians and whites (Wanyande, 2001). However, after independence the government started playing a central role by taking over the ownership and control of sugar companies (KSB, 2010). The industry grew and by 2013 it comprised of public millers like NSC, private millers like WKSC and others under Public Private Partnerships (PPP) (GOK, 2019). As of now the industry consists of 14 mills, nine of which are private and five are either public or under shareholding (KNA, 2015, Privatization Commission of Kenya; PCK, 2015).

In the early years of establishment, the industry made substantial contribution to the substitution strategy and was the third largest agricultural commodity after tea and coffee because it had the support from the political elites of the time (KSB, 2010). The support

also enabled increase in government shareholding such that by 2001, the government had a 49% stake in Miwani Sugar Company as the rest belonged to Vanessa Associates (World Bank, 2013). By 2007, the government owned a vast majority of the sugar industry with the exception of WKSC (Njeru, 2016).

From the onset of market liberalization in accordance with the Structural Adjustment Programmes (SAP) of the Worldbank, the government changed public policy to encourage private sugar production as it started decreasing its shareholding in the industry (Njeru, 2016). This attracted private investment and so far nine private owned mills have been established (GOK, 2019). As a result, the sugarcane farming model of Kenya features both public and private millers like WKSC.

The development of public milling services was mainly undertaken between the 1960s and 1970s specifically Muhoroni in 1966 with a rated capacity of 1200 tons of cane per hectare, Chemelil Sugar Company in 1968 with a rated capacity of 3,000 tons, MSC in 1973 with a rated capacity of 2,000 tons and NSC in 1978 with a rated capacity of 2,000 tons and South Nyanza in 1979 (KSB, 2010). For the private milling the development trend involved WKSC in 1981, Soin Sugar Factory in 2006, Kibos Sugar and Allied Industries in 2007, Butali in 2011, Trans Mara Sugar in 2011 and Sukari Industries in 2012 (GOK, 2017). A comparison of the trends revealed that most private millers emerged after the state stopped developing new mills (Ellis & Singh, 2010).

By the time of the study public mills were directly responsible for 37% of domestic production in addition to non-controlling shares in some private millers on Public Private Partnership (PPP) (GOK, 2019; Wachira, 2014). The active public mills were Chemelil, Nzoia, and Sony while Miwani and Muhoroni were under receivership (KNA, 2015). The public mills were technically insolvent because their liabilities exceed assets (KSB, 2012). Meanwhile Muhoroni and Miwani sugar companies had remained under receivership for long (GOK, 2019). According to Monroy *et al* (2013) there are significant differences between private and public millers in terms of management therefore countries dominated by private millers are performing better. In Kenya, private millers are more efficient and often pay more competitive prices while the state-owned mills under-perform in terms of manufacturing, competitiveness and production costs (World Bank, 2013). West Kenya, Butali and Kibos which are private millers are operating at the highest capacity in the country (Kamau, 2015). However, on the average

the sugar conversion rates in Kenya are poor when compared with other COMESA member states (COMESA, 2015).

State controlled millers were 59 billion shillings in debt, experiencing managerial inefficiency, patriotism and corruption (Odera, 2014). According to GOK (2019) unlike private mills, the public mills had unique challenges specifically high debt portfolio, lack of working capital, ageing equipment, obsolete technology, governance issues, and inability to pay farmers and employee in time, low efficiency and high cost of production. On the contrary private mills are relatively more efficient and this is one of the drivers of the privatization strategy (Kirimi *et al.*, 2011).

Public mills are performing far below projection and are affected by fraudulent transactions, opaque management processes and excessive government interference (Atieno, 2009). At the same time, inefficient operations due to factory mismanagement are more pronounced in the state owned than private mills (KSB, 2010).

Although rich in content, this empirical review does not indicate the extent to which policy influences revival of sugarcane farming through public or private mills separately or jointly and further to what extent policy is responsible for the differences in performance of the public and private mills in Kenya or the extent to which the Sugar subsector is under opportunists.

2.15 Kenya's sugar Industry; Regional and Global Partnerships

When Kenya's sugar subsector was perceived as non-performing, the Waruhiu Commission was formed to pursue for solutions to the issue and it recommended adoption of World Bank intervention (GOK, 1979). Subsequently, in 1992 the World Bank introduced Structural Adjustment Programs (SAPS) that marked the onset of the liberalization period which was associated with market reforms (GOK, 2019: Wanyande, 2001). From this time, millers started marketing their own sugar and the domestic market was opened to cheaper sugar from the import market specifically EAC and COMESA (GOK, 2019). This is contrary to the period prior to 1992 when the Kenya Government controlled the marketing of sugar in the country through the Kenya National Trading Corporation (KNTC) with regard to regulation of producer and consumer prices together with distribution margins up to the retail level (SUCAM, 2003). The main purpose of SAP was to remove distortions that were blocking the emergence of functional markets in developing countries (Wanyande, 2001). According to Innes (2010), liberalization of

the sugar market was implemented through removal of price controls and tariffs that protected the domestic sugar market and this led to increase in sugar importation from COMESA Region.

Liberalization targeted free trade aimed at promoting the economic development and increasing of employment opportunities for the countries under focus (Njeru, 2015). However, liberalization of Kenya's sugar market under the COMESA and WTO protocols resulted in an increase in trade and increase in competition against the local industry rather than productivity (Netondo *et al.*, 2010). This was worsened by unregulated importation and illegal influx of cheap sugar from outside (SUCAM, 2003). According to Gertz (2007), market liberalization targeted competitiveness and privatization of the industry. However, the accruing benefits of privatization did not cascade down to the farmers but were instead captured by the political elites and top government bureaucrats.

Partially due to liberalization as per the SAP, the Sugar Act No 1 of 2001 aimed at revival of the industry was enacted. This was in addition to the policy framework paper on "Economic Reforms" for the 1996-1998 which indicates that since mid-1993, the government eliminated foreign exchange controls, removed all trade restrictions and reduced tariff rates, besides abolishing all price controls (Innes, 2010). In the area of domestic market liberalization, the government has undertaken reforms to ease restrictions on business entry and operations.

In Africa, countries engage in regional integration to promote economic development especially in the perspective of industrialization (Agricultural Trade Policy Advisory Forum for Eastern and Southern Africa: ATPAF-ESA, 2011). In line with this, COMESA protocol was conceived in 1960 and developed into Preferential Trade Area for Eastern and southern Africa in 1981 before transformation to common market status trading on reduced tariff rates as from 1994 (COMESA, 2015; COMESA, 2013;). So far COMESA comprises of 19 member states and in the period between 2003 and 2011 its combined GDP was over USD 588 billion an equivalent of 32.7% of Africa's GDP for the period (COMESA, 2015). The goal of COMESA is to ensure regional food self-sufficiency through specific targets particularly how to increase livestock, fisheries and forestry production, enhance crop production, and increase exports within and outside the

common market besides facilitation of access to inputs for Agro-based industries (COMESA, 2010).

Its vision is "establishment of a fully integrated internationally competitive regional community within which there is economic prosperity and high living standards for its people' while its mission is ''to endeavor to achieve sustainable social and economic progress in all member states through increased co-operation and interaction '' (COMESA, 2010). Article 10 of the COMESA treaty which was signed in November 1993 empowers its council of ministers to enact regulations and directives and decisions that bind Member states (COMESA, 2013). The same are then gazetted by COMESA secretariat and member states are expected to transpose them and establish institutional structures for implementation and co-ordination (GIZ, 2015).

There are a number of obstacles to the transposition and implementation of the protocol, specifically technical, institutional, financial and political constraineds facing member state governments inclusive of lack of effective monitoring and evaluation mechanism at the national and regional levels and lack of legally binding mechanism to enforce the implementation by the member states (COMESA, 2012). A significant institutional constrained is the fact that in most member states, the structures and co-coordinating processes are too weak which indicates that implementation of regional integration commitments is not a political priority of the country or at least does not receive sufficient attention at the highest political level for government dedication and action (GIZ, 2015). Some member states also face technical constraineds due to lack of skills and knowledge for transposition and even implementation of some regional commitments and yet effectiveness and timeless of commitments is related to the technical capacity apart from financial and political constraints (COMESA, 2012).

In most COMESA member states political constrain was reflected in low priority given to regional issues in national development plans and budgets. This is because the regional issues tend to attract the lesser political rewards for implementing regional instead of national agenda and the general logic to prioritize economic concerns of national level stakeholders (COMESA, 2012). The policy guidelines of COMESA include regional competition policy and custom's management policy and common external tariff (CET) (Godfrey *et al.,* 2015). Therefore, member states are expected to

eliminate import tariffs so as to facilitate a free and friendly business environment (COMESA, 2015). Further to this, the COMESA protocol on the Rules of Origin (ROO) sets out the originating criteria for goods traded under the protocol (Gerald, 2015).

However, in spite of this, many member states still suffer from the limitations of domestic production, underdeveloped markets and other economic infrastructures (COMESA, 2010). The objectives of COMESA protocol are trade liberalization, promotion of private sector, easing administrative processes to allow free movement of goods and harmonization of monetary and economic policies (Gerald, 2015). The treaty provides for cooperation in staple foods and export of agricultural commodities inclusive of the key commitments of allocation of at least 10 per cent of each member states' national budget to the agricultural sector (Styhre, 2015). The key areas of co-operation are harmonization of agricultural policies, research extension and information exchange agro-meteorology, production and supply of food (ATPAF-ESA, 2011). Pursuant to this, COMESA has developed and established programmes in agriculture, transport and industrial development guided by different time horizons (Gerald, 2015). The treaty specifically provides for cooperation in staple foods and export of agricultural commodities according to guidelines about the ROO which sets out the originating criteria for goods traded in the trading arrangement (Gerald, 2015, Styhre, 2015).

Generally, COMESA policies and programmes are supposed to be implemented at the member state level implying that member states have a final say in setting the COMESA agenda and even in implementation (Njeru, 2016). Therefore, it is necessary that the COMESA policy instruments to be operationalized through each member state's domestic laws, policy instruments and action plans (COMESA secretariat, 2013). However, on the contrary, member states participate in COMESA to pursue different strategic goals as a mechanism of achieving national objectives (Lisuola, 2015).

COMESA market sought to carve a niche as a regional economic community that primarily focuses on trade centered agenda driven by a good and long-term economic rationale of resource pooling (COMESA, 2010). On the contrary, evaluation against its target of becoming a customs union by 2012 the outcome indicates non-performance (African Development Bank, 2013). Performance of COMESA has been hampered by

uneven implementation of regional agreements by the Member states (Ligami, 2015, COMESA, 2010). Programme implementation by COMESA member states does not satisfy the preset timelines and policy commitments. In fact, the best performing member states are only implementing 60-70% of the targets (COMESA, 2012).

Although by 2010, member states had made significant progress in implementing the COMESA decisions, instruments and protocol, the implementation was not yet fully matched or in accordance with the timelines and commitments as per the policy expectations (COMESA, 2010). However, without implementation the regional integration agenda fails to make any significant contribution as the policies and programmes only remain on paper (COMESA, 2018; COMESA, 2010). The critical issue is that there are significant disparities between the COMESA member states in terms of resource empowerment and quality of governance that affect the implementation of its agenda (Ligami, 2015).

Further according to Ligami (2015) for most member states the critical challenge is the gap between what is economically desirable and politically feasible. Additionally, COMESA member states have different priorities in terms of regional integration. According to COMESA (2010) member states participate in COMESA to pursue particular and yet different strategic goals as a mechanism of achieving their national aspirations or objectives. This was further compounded by the fact that COMESA is member driven thereby fulfillment of its agenda, programmes and policies depends on the interests and decisions of the Member states (COMESA, 2012). In spite of this, COMESA Has made considerable progress on certain elements of regional integration agenda given that its member states have different interests and challenges (Ligami, 2015)

On the overall Kenya is a significant beneficiary of the COMESA protocol achievements because up to 37% of the exports to the COMESA market particularly tea and industrial products are of Kenyan origin (COMESA, 2010). When viewed in this issue this empirical review indicates that so far hardly any study has established why Kenya's sugar subsector is disadvantaged on the COMESA market.

2.16 Performance of Kenya's Sugar Subsector in the COMESA market

In the existing economic dispensation, most economists perceived free trade as beneficial for all stakeholders in the long run (Njeru, 2015). This is the genesis of regional integration which is an intervention that is designed to promote and protect economic development in the perspective of economic integration (Styhre, 2015). Pursuant to this, many states switched from domestic economic systems in which the state was heavily involved in production, distribution and marketing to systems that are inclined to common market perspectives (Ligami, 2015). According to Njeru, 2015 virtually all countries in the world are striving to increase trade beyond national boundaries but cautiously confining and protecting themselves through regionalism.

Pursuant to the benefits of economic integration and regionalism, Kenya is a member of the WTO with access to more than 90 percent of the world markets with Most Favored Nation (MFN) treatment and a signatory to multilateral trade agreements like the African Growth and Opportunity Act (AGOA) and the African Caribbean and Pacific Group of States-European Union (ACP-EU) trade agreement which gives it non-reciprocal market access to the EU (GOK, 2019: KIA, 2012). According to Kenya Vision 2030 (GOK, 2007) Kenya is also an exporting member of the International Sugar Organization (ISO) and Intergovernmental Authority on Development (IGAD).

In Africa economic integration led to emergence of the COMESA protocol of which Kenya is a signatory among others (Styhre, 2015). This is in consistent with the continental objectives of economic partnerships for development as per the action plan of the Organization of African Unity (Lisulo 2015). The COMESA protocol is the second largest of the eight regional economic communities in Africa (Styhre, 2015). So far it comprises of 19 member states inclusive of Kenya, Zimbabwe, Rwanda, Sudan, Swaziland, Uganda, Seychelles, Burundi, Comoros and the Republic of Congo while Tanzania withdrew (Styhre, 2015).

This is in addition to the membership of the East African Community (EAC) which comprises of Kenya, Tanzania, Uganda, Rwanda and Burundi and aims to achieve cooperation and regional Harmonization on issues related to labor movement, work permits, education, standardization, customs, rules of origin (ROO) and common tariff nomenclature (GOK, 2007). Evidently, Kenya is increasing its partnerships further as

signified by the recent bilateral agreement signed on 11th April 2019 with Mauritius and the ongoing preparations to participate in the upcoming African Continent Free Trade Agreement (ACFTA) and in the African Union Agenda 2063 (GOK, 2019). However, in spite of the benefits of regional integration some issue s of the domestic industry may suffer due to illegal importation and dumping of commodities hence the need for protective interventions (Lisulo, 2015).

Protectionism is a political and economic intervention that involves restraining or limiting trade between nations through tariffs, restrictive quotas, enactment of anti-dumping laws and a variety of other restrictive government regulations designed to discourage cheaper imports and dumping in an attempt to protect domestic industries from foreign -takeover and competition (Njeru, 2015; Styhre ,2015). All nations across the world practice some amount of protectionism through regional integration with the agriculture sector being the most focused (COMESA, 2010). The political nature of sugar as a commodity provides opportunities for economic integration to influence its prices across the world (COMESA, 2010). In the context of economic integration, the specific price determining factors are the numerous international sugar agreements like WTO that provide for protection and trading in the commodity, Free Trade Arrangements in regional trading blocs like EAC, SADC and COMESA and then the bilateral commitments of individual countries (COMESA, 2010; GOK, 2007).

The international sugar market indirectly influences domestic sugar industry through regional economic policies (GOK, 2019). The influence is significant in countries that subsidize farm inputs to lower production costs and yet the regional policy allows for competition with the locally produced sugar (Njeru, 2016). In 2006, Sserunkuma and Kimara noted that the EU ruins the livelihoods of millions of poor farmers in Africa by dumping products that have unfair edge or advantage due to subsidization. Similarly, in COMESA region, Kenya is a prime destination for sugar and sugarbased products since it has higher consumer prices (GOK, 2019; Njeru, 2016).

Most of the sugar producing countries in the world protect their industries from the lower cost producers using subsidies, tax interventions and special policies that are designed to insulate domestic markets from dumping (KSB, 2003). Commodity prices in the integrated markets are determined by these agreements instead of supply and demand

forces (COMESA, 2018). However, Kenya's sugar industry is facing challenges from regional and global markets specifically relative to protectionism as a barrier to trade because it is both a producer and an importer (GOK, 2007).

Policies that aim at shielding the domestic industry from competition keep Kenyan sugar prices considerably above world class prices at the expense of the consumers (KSB, 2010). Therefore, the restrictive trade policies were not only depriving farmers of welfare gains but also disrupting incentives for increased efficiency in domestic industry (Chisianga *et al.*, 2014). In terms of protection the sugar sub sector is at crossroads because Kenya is both a producer and an importer (GOK, 2007). This position calls for special protection measures especially given the high costs of domestic production (Njeru, 2015). However, this industry is one of the most protected in the country because Kenya Has formidable sugar trade barriers including exceptionally high tariff rates and non-tariff barriers like road blocks, local import bans, bureaucracy and prohibitive administrative charges such that even liberalization within COMESA market Has been historically restricted (Chisianga *et al.*, 2014: KSB, 2010). Additionally, Kenya has continued to receive waivers from common market partners specifically the COMESA safeguards that have been extended severally (GOK, 2019).

Kenya is a signatory to COMESA protocol which is an economic bloc or FTA of 19 member states (COMESA, 2015). As a signatory Kenya is bound by the provisions the protocol that allow duty and quota-free access of sugar export from the COMESA FTA countries (COMESA, 2010). Eleven of these states specifically Kenya, Uganda, Madagascar, Malawi, Zambia, Zimbabwe, Ethiopia, Egypt, Sudan, Mauritius and Swaziland are competitors in sugar production though only six namely Malawi, Egypt, Swaziland, Mauritius, Zambia and Zimbabwe are significant exporters (Kinuthia, 2015).

Significant variations exist in the levels of sugar production across the member states for example in 2012 the contributions to the regional production were Egypt (33%), Sudan (11%), Swaziland 10%, Kenya 8%, Zimbabwe 8%, Zambia7% Mauritius 7%, Malawi 5% while Madagascar, Congo and Burundi produced less than 1% each (COMESA 2013). In 2019, the net sugar exporting COMESA member states were Malawi, Mauritius, Eswatin, Zambia and Zimbabwe (COMESA, 2019). So far, Kenya's sugar subsector is uncompetitive on the COMESA market (COMESA, 2018). Stakeholders in

the industry Have engaged a range of policy initiatives towards competitiveness but the outcome is persistently low (GOK, 2019 2001). Owiye *et al* (2016) and Odera (2014) identified high production costs as the major cause for Kenya's uncompetiveness.

The cost of sugar production in Kenya approximately 870 USD per metre which is twice the average cost of production in other COMESA countries and was particularly very high when compared to Zimbabwe (300 USD), Malawi (350 USD), Swaziland (340 USD), Sudan (340 USD), and Zambia (340 USD), (KNA, 2015; USDA 2014; FAO, 2013). The Kenya sugar industry was facing technology capability challenges resulting in capacity underutilization, lack of regular maintenance, poor transport infrastructure and weak corporate governance making it more uncompetitive in the COMESA market (COMESA, 2010).

Odera (2014) identified low productivity as the key factor behind Kenya's low competitiveness. According to FAO (2012) sugarcane productivity had gone down in Kenya and up in the competing COMESA member states. Farms which were producing around 130 tons per hectare in the 1980 dropped to 80 tons by 2010 (FAO, 2012). However, in spite of the drop the sugar industry has remained critical in Kenya's economy (Otieno, 2009). The combination of high production costs and low productivity result in high farm gate and ex-factory prices which are in fact highest in Kenya (KSB, 2012). This is why Kenya's sugar is unable to compete with the cheaper sugar from other COMESA member states (FECSSK, 2016). The industry was facing challenges of factory maintenance and poor transport infrastructure which made it uncompetitive in the COMESA region (Sugar Industry Strategic Plan for 2010-2014). Apart from this, the sugarcane pricing mechanism is based on weight and not quality and therefore does not promote development of sugar quality and subsequently industrial competitiveness (KSB, 2012). In the period between 1993 and 2000, Kenya's sugar importation averaged 26% of domestic consumption but from January 2001 it was flooded with cheaper imports from COMESA member states because the domestic market was opened to foreign competition within the COMESA Free Trade Area (FTA) by dropping the tariff to zero for member states (Hoffmann *et al.*, 2013).

In response, the Kenya Government negotiated a delay in the free trade of sugar by invoking the provisions of the safeguard clause (Article 61) of the COMESA protocol (Sean, 2016). This was undertaken in the struggle to protect and revive the domestic

sugar sub-sector (GOK, 2019). COMESA granted the safeguard to Kenya on condition that Kenya gradually decreases its quota tariff until it reaches and is sustained at 0%, shift from paying farmers based on weight to payment based on sucrose content of sugarcane, improves infrastructure particularly roads and bridges in the sugar growing areas, privatizes the state-owned mills and through research generate fresh early maturing and high sucrose content sugarcane varieties and ensure adoption of the early maturing varieties (Trindale,2016). Kenya is conditioned to achieve and adhere to these standards or lose the safeguard measures and to the disadvantage of domestic producers (COMESA, 2018). On the basis of the safeguard measures, Kenya sets an import quota to restrict sugar imports from other COMESA member states under the guise of allowing its un-competitive industry to become competitive (KACC, 2010). On the domestic scene, the import quota essentially means that locally produced sugar which in this case is non-quota in nature retails at a price that is above the international market price (COMESA, 2015).

The COMESA Council of Ministers further decided that the safeguards will be reviewed and renewed after a period of one-year subject to the progress towards fulfillment of the above conditions (Gerald, 2015).On the basis of these circumstances, on several occasions COMESA trade and customs committee accepted to extent the safeguard after due assessment of the level of progress based on evaluative studies (Gerald, 2015: COMESA, 2015).The repeated extension of safeguard measures with variations in quota size and the COMESA out-of-Quota tariff was based on the judgment of business experts and agriculturalists relative to the prevailing challenges (Word Press, 2019, Cotty & Jayne, 2012). According to the COMESA Council of Ministers (2015) the challenges include political interference in appointment of managers, lack of accountability in miller's management boards, high cost of accountability and occasionally non-existent road networks and lack of suitable transport, poor timing of harvesting, and high debt burden on the part of the millers, over-reliance on rain fed production and low sucrose content due to poor seedcane varieties.

The extension beginning from 2015 was set on a quota of 350,000 metric tons (COMESA, 2012). This occurred as the COMESA out-of-quota tariff progressively dropped (Cotty & Jayne, 2012). However, the COMESA Quota has generally been under-utilized due to non-tariff barriers (NTB) like clearing fees and other informal

payments that allow discretionally blocking of sugar imports occasionally causing disputes between Kenya and the COMESA partners (Monroy *et al.*, 2012). This extension of the sugar safeguard provided opportunities for evaluation of the readiness of the Kenyan industry to operate without the safeguards in terms of the barriers that have made Kenya's sugar industry non-competitive (COMESA, 2012). However, the safeguards are still upheld which indicates that Kenya is yet to fulfill the preset conditions (GOK, 2019). One of the hurdles is privatization of state-owned sugar mills particularly Nzoia, Chemelil, Sony, Miwani and Muhoroni yet these state-owned millers are saddled by a debt burden of 100 billion Kenya shillings (GOK, 2019).

With all these challenges, business experts and agriculturalists would excuse Kenya for the recurrent request for safeguard extension for its sugar (COMESA, 2012). In fact, in spite of significant benefits from the protocol particularly the fact that over 37 percent of all types of exports to the COMESA market, specifically tea and coffee alongside other value chains like rice and wheat originate from Kenya, to a majority of the Kenyans, the sugar value chain is the lens through which COMESA is viewed and perceived because the protocol is a threat to its survival (COMESA, 2012; Omondi, 2013).

However, policies aimed at shielding the domestic industry from competition keep Kenyan sugar prices considerably above world market prices at the expense of the consumers (KSB, 2010). Therefore, the restrictive trade policies were not only depriving famers of welfare gains but also disrupting incentives for increased efficiency in the domestic industry (Chisianga *et al.*, 2014). Therefore, questions persist specifically about how and how long Kenya will maintain the protective measures and further why sugarcane production has kept declining in spite of these protectionist policies and whether these policies can enable revival of sugarcane to the once vibrant and lucrative status. .

2.17 Challenges of State Integration into the COMESA Market ; Kenya

In Kenya, sugarcane is an important player in terms of promoting regional economic growth as reflected in the COMESA protocol. The political nature of sugar as a commodity provoked Kenya's membership of WTO and several free trade arrangements like EAC and COMESA and several bilateral commitments (COMESA, 2010; GOK, 2007). Each commitment brought in new policies. Eventually there is confusion in the

domestic sugar market due to non- alignment of the many policy (UN, 2017). In spite of the alternative economic benefits, particularly the fact that the COMESA protocol provides the market for up to 70% of Kenya agricultural export products, the protocol is a threat to the survival of Kenya's sugar industry (Ligami, 2015). In the existing economic dispensation, most economists perceive economic integration as the route to success but to Kenya's sugar subsector this has emerged has a policy challenge because Article 2 of the Constitution of Kenya 2010 recognizes the policy frameworks of the linked economic blocs as part of the national legislation without due regard to alignment to the domestic market. Due to this, in the COMESA region, Kenya is a prime destination for sugar and sugar products because of high consumer prices (Njeru, 2016). This is why some of the countries within the COMESA protocol are capitalizing on the rules of origin as provided for under the COMESA protocol to export sugar to Kenya from non-COMESA member states (ATPAF-ESA, 2011**).**

Uptake of World Bank and other external interventions without due consideration is another policy challenge for Kenya's sugar subsector (Omolo, 2005). For example, in 1991 market liberalization was undertaken according to World Bank recommendations and it led to removal of price controls, opening of borders to promote international trade in addition to privatization of state -run agencies (Aseto & Okelo, 1997). However, the sugar industry experienced a crisis in the late nineties due to the market liberalization (GOK, 2019).

According to Owiye *et al* (2016) Kenya's sugar industry presents a show case of the adverse repercussions of economic liberalization. The challenges of sugarcane farming in Kenya include trade liberalization under the COMESA and WTO protocols (SUCAM, 2003). Market liberalization under the WTO and COMESA protocols resulted in an increase in trade rather than productivity besides increase in competition against the domestic industry (GOK, 2019; Netondo *et al.*, 2010). This was worsened by unregulated importation and illegal flux of cheap sugar from outside (SUCAM, 2003). Even though rich in content, this empirical review does not identify any recommendation for revival of sugarcane farming in Kenya within the economic integration framework**.**

2.18 Rationale of Policy in Operation of Sugar Subsector

Agriculture policies consist of government guidelines for public and private investments in the agriculture sector in terms of resource allocation, revenue collection and input / output pricing (Alila &Atieno, 2006). In 2012, Mbithi observed that agricultural trade policy refers to the guideline or course of action by government or any authority that directs business in agricultural products. This is close to the perception of Anderson (2010) according to whom "policy is a projected programme consisting of desired objectives and the means to achieve them or a guide used to put expectations, mission or decision into action.

Pursuant to the missions of governments, government and private institutions policy interventions in production and marketing of agricultural commodities are common all over the world and have been widely justified through market failures (Cafero, 2003). Additionally, unless subjected to supportive public policies smallholder agriculture is subject to a range of market failures (Birner & Resnick, 2010). In fact, World Bank (1998) indicated that successful growth of agriculture sector depends on the state and its capacity to correct market failure within the sector. This was supported by Rodrick (2000) according to whom for agriculture markets to deliver due benefits they must be supported by government directives and legal institutions.

In the global economy, the rationale of policy in farming and agricultural trade lies in the fact that within individual countries agricultural policies are key determinants of production incentives (Kodituwakku, 2013). According to Collins (2010) the rationale of policy in production is the fact that is a strategic tool for determining direction of services but according to Citizen (2018) the rationale of policy in production was reflected in the fact that non compliance to policy is a precursor to failure. The survival and even growth of a nation's agriculture sector depends on the capacity of the state to correct emerging market failures (World Bank, 1998). According to Brook (2010) government policies are needed to promote long-term development of agriculture-based industries by addressing market failures, ideally by tackling them at the source.

Addition rationale of policy in production economics is the fact that policy provides explanation of why rich industrialized countries subsidize their products while the poor developing countries tax them as trade and exchange rate policies influence production

incentives (Chisianga, 2011). In most countries there is a strong causal relationship between policy environment especially regulatory policy and economic performance (Masinde & Shitsewa, 2013; Jalilian *et al.,* 2006). In general, the factors that contribute to rational of policy in agriculture include economic competitiveness of agriculture, the cultural and political importance attached to family land, the general commercialization of land and the legal issues associated with land (Wall, 1990). According to Sadoulet and Dejanry (1995) policy guides the design of farm subsidies, credit and agricultural trade. Most sugar producing countries in the world protect their industries from the lower cost producers using subsidies, tax interventions and special policies that are designed to insulate domestic markets from dumping (KSB, 2003).

In the International arena, the agricultural markets are heavily distorted with sugar being one of the worst affected (Tyler, 2007). In response most of the large-scale sugar producers intervene in sugar trade through policies that affect international prices while the smallness of the market shares of the other producers limits their interventions from affecting the global markets (Larson & Borell, 2001). The influence of policy is more significant in countries that have policy for subsidization of farm inputs because they lower production costs as a strategy to becoming more competitive in the integrated markets (Njeru, 2016).

In sugar producing, importing and exporting countries sugar policies are important since sugar is an important sub-sector in each nation's economy (Brook, 2010). Sugarcane farming is a commercial or business activity which other businesses requires and depends on while its performance depends on property rights, regulatory institutions besides conflict management institutions like sugar tribunals (Cunningham, 2009; Rodrik, 2000). Government interventions through policies may enable farmers to realize higher productivity at lower costs while negligence of sugar and related policies at national and miller levels contribute to lower productivity and lower profitability (Koditumakku, 2013). According to Lands (2010) for India profitability of sugarcane and sugar production depends on policy interventions. In Sri Lanka sugarcane and sugar price policies have been identified as important instruments in sugar industry (Keethipala (1997). However, high rate of taxes and duties imposed by the government on the sugar industry in Pakistan affects it negatively (Memon & Saeed, 2011).

The sugar value chain which starts from acquisition of seed cane to production of sugarcane and eventually sugar on the consumers' table involves a complex series of transactions involving negotiations, agreements, price comparisons and quality standards all which need policy direction (Birner & Resnick, 2010). In Kenya the rationale for policy considerations in sugarcane farming is manifested in the fact that earlier researchers like Mireri *et al* (2009), Odek *et al* (2003) and Wanyande (2001) attributed the poor performance of the sugar industry to policy issues with regard to mismanagement, corruption and political interference. At the same time, Kenya's sugar industry is dominated by the state and thus its performance is highly dependent on government policies and directives (Ellis & Singh, 2010).

Pursuant to this, in Kenya, the sugar subsector has been at the centre of government policy due to its prominence in the economy as a source of income, employment and food (Mireri *et al.,* 2009). At the same time, Kenya's sugar sub sector particularly requires regulatory policies because Kenya is both a producer and an importer of sugar (GOK, 2007). The critical rationale of policy in Kenya's sugar subsector was reflected in the views of (KNA, 2014). According to the views to save the sugar sub-sector from collapsing, the problems facing farmers need policy and legislative action measures because they reflect policy flaws and inadequacy of legislations. In the views of World Bank (2013) Kenya's sugar industry is only surviving due to high tariff and non- tariff protection. This meant that without the policy the subsector would be extinct hence the rationale of policy.

According to COMESA (2012) Kenya's sugar industry experiences a lot of policy issues specifically court litigations, workforce strikes, corruption and bribery acts. Technically, these issues point to the rationale of policy in the daily operations of the sugar subsector. Additionally, in Kenya sugarcane production is mainly undertaken by small scale farmers and yet according to Birner and Resnick (2010) smallholder agriculture is prone to a range of market failures unless subjected to supportive public policies. Rationale of policy in the Sugar subsector is also reflected in the current confusion in the domestic market due to the fact that Kenya is a signatory to several partnerships whose policies were not aligned (UN, 2017). In fact, the policies of some of the economic partnerships are unfavorable to Kenya's sugar industry (GOK, 2019).

Although this empirical review provides rich content on the rationale of policy in farming, it is limited because so far no study had established why in spite of the presence of policies sugarcane farming in Kenya declined.

2.19 Dynamics of Policies for Sugarcane Farming in Kenya

Kenya's sugar industry is one of the oldest in COMESA region given that sugarcane farming was introduced in the country more than a century ago (Netondo, *et al.,* 2010). The emergence of the sugar industry in Kenya is linked to the settlement of Asian farmers in the country who came to build the Kenya-Uganda Railway in 1902 (GOK, 2017). It was then expanded through investments in sugarcane growing schemes and factories by both government and private sectors (FAO, 2016). The first sugar factory was a private mill set up at Miwani near Kisumu Town in 1922 and then later a second one was established at Ramisi in the former coast province in 1927 (Balongo 2008). Miwani was owned by Indians specifically the Hindoocha family which later became a successful Business family in Kisumu while Ramisi Sugar Mill was owned by the Madhavini Group Intenational of India (Netondo *et al.,* 2010). During the colonial era the sugar industry was dominated by the private sector specifically of the Indian origin and for a long-time sugarcane farming was a preserve of Indians and whites (Wanyande, 2001). The industry was slow to develop such that by 1967 Kenya had only two factories namely Miwani and Ramisi (Oyaya & Ogagul, 1995). However, with the attainment of political independent in 1963 the ownership landscape of the sugar industry changed as the new government converted public mills into parastatals and enabled establishment of more private mills (GOK, 2019).

The new developments included Muhoroni in 1966, Chemalil in 1968, Ramisi in 1973, MSC in 1973, NSC in 1978, South Nyanza sugar company (Sony) in 1979 West Kenya in 1981 (Balongo, 2008) and Butali in 2011 (GOK, 2017). Today, sugar companies are spread throughout the sugarcane growing areas and their establishment was guided by the national objectives for sugarcane and sugar production (KSB, 2012). After independence, the country through its first development plan referred to as "African socialism and its application to planning in Kenya" acquired shares in previously private mills specifically Muhoroni in the 1960s and 95.39% ownership of Chemilil Sugar Company by 1974 (Njeru, 2016). The government also acquired land around Muhoroni

Sugar Company and developed sugar settlement schemes under the Ministry of lands to encourage sugarcane farming but the project failed (Wanyande 2001).

Furthermore, the government through Sessional Paper No 10 of 1965 which was focused on accelerated socio-economic development, promoted indigenous entrepreneurship and foreign investment through joint ventures in sugarcane farming. In response, five addition factories were established in between the 1960s and 1970s specifically. Later, seven more sugar firms specifically West Kenya in 1981, Soin sugar factory in 2006, Kibos Sugar and Allied Industries in 2007, Butali in 2011, Trans Mara Sugar in 2011 and Sukari Industries in 2012 were developed (GOK, 2017). However, the first two and older factories faced sustainability challenges and ceased operations in fact Ramisi sugar factory totally collapsed in 1988, though in 2015 it was revived and renamed Kwale Sugar Company Limited meanwhile Miwani sugar factory was put under receivership (GOK 2017). The ownership structure of Kenya sugar sub-sector as changed such that although by 2010, 70% of the millers were state owned, this has reduced to 50% following the opening up of more private mills (KESREF, 2010). Now, Kenya Has 12 sugar mills including Mumias, Sony, Nzoia, West Kenya Sugar Company, Butali, Kibos, Muhoroni, Chemelil, Soni, Transmara, Sukari and Kwale distributed across the sugarcane producing areas with a milling capacity of 1 million metric tons annually (Monroy *et al.,* 2013).

The industry was once lucrative to farmers, millers and government in terms of income and livelihood support but nowit is facing imminent collapse (SUCAM, 2003). Generally, Kenya's agriculture sector benefitted from a supportive policy environment during the first 20 years of independence because the political elites of the time had strong interests in agriculture (Jayne *et al.,* 2005).

Although rich in content, this empirical review revealed that so far the extent to which each of the many policy reviews so far undertaken in Kenya has encouraged or discouraged development of sugarcane farming in the country is yet to be established and documented.

From inception Kenya's sugar industry has always been directed by policy, (Wanyande 2001). According to Aseto and Okelo (1997) the first and the only policy during the pre-

independence era was the directive that allowed Asians and Whites while excluding Africans from sugarcane farming. Later policy reforms started with Swynnerton Plan of 1954 which encouraged commercial farming by propagating private property rights specifically land registration and subsequently ownership of Land Title Deeds (Wanyande, 2001). This was followed by Sessional Paper No 10 of 1965 about ''African socialism and its application to planning in Kenya'' which sought to Kenyanize the economy by encouraging joint entrepreneurship and specifically allowed entry of Africans into sugarcane farming among other interventions (UN, 2017: Leys, 2009). Other policy interventions included the Trade Licensing Act 1967 and the Import, Export and Essential Supplies Act 1967 (Adams *et al.,* 2011). Immediately after independence, Kenya's agricultural policies were characterized by financial subsidization, low taxation, controlled price mechanisms and public investment in infrastructure (Adam *et al.,* 2011). The KNTC was established with monopoly over sugar matters at a government determined price (Wanyande, 2001). In Kenya, the state has primarily played the direct role of sugarcane production by investing in and operating sugar mills in addition to coordination of the industry stakeholders (Njeru, 2016). To this end, the Government Has spearheaded several policy initiatives specifically the national policy on sugar industry in 2001, Kenya Sugar Strategic Plan (2004–2009), KSB Strategic Plan (2010-2014), Agricultural Sector Development Strategy (2009-2020) and now the strategy on agricultural sector transformation towards sustainable agriculture transformation and food security for all (Ojeara *et al.,* 2017).

Prior to this, in 1994, the government released a paper called the sugar sub-sector restructuring study (SSRS) as a result of a task force (FAO, 2012a). The study proposed among other matters, selling shares in Chemelil, hiring technical consultants and introducing performance-based contracts in public mills specifically in Sony, Muhoroni and Nzoia and most critically privatization of Nzoia and Muhoroni (Njeru, 2016). However, the proposal did not go down well with the farmers who claimed they were not consulted. Furthermore, during that period, the government began liberalizing various markets and privatizing parastatals. However, this was undertaken without any legal or policy framework in place (FAO, 2012a).

In addition, a task force was appointed by the Ministry of Agriculture in March 2003 to look into the problems of the industry specifically poor management, lack of a proper

marketing mechanism and poor infrastructure. On the basis of task force report, a team of stakeholders from the subsector in conjunction with the Ministry of Agriculture developed the Kenya sugar industry Strategic Plan (5-10 years) aimed at revival of the industry towards making it profitable and competitive in regional and global market arenas (Ojeara *et al.*, 2017). Other policy interventions included the Sugar Act No 1 of 2001 and the various sections like Section 4(1) and 4(2) through which specifies or provides for the roles of each industry player inclusive of farmers, out grower organizations and researchers (Otieno, 2009; KESREF 2010; CGD, 2005; KESREF, 2005). Further to this, the Kenya Government Has spearheaded several policy initiatives within the sub-sector (Ojeara *et al.*, 2017). Apart from this, a policy shift occurred making the government to start running state enterprises like public mills in form of parastatals (Ogolla, 2012). However, over time this approach was perceived as non-performing and the Waruhiu Commission of 1990 recommended for World Bank intervention leading to adoption of SAP and liberalization from 1991 (GOK, 1979). Liberalization was aimed at removal of price controls, opening of borders to promote international trade and privatization of state agencies (Aseto & Okelo, 1997). The government also came up with sugar sub-sector restructuring study (SSRS) that introduced performance contracts for managers (Omolo, 2005).

In the late nineties, the industry experienced a crisis which led to enactment of the Sugar Act No 1 of 2001 under the Agriculture Act 318 aimed at its revival (Ogolla, 2012). The objectives of this act were to achieve self-sufficiency in the most cost effective and efficient manner, provide direct and indirect gainful employment for Kenya's growing population, provide raw materials for processing beverages, soft drinks and pharmaceuticals among other products as a contribution towards savings , earning foreign exchange and to promote rural development through direct participation of rural families in sugar producing areas to address rural-urban migration (GOK, 2019). Section 33 of the Act provided for the minister of agriculture to make regulations to give effect to the act (GOK, 2019; Omolo, 2005).

Pursuant to the provision, regulations for sugar importation, export, generation of by-products and for election of the directors of KSB were gazetted in 2008 together with the arbitration and tribunal rules. However, apart from the policy on zoning of the sugar land no other rules were gazetted to guide domestic sugarcane farming, sugar production

or manufacturing and marketing in spite of their criticality (GOK, 2019). In 2012 the sugar act was repealed and replaced in 2013 by the Agriculture and Food Authority Act No. 13 and Crops Act No. 16 as a culmination of the Agricultural sector reforms that began in 2003 with the crops act lumping together all crops inclusive of sugarcane (GOK, 2019). Under section 40 the Crops Act No. 16 of 2013 gives provision for the development of crop-specific regulations, efforts to operationalize the act commenced in 2014 but are yet to materialize. Even though this empirical review presents the sequential changes or profile of Kenya's sugar policies, it indicates that so far the extent to which each policy change influenced sugarcane farming in the country is largely unknown.

2.21 Policy Dynamics and technological Development of Kenya's sugar Industry

In Kenya, the state has primarily played the direct role of sugarcane production by investing in and operating sugar mills in addition to coordination of the industry stakeholders (Njeru, 2016). Prior and immediately after Kenya's independence, the government as the primary stakeholder in the development of sugar industry focused on estate expansion because sugarcane productivity was high since by then soil fertility was a non-issue but production was low because of limited land under sugarcane (GOK, 2019. In fact, a lot of expansion was undertaken courtesy of African Sessional Paper No. 10 of 1965 that was skewed towards Kenyanization of the economy by allowing Africans to engage in sugarcane farming (Wada *et al.,* 2016). However, after several years of engagement sugarcane productivity became a challenge due to monoculture and this shifted state involvement beyond factory establishment to sugarcane development and promotion (Atieno, 2009).

Pursuant to this shift, in 1988 an Inter-Ministerial Committee was commissioned to address the situation and led to the establishment of KESREF in 1998 and its launch in 2001 as the scientific wing of the industry (GOK, 2017; Wada *et al.,* 2016; Otieno, 2009: CGD, 2005}. From then the government started supporting research services focused on optimization of cultivation methods, development of more productive and climate-sensitive sugarcane varieties, farm mechanization, sugar marketing and agriculture education programmes to increase productivity (FAO, 2012).

The headquarter of KESREF which is now the headquarter of KALRO-SRI the new sugar industry developer is based in Kibos within Kisumu County while sub-stations or

branches are spread in sugarcane farming regions specifically Mumias, Mtwapa and Rongo (KSB, 2010; Wanyande, 2001). The mandate of KESREF was research and provision of extension services in collaboration with sugar companies and universities (Wanyande, 2001). This involved breeding of new varieties of sugar cane, crop nutrition or fertilizer recommendations, development, monitoring and appraisal of technologies in the fields of agronomy and pathology, farm machinery, environment and safety in the industry, socio-economic studies to enhance commercialization of sugarcane farming as well as extension service and collaboration with alternative bodies that could further the mission of research (Wawire *et al.*, 2006). However, KESREF suffered financial limitations due to sole dependence on one percent out of the seven percent SDL d taxation and even much more when it was restricted to depend on the exchequer after the levy was de-gazetted (USDA, 2012).

The government also established tax procedures act specifically income CAP 470 that provided for enactment of SDL which was 7% levy on locally manufactured and even imported sugar (KSB, 2010). The SDL played a significant role in the subsector in terms of factory rehabilitation, cane development, road development and research (KSB, 2012). Pursuant to this, the government supported research on optimal cultivation methods, new sugarcane varieties, farm mecHanization marketing and agriculture education programmes to enhance productivity (FAO, 2012).

Further to this, government provided a policy framework for providing farmers with credit facilities through Agricultural Finance Corporation (AFC) and even for subsidization of farm inputs towards increasing production (Njeru, 2016). In terms of sugarcane varieties, for a long time, Kenya's sugar industry depended on sugarcane varieties with low sucrose yields (6-9%), however in the recent past new varieties with higher sucrose yields (12-15%) and shorter maturity periods (15-18 months) have been developed (SRI ,2016). According to the Kenya Gazette No. 07 of 2007, KESREF introduced four improved varieties D8484, Ken, 82-472, EAK 73-335, and Ken p2 – 62 in 2007 (Odenya, 2007). However, the major sugarcane varieties grown in Kenya are N14, Co421, Co617 and Co 945 and they occupy 82% of the land surface under sugarcane (Wawire *et al.*, 2006).

In 2012 and specifically during the policy reforms that led to enactment of AFA as a consolidated state corporation, KESREF was replaced by KALRO-SRI (GOK, 2019). The mandate of KALRO-SRI is limited to generation and dissemination of knowledge, improved technologies and for sugar production, generation and dissemination of appropriate sugar processing technologies, contribution to policy formulation and integrated marketing practices, developing a sustainable institutional capacity for research capacity in sugar production and finally enhancement of availability of information on sugarcane production and sugar manufacturing technologies (GOK, 2019). In pursuit of the health and productivity of sugar cane, the government developed the Agriculture Act 318 and then linked it to the Standardization Act which provided for establishment of Kenya Plant Health Inspectorate Service (KEPHIS) to oversee different plant health issues in accordance with relevant CAPs specifically CAP 324 for plant protection, CAP 320 for marketing and CAP 319 for export of agricultural produce (GOK, 2018).

2.22 Dynamics of Regulatory Policies and Performance of Kenya's Sugar Industry

A regulation is a rule, policy or law designed by government, organization or company to limit specific activities and engagements in development discourse (Coglianese, 2012). Income generating organizations need regulations to balance or align costs and benefits of all transactions for sustainability (Jalilian *et al.*, 2006). In the business world, regulations can enhance markets and also protect those who might otherwise suffer in unregulated circumstances (stiglitz, 2009). Jalilian *et al* (2006) established a strong causal relationship between regulatory policy and economic performance of manufacturing firms in India.

Although professionally meant to streamline business, in some situations, regulation is a victim of opportunists who were a much greater threat to organizational performance than CAPture by producer groups outside the political system (coglianese, 2012). This is because opportunists manipulate regulatory goals to pursue personal gains (Jalilian *et al.*, 2006). Opportunists shift the skewedness of policies from broad economic goals towards personal gains (Ligami, 2015). The outcome of any regulatory system can be assessed against the lens or yardsticks of effectiveness and efficiency whereby effective regulation achieves the goals set by the government for the regulatory authority while efficient regulation achieves the goals at minimum economic costs (Stiglitz, 2009). While no

regulatory system is perfect, economies with well-designed regulations perform far better than those with inadequate regulation (Jalilian*et al.,* 2006).

Pursuant to this, in Kenya, sugarcane farming was regulated from the onset since during the colonial era it was a preserve of the Indians and whites because the colonial policy classified sugarcane among the then profitable export crops (Balongo 2008, Wanyande, 2001). This was followed by the Sywnnerton Plan of 1954 which established land registration particularly the Individual land tenure system and liberalized sugarcane farming by allowing participation of Kenyans with African roots.

After independence, the government opened more opportunities for sugarcane farming through African Sessional Paper No 10 of 1965 focused on accelerated socio-economic development, promotion of indigeno us entrepreneurship and foreign investment through joint ventures in sugarcane farming (Otieno , 2009).This was followed by establishment of the KNTC as the only organization with mandate to distribute and sell sugar from the state owned millers to wholesalers and retailers under CAP 318 of the Agriculture Act (Tegemeo Institute of Agriculture and Development;TIA , 2009). However, KNTC failed and was replaced by Kenya Sugar Authority (KSA) in 1973 under the order of Agriculture Act CAP 318 through Legal Notice No. 32 of 1973 (Centre of Governance and Development; CGD, 2005).

In 1973, the government declared sugar a special produce and under Legal Notice No 32 of 73 the KSA was legally instituted as an advisory institution within the Ministry of Agriculture to promote and accelerate development of the industry (GOK, 1987). The mandate of KSA was provision of advice on effective and efficient development of the industry, sugarcane pricing, policy on regulations and sugarcane quality control services (Njeru, 2016). KSA which was functioned between 1973 and 1992 was non autonomous therefore lacked executive powers and basic facilities to control and co- ordinate the industry and also suffered from excessive government interference and red tape (Coughlin, *et al.,* 1991). It was mainly controlled by the government and aligned to the Economic Strategy Recovery Papers (ERPS) Vision that sought to develop Kenya's sugar industry to world class status (KESREF, 2005). Compared to KNTC, KSA had an expanded mandate of overseeing sugar production in addition to marketing (GOK, 2017).

Later it was perceived to be unfit and unable to consolidate the interests of all stakeholders and replaced by KSB through Article 10 of the Sugar Act No 1 of 2001 (KSB, 2007). The broad objectives or targets for establishing KSB were to achieve self-sufficiency in sugar with a surplus for export in a globally competitive market, generation of gainful employment, wealth creation, supply raw material for sugar related industries and promotion of economic development (KESREF, 2005).

The mandate of KSB was stipulated in sections 4 (1) and 4 (2) of the Sugar Act No 1 of 2001 which became functional as from April 2002 (Jung, 2006). The mandate was to regulate, develop and promote the sugar industry, co-ordinate all stakeholders, licensing of sugar mills, facilitate equitable access to the benefits and resources of the industry by all stakeholders, mediation between government and industry and maintaining a database for the industry (KSB, 2007).The sections also specified the roles of other industry players particularly farmers, out grower organizations and researchers (Atieno , 2009; KESREF, 2010; CGD, 2005; KESREF, 2005).

The functions of KSB were; to participate in the formulation and implementation of overall policies, plan and programs of work for the development of the industry, act as an intermediary between the industry and the government , facilitate the flow of research findings to interested parties, monitor the domestic market with a view of identifying and advising the government and interested parties on any distortions in the sugar market and to provide financial, economic , technical, safety and environmental advisory services . To achieve efficiency, represent the industry in such organizations as could be relevant for the promotion of the industry, oversee the formulation of standard provisions governing the mutual rights and obligations of growers, millers and other interested parties, collect, collate and analyze industry statistics and maintain a database for the industry and also to license sugar mills (GOK, 2019).

Similar sentiments were by the KNA (2014) according to whom KSB was charged with the responsibility of developing regulations to guide the sugar industry, to issue licenses to manager restrictions on sugar importation jointly with KRA, to license sugar mills and define zones for their operation while the role of verifying quality, quantities and values rests with KEBS and KRA. On the basis of its mandate KSB developed operational strategies focused on how the growth of the sugar industry could be sustained by

satisfying customers, how to manage each functional area, how to develop requisite capabilities, how to achieve its objectives and how to compete with other regulatory bodies (KSB, 2010). The operations of KSB were funded by a component of Sugar Development Fund (SDF) (Atieno, 2009).

Eventually KSB developed challenges and was also replaced by the current non-autonomous SD under the Agriculture and Food Authority (AFA) Act No 13 of 2013, Crops Act No 16 of 2013 and the KALRO-SRI Act No 17 of 2013 (Onyango *et al.*, 2016). In 2005, CGD established that KSB faced several challenges specifically financial limitations, inadequate computer services and lack of risk management policy, corporate governance challenges and the mode of election of the members of the Board of Directors. In spite of the richness in content, this empirical review indicates no studies have been undertaken to establish the effects of the changes or shift of regulatory mandate and services from KNTC to KSA to KSB and now SD yet sugarcane farming has and is gradually declining. Although these changes were informed by policy changes, the influence of the policies on sugarcane farming had not been established and documented hence the importance of this study.

2.23 Legislation and Policy Design for Kenya's sugar subsector

Policy design is intended to address and facilitate realization of pre-determined expectations, mission and vision (Anderson, 2010: Wilcox & Hirschfield, 2007). In policy design, the empHasis is on content in terms of actions to be taken, actors or implementers, which tactics to be used, intended beneficiaries and desired outcomes (Anderson, 2010). Policy design focuses on the issues of when, how, where, for whom and by whom in the wider process of problem solving and service delivery (Wilcox & Hirschfield, 2007). Additionally, in 2010 Anderson established that feasibility of a policy depends on its design.

In every country's Sugar subsector is guided by special policy designs because sugar production and trade structures have unique national dimensions (Owiye *et al.*, 2016). Brook (2010) identified international markets, regional partnership, inherent tension between sugar mills and sugarcane growers, local monopoly and monopsony relationships between the growers and the mills as unique features that need distinct policy designs. According to Hannah and Spence (1996) sugar policy tools are

categorized into domestic production, border, international and domestic consumption measures but border and domestic production measures are the most important in production-promotion since they affect productivity and pricing. Pursuant to this, governments across the world design and re-design or reengineer their agricultural policy frameworks towards promotion of production and trade (FAO, 2013).

In most countries, policy re-engineering was justified by and through market failure frameworks (GOK, 2017). Drollery and Worthington (2017) observe that public policymakers have long enjoyed the benefits of the theory of market failure because it facilitates the identification of undesirable market outcomes and assists in the prescription and implementation of corrective government intervention. For example, taxation policy raises the price of a commodity above the level that would have been attained in a competitive market while subsidization policy lowers its price below the expected or standard market price (Drollery & Worthington, 2017; Brook, 2010).

The benefit of any public policy depends on how it is implemented because even a good policy is worthless if it is poorly implemented (Lipsky, 2010). Policy implementation refers to the execution of the law during which different stakeholders work together procedurally and technically to policies towards attainment of preset goals (Stewart *et al.,* 2008). Policy implementation is context specific because it depends on political, social, economic, organizational and attitudinal environment (Stewart *et al.,* 2008). The implementation also differs over time, across policies and from one society or state to another (Anderson, 2010).

For a long time, most organizations dependent either on top-down or bottom-up policy implementation strategies (Pulz & Teib, 2007). However, over time the policy implementation approaches have evolved into Hybrid Models of the two strategies (Lipsky, 2010) therefore currently policy implementation depends on the characteristics of the target groups (Smith &Larimer, 2009). Apart from this, for any policies to be useful they should enforceable both in principle and practice meaning that there has to be capacity and willingness to enforce the policies (GIZ 2015). In the current public development discourse most countries base their policies on corporate governance (Duke & Kankpang, 2011). The purpose of corporate governance is to ensure that each organization is managed in the long-term interest of the shareholders and other stakeholders (Joe, 2007). According to Nwakioke (2009) corporate governance is

focused on company policies, rules or regulations and boards of management. Cooperate governance is one of the notable strengths of the competitive sugar industries in the world (Joe, 2007).

In Kenya, public mills are state corporations as per CAP 446 of the State Corporations Act (SCA) No 1986 which also provides for the government to have controlling equity interests (Wanyande, 2001). The public mills are therefore established under the SCA and operated as ordinary companies governed by chapter 486 of the Companies Act of 1978 (Otieno, 2009). The SCA gives significant powers to the president, the treasury, the ministers and permanent secretaries of parent ministries who were also the respective accounting officers (Atieno, 2009, Wanyande, 2001). This is one of the notable bottlenecks of poor governance of public mills in Kenya (SUCAM, 2003). The SCA gives significant powers to the president, the treasury the minister and the permanent secretary of Ministry of Agriculture and Livestock Development the power to issue directives of a general nature in the running of parastatals and also provides for the permanent secretary as the accounting officer (Atieno, 2009; Wanyande, 2001).

Further to this, SCA gives the power of appointment of the chairman for any parastal to the president while appointment of parastatals heads or Chief Executive Officers (CEO) and the nomination of boards is a mandate of the agriculture minister. In line with this, the chairman of AFA-SD is appointed by the president while the Minister of Agriculture in consultation with the State Corporations Advisory Committee (SCAC) appoints the Chief Executive Officer (CEO) (Otieno, 2009). The Companies Act CAP 486 Section 2-5 provide for the company secretary to play the core roles of organizing board committee meetings like audits, nomination of committees and formulating agendas for board meetings with the assistance of Chief Execiutive Officers and chairman in addition to ensuring that the board committees are properly constituted and provided with correct terms of reference, in fact ideally give policy direction to the chairman and CEO (Atieno , 2009; CGD, 2005).

As per SCA, other stakeholders in the governance of public mills are the treasury with regard to budget and remuneration and the investment appraisal committees of the industry treasury, SCAC, the Inspector of State Corporations, the controller of budget, the Auditor General and finally the Public Accounts Committee of Parliament (Atieno,

2009). Internally, the administrative arrangements of Kenya sugar companies typically consist of Agriculture, Finance, Factory and Human Resource Departments although in some factories like Chemilil the factory department Has been split into Quality Control and Engineering Departments (CGD, 2005).

According to this empirical review so far no study had established the extent to which policy design influences efficiency of governance in Kenya's sugar industry and further no study had undertaken SWOT analysis of Kenya's policy design with respect to governance of the sugar industry. In 2003 the Auditor General of Canada observed that policies are generally classified into broad policies that enunciate government-wide direction, specific policies that only guide a particular sector or a narrow issue-area and operational policies as those that are normally designed to guide decisions on selected programs and projects within a sub-sector. He further observed that government policies are normally articulated as legislations or regulations and occasionally as programs (Auditor General; Canada, 2003). Sugar policies in sugar producing, importing and exporting countries are important since sugar is an important sub-sector in the world economy and are generally classifiable into domestic production measures, domestic consumption measures and international measures (Spence & Hannah, 1996).

Domestic production policies are government guidelines intended to enhance sugarcane and sugar production within a state (Keethipala & Dharmawadene, 2000). The domestic production policy measures directly affect production of sugarcane and sugar (Larson & Borell, 2001). Domestic production policies include prescriptions of minimum and maximum prices for sugarcane and sugar, tax procedures and rates, export subsidies, price premiums, input and credit subsidies among others.

The border policy measures like tariffs, import quotas, tariff rate, quotas and import and export licensing measures influence sugar prices and therefore have a backward influence on sugarcane and sugar production of the countries under consideration (Kodituwakku, 2013). According to Omondi (2013) effective border policies are those that have the capacity to control importation, illegal influx and dumping of sugar from other countries. The domestic and border policy measures of all countries are aligned to and operationalized in accordance with WTO guidelines (Larson & Borell, 2001).

Sugar policies in sugar producing, importing and exporting countries are important since sugar is an important sub-sector in the economy (Spence&Hannah, 1996). This applies to Kenya because Kenya is both a producer and an importer (GOK, 2007). In accordance with this situation, Kenya's sugar industry requires a developer, promoter and a regulator and subsequently development, promotion of regularatory policy frameworks (COMESA, 2008). By the time of this study, the policy tools engaged to control sugar production include taxes, subsidies and foreign exchange rate control regulations (Miller, 2008).

The Constitution of Kenya is the foundation of legislations and public policies in the country (GOK, 2019). Further to this, Article 2 of the constitution provides that treaties ratified by Kenya are part and parcel of the laws of Kenya (PELUM, 2015). Therefore, the policies of WTO, COMESA protocol and other treaties are legal laws of Kenya.
A public policy is direction made by government to address an issue in the society and it is normally operationalized through relevant legislatures. At the national level, the parliament and other national assemblies like the senate debate the policy proposals and ultimately make decisions (PELUM, 2015). The drafting of policy proposals is undertaken by the executive arms of governments in accordance to government ministries, departments and agencies. The proposed laws are normally debated and enacted as bills which become acts upon their assent. Acts often give the cabinet secretary or the executive officer in question the mandate or powers to develop and gazette regulations and rules as statutory instruments for operationalization of the acts (PELUM, 2015).

The WTO and COMESA protocols and the Constitutions of Kenya are the over-arching laws that provide the legal foundations from which the acts and policies for the Sugar subsector are derived (GOK, 2019). Prior to the AFA and Crop Acts the Sugar Act No 1 of 2001 was the legal baseline for the sugar subsector and it had the advantage of being a stand-alone legal framework that also provided for self-funding within the industry, an independent autonomous regulator and independent sector research intervention (GOK, 2019). This act was repealed in 2010 leading to failure of several contractual obligations among other negativities (GOK, 2019).

The AFA Act No 13 of 2013, the Crops Act No 16 of 2013 of the Constitution of Kenya 2010 which were enacted as a culmination of the agricultural sector reforms that began in 2013 and Articles 10, 28 and 61 of the COMESA protocol provide the legal baselines for Kenya's sugar industry (GOK, 2019). The two acts provide for attendant regulations for example the Crops Act No. 16 of 2013 gives provision for the development of crop regulations under Section 40 although efforts to operationalize the act which commenced in 2014 are yet to materialize (GOK, 2019).

On the basis of the AFA Act No 13 of 2013 and the Crops Act No 16 of 2013 the government established the SD to oversee sugar production and importation (GOK, 2017). The mandates of the directorate are provision of technical and advisory services to stakeholders, market research and product development, overseeing regulation and compliance in the Sugar subsector and based on these its vision is "To be a World –class multi-producer sugar crop industry" (GOK, 2018).

Section 88 of the Crops Act provides for support in terms of inputs, production, distribution and marketing for scheduled crops while Section 9 of the AFA Act provides for commodity fund for affordable credit to farmers. The Crops Act in section 3 empowers AFA to recommend the nature of agreements between producers and processors thus providing for contracted farming while the Law of Contracts Act CAP 23 provides the framework for contracts in general (GOK, 2010).

Kenya Agricultural and Livestock Research Organization (KALRO) Act No .17 of 2013 and the Science, Technology and Inovation Act No 28 of 2013 are the legal instruments for implementation of agricultural research in the country (GOK, 2019). KALRO has the mandate to ensure that agricultural research is consistent with the national priorities.

The other legal instruments in the agriculture sector that guide sugarcane farming are AFC CAP 323 and the plant varieties Act CAP 326 and the Companies Act (CAP 486) that provides the mechanisms and procedures for putting companies under receivership. They also provide for the procedure of appointing receiver managers (GOK, 2019: Otieno, 2009). In fact, from a regulatory perspective, in Kenya, commercial oriented parastatals are governed by this Companies Act. Further in pursuit of regulation the government developed the standards act which provided for Kenya Bureau of Standards established in 1974 as per CAP 496 to control the quality of both imported and locally

manufactured sugar among other consumer products (GOK, 2017). At the same time, the Agriculture Act 318 provided for establishment of Kenya Plant Health Inspectorate Service (KEPHIS) to oversee plant health issues in accordance with relevant CAPs specifically CAP 324 for plant protection, CAP 320 for marketing of agricultural produce and CAP 319 for export of agriculture produce (GOK, 2018).

In Kenya domestic production is unable to satisfy demand and the deficit is filled through imports as determined by the sugar regulator (KSB, 2012). The AFA Act No 13 of 2013 governs the licensing of sugar importation and the SD has discretionary powers to amend the qualifications and even the amounts of sugar for importation from time to time as per Articles 10 and 232 of the constitution (GOK, 2010A).

Import or export licenses are issued to registered importers and exporters upon fulfillment of conditions set out by the regulator. The licenses are issued only for the specific consignments imported or exported and to manufacturers entitled to import white refined sugar and were not transferable (Jayne *et al.,* 2005). The type and amount of sugar to be imported is determined from time to time by the directorate based on deficit (GOK 2019). AFA- SD issues importation licenses while the role of verifying quality, quantities and values rests with KEBS and KRA (KNA, 2014).

Each of these acts give powers to the relevant cabinet secretary to develop and gazette regulations and rules for operationalization to provide for day-to-day exigencies (PELUM, 2015).The cabinet secretary is assisted by the planning unit of the Ministry of agriculture and livestock development who were also answerable to the Directorate of Economic Development, Planning Policy Formulation and Budgeting and the Ministry of Devolution and Planning that is in charge of co-ordination and writing of National Development Plans and Sessional Papers (KNA, 2019).

However, in spite of the mandate the cabinet secretaries are yet to come up with a comprehensive policy framework for the Sugar subsector and this has generated a lot of debates among stakeholders. The policy options being debated include contractual versus non–contractual production, de-zoning (oligopsony) versus zoning (monopoly) of production areas, privatization versus public ownership of mills, poaching versus side selling, liberalization versus restriction of markets, inclusion versus exclusion of millers in sugar importation plus exclusion and versus inclusion of county governments in sugar

and sugarcane matters (SUCAM, 2003). Even though this empirical review is rich in content, it has not traced any information as concerns to what extent each category of policies and or legislations is feasible in the perspective of Kenya's sugar subsector.

2.24 Kenya's sugar Sub-Sector; Supplementary Policies and Service Agencies

A public policy is a guide to government action and consists of mandate which is translated into programs, projects and actions, further to this, it entails the broad statement of future goals, actions and the means of achieving them (Khan & Khand Aker, 2016). The effectiveness of any policy depends on how it is implemented (Ahmed & Dantanta, 2016). In fact, even the very best policy is of little worth if it is not implemented properly yet implementation also varies over time, across policies and governance units (KHan, 2016). Public policy implementation is a major problem in the efforts of most nations to achieve national development because it's often taken for granted that once a policy is adopted by government, it will obviously be implemented and the desired goals achieved (Ahmed & Dantanta, 2016).

Kenya's sugar industry is dominated by the state and therefore its performance depends on government institutions (Ellis &Singh, 2010). Pursuant to this, several government agencies are mandated and involved in implementation of policies within the sugar subsector. According to Nafuna (2012) in Kenya the main players in the sugar industry are government ministries, sugarcane farmers, millers, KSB but now AFA-SD, KESREF, KESGA, SUPAC, SDG, financial institutions, KRA, KEBS, Kenya Plant Health Inspectorate (KEPHIS), sugar importers and consumers.

These stakeholders have engaged a range of policy initiatives towards competitiveness but the outcome is persistently low (Wanyande, 2001). The regulator is the main policy implementer, as a regulator KSB was charged with the responsibility of developing regulations to guide the industry, to issue licenses and restrictions on sugar importation jointly with KRA, to license sugar mills and define zones for their operation (KESREF, 2010). As a regulator KSB had weak surveillance capacity, lacked investigatory and prosecutorial powers as these powers were and are only within the mandate of the Kenya Police Service. In terms of importation, KSB used to issue importation licenses while the role of verifying quality, quantities and values rests with KEBS and KRA (KNA, 2014).

KRA whose major mandate is tax collection was established by an act of parliament CAP 469 and became operational in 1995 but does not have infrastructure at all borders of Kenya especially Eastern and North Eastern where sugar smuggling is rampant. This is because it lacks the capacity to verify every container of commodities imported although it does random scanning and verification through sampling (KNA, 2014). KEBs were established in 1974 under CAP 496 of the laws of Kenya. Its mandate includes development and Harmonization of standards, education and training in standardization, enforcement of standards, product testing, inspection and certification, metrology and conformity assessment, management systems certification and then calibration and measurement (GOK 2019). KEBS lacks capacity for enforcement of standards and market surveillance and therefore cannot cope with demands like single window and 24-hour operations at the port of clearance, entry or exit (KNA, 2014).

Other policy organs with roles in the Sugar subsector include Kenya Plant Health Inspection Service (KEPHIS) which operates within the confines of the KEPHIS Act 2012 and the State Corporations Act CAP 446. The key mandate of KEPHIS is to ensure the quality of agricultural inputs and produce. It's focused on plant health, development of Sanitary and Phytosanitary Standards (SPS), agricultural productivity and trade facilitation (GOK, 2019).

Kenya police arrested and prosecuted suspects of sugar smuggling but the courts often releasedthem due to legislative limitations (KNA, 2014). On the overall, it is not easy for any complainant to win a sugar related court case in Kenya due to legislative limitations (KNA, 2014). Although very informative, this empirical review displays a knowledge gap in terms of how each agency can be reformed to optimize provision of services that can enable revival of sugarcane farming in the country.

2.25 Evaluation of Policy Implementation Issues in Kenya's Sugar Industry

Policy is a guide used to put expectations, mission or decision into action (Anderson, 2010). A policy is the government's means or framework of governance intervention in the citizens' livelihoods (Khan & Khandaker, 2016). According to Stewart, Hedge and Lester (2008) the benefit of any public policy to citizens depends on how it is implemented because even the policy is worth little if it is poorly implemented (Lipsky, 2010). Policy implementation refers to the execution of the law during which different

stakeholders work together procedurally and technically to concert policies and effects as a step towards attainment of preset goals (Stewart *et al.,* 2008).

The implementation of a particular policy is content specific because it depends on political, social, economic, organizational and attitudinal factors that influence how well or poorly a policy is implemented (Stewart *et al.,* 2008). The implementation also differs over time, across policies and from one society or state to another (Anderson, 2010). For a long time most organizations dependent either on top-down or bottom-up policy implementation strategies (Pulz & Teib, 2007). However, policy implementation models have evolved into hybrid models of these implementation strategies (Lipsky, 2010). According to Smith and Larimer (2009) policy implementation depends on the characteristics of the target groups.

2.26 Stakeholder and Policy Issues in Kenya's sugar Sub-Sector

A stakeholder is an individual, group of people or organizations with interest in the issue or activity under focus (Bammann, 2007). Stakeholder analysis helps to identify and value stakeholders relative to their knowledge, interests, positions, alliances and importance (Bammann, 2007; Mayoux, 2003). This is because the higher the stakeholders' interest in the business the greater the pressure to influence the business direction because of the potential outcome (Changwony, 2012).

According to Brugha and Varvasovky (2000) stakeholder analysis helps to identify and understand stakeholders in terms of behavior, intentions, interrelations, agendas, interests and resource base.The stakeholders in Kenya's sugar industry are classifiable into international participants like the WTO, ISO and the rest of the international sugar market, regional partners specifically the COMESA and EAC Member states and then domestic participants like the national and county governments, millers and farmers. The international sugar market indirectly influences domestic sugar industry through regional economic policies and the influence is most significant in countries that subsidize farm inputs to lower production costs (Njeru 2016: Tyler, 2007). In 2006, Sserunkuma and Kimara noted that the EU as a large-scale market and stakeholder ruins the livelihoods of millions of poor farmers in Africa by dumping products that have unfair edge or advantage due to subsidization.

COMESA market is a stakeholder in Kenya's sugar industry because Kenya as a signatory to the COMESA protocol is bound to its rules and it is one of the actors that are working towards revival of sugarcane farming in Kenya (Cunningham, 2009). However, Kenya has issues over the COMESA rules of origin (ROO) because some of the COMESA member states are capitalizing on them as provided for under the COMESA Protocol to export sugar to Kenya from the rest of the open World (Njeru, 2016: ATPAF-ESA, 2011).

In Kenya the state is the major player in the sugar industry and is represented in the sub sector by the Ministries of Agriculture, Finance, Trade and Industrialization, Economic Planning and Office of the President (GOK, 2019). According to Njeru (2016) and Nafuna (2012) the main players in the sugar industry are government ministries, sugarcane farmers, millers, KESREF, financial institutions, KRA, KEBS, Kenya Plant Health Inspectorate (KEPHIS), sugar importers and consumers. Wanyande (2001) states that Kenya Government directs establishment of new sugar companies and programs aimed at ensuring rapid development of the industry. After independent, the Kenya government engaged in investment and operation of mills in addition to regulating the players in the industry (GOK, 2017). In the context of public mills in Kenya the state is the major shareholder and it is represented in each public mill by the state appointed Boards of Management (GOK, 2019).

As a primary stakeholder, the government intervenes in sugarcane farming through the National Assembly for the purposes of enacting enabling acts (GOK, 2019; Nafuna, 2012). It is the core provider and implementer of sugar policy and has a greater say in the management of public mills (Njeru, 2016). However, it is under obligation as per the COMESA safeguard commitments to relinquish its share- helding (GOK, 2019. Government influences the activities of other stakeholders like millers and farmers (Njeru, 2016). Through financial agencies specifically commercial banks and the Agricultural Finance Corporation (AFC), the government facilitates credit services for farmers in addition to management of the SDL (Odera, 2014). In terms of market control, the government enacted KNTC as a state corporation for marketing and distribution, later replaced it by KSA in 1973 and then by KSB in 2002 and now AFA-SDin the struggle for self-reliance (GOK, 2019).

As primary stakeholders, farmers are unable to meet their ends from sugarcane farming due to over taxation and low farm-gate prices (Odera, 2014). The farmers were also victims of delayed payment for sugarcane due the millers' failure to adhere to contract agreements (Netondo *et al.*, 2010). Apart from this, there is no policy that was enabling or guides them to benefit from the sales of value-added products (VAP) as they accuse millers of exploitative terms of engagement. (SUCAM, 2017). Farmers also have complained about the policy that allows millers to import sugar because this creates conflict of interest where millers tend to shift attention to importation to the disadvantage of the famers (GOK, 2019).

Although in most industrialized countries farmers are only a small proportion of the population, they have a higher political influence compared to those in developing countries who form a majority of the labour force but struggle for influence over policies that direct their daily farming activities (Njeru, 2016). In Kenya farmers are by law supposed to cHannel their concerns through farmers' out- grower associations (KSB, 2010).

These organizations and cooperative societies are established and guided by the Co-Operatives Act of 1966 and are designed to provide mechanisms for service provision networks by providing marketing and credit inputs mechanisms (CGD, 2005; Wanyande 2001). This is in addition to Kenya Sugarcane Growers Association (KESGA). An umbrella organization of producers (KESGA) established in 1982 to lobby the government for support and negotiate sector relations (GOK, 2007). However, the policy structures of most farmers' organizations are questionable since most of them are victims of mismanagement and highly indebted (EU, 2012). In fact, most out growers' organizations have failed due to misuse of funds, poor book keeping services and illiteracy of officials (CGD, 2005). Further to this, the Ministry of Cooperatives has also failed to adhere to the Cooperative Act (GOK, 2007).

Additionally, these associations through and together with Kenya Sugar Growers Association (KESGA) have been noted to be highly corrupt in fact a majority Have virtually collapsed (KACC, 2010; Harding, 2005). Although once beneficial to farmers, out grower institutions have collapsed compromising farmers' bargaining power on critical concerns like sugarcane prices and the costs of inputs and transport services

(Njeru, 2016). As stakeholders, millers have complaints about political interference, poor infrastructure in the sugar zones, inappropriate seed technology, excessive land sub-division and poor organization of out grower institutions exuberated by pressure from World trade regimes (SUCAM, 2003; USDA, 2012; COMESA, 2006). Other issues include increase in farmers' dropout rate shift from contractual sugarcane farming to non- contractual alternatives in spite of the opportunity costs and increasing transfer of agricultural resources to alternative projects (Waswa *et al.,* 2012; KSB, 2012).

Agricultural value chains consist of inter-linkages between and within actors involved in production, processing, distribution of inputs, outputs as well as co-ordination and governance of the chain (Furuholt & Matotay, 2011). A strong link between value chain actors is essential for performance and is determined by policy and efficiency of communication (Sanga *et al.,* 2013). However, in the case of Kenya, stakeholders in the sugar industry had had several conflicts due to a diversity of policy issues. The stakeholders have engaged a range of policy initiatives towards competitiveness but the outcome is persistently low (Wanyande, 2001). Although rich in content, the information available as per this empirical review revealed that so far the extent to which the identified policy concerns influence each stakeholder's attitude and physical contribution towards revival of sugarcane farming in Kenya is yet to known implying that even the potential of policy interventions on revival of sugarcane farming is also still largely unknown.

2.27 Opportunity and Rationale for Revival of Sugarcane Farming in Kenya.

The opportunity for revival of sugarcane farming in Kenya is expressed in the fact that so far the country has established adequate milling capacity in fact all the sugarcane farming regions are dotted with mills yet virtually all of them are operating below capacity in spite of the fact that land and other factors of production are available (GOK, 2019). According to Furuholt and Matotay (2011) farmers' long-term experience and the presence of necessary technologies provide opportunities for revival of sugarcane farming.

In Kenya, revival of sugarcane production first became a subject of concern in 1988 when Ramisi sugar factory collapsed and was later revived as Kwale Sugar Company Limited and further when Miwani was put under receivership (KSB, 2012). Nowthe

concern is over the declining trend of sugarcane farming inclusive of yield decline which has so far dropped significantly to 60.52 tons /ha from 90.86 tons /Ha in 1996.

Additionally, only a few public millers are surviving although marginally while others inclusive of Muhoroni and once again Kwale Sugar Company Limited are under receivership as Chemilil sugar company is gradually re-emerging (GOK, 2018; Odera, 2014). This cycle of events justifies the feasibility of investment in revival of sugarcane farming in the context of Kenya's economy (GOK, 2018; Odera, 2014).

In terms of agronomy, a critical rationale for revival of sugarcane farming in Kenya is the fact that Kenya is one of the countries in the tropics the only region of the world with immense agronomic potential for sugarcane production (Muteshi & Owino, 2017). Therefore, failure to revive sugarcane farming is wastage of this potential and by extension opportunity. Instead of continuous blending of importation and production and revival of sugarcane farming will facilitate complete shift of the subsector towards domestic production (UN 2017; KSB, 2010). Potentially this will save the exchequer billions of Kenya shillings (Ojeara *et al.*, 2017).

In terms of population; according to GOK (2017) due to increase in population national sugar consumption is expected to have increased to 36 metric tons by 2030. This meant that there is need to revive sugarcane farming to cater for the increase. More rationale and even opportunity for revival of sugarcane farming in Kenya is manifested in the attractiveness of the domestic market and fast growth of population which increases sugar demand and human resources for farming **(**Ojeara *et al.*, 2021; Muteshi & Owino, 2017).

The economic rationale of **r**eviving of Kenya's sugar industry has a great potential of impacting on state economy because in spite of its current dismal performance it is one of the largest contributors to GDP, in fact, nationally sugarcane is the third largest agricultural commodity and revenue generator next to tea and coffee (KSB, 2010). It supports at least 25% of the national population and the survival of towns and markets located around the mills (Ojeara *et al.*, 2017; KSB, 2010; GOK 2008; Pearce and Robinson, 2007).

Revival of sugarcane farming will contribute to poverty reduction through sugarcane entrepreneurship which according to Ogolla (2012) concerns hire of sugarcane fields for

profit (Ogolla (2012). Like in Sri Lanka, if revived the sugar sub-sector will provide more opportunities for employment and income generation in Kenya's economy (Keethipala, 2007). In terms of COMESA protocol revival of sugarcane farming will enable Kenya's sugar industry to survive within the COMESA protocol without the cover of the safeguard measures by fulfilling the prescribed standards of competitiveness as it increases sugar supply on COMESA market. Additionally, the protocol provides opportunities for revival as reflected in the prescribed COMESA standards of competitiveness and further in the fact that COMESA member states provide a potential sugar market (COMESA, 2012).

In terms of international relations, Sugarcane yields sugar which is consumed and widely traded across the world. Therefore, reviving sugarcane farming will improve Kenya's image in the international sugar arena with regard to membership of WTO, ISO, COMESA and other sugar-based economic blocs (Ojeara *et al.,* 2017; Pearce and Robinson, 2007). Kenya is among the few countries in the tropics the only region of the world with agronomic potential for sugarcane farming. Therefore, revival of sugarcane farming in Kenya will provide an essential service to the rest of the world enhancing Kenya's image in the international arena (Ojeara *et al.,* 2017; Ogolla, 2002). According to this empirical review effort to revive sugarcane farming in Kenya have strong economic, agronomic and even social logic and foundation however the potential of policy to enable the revival is still largely unknown.

2.28 Studies on Sugarcane Farming in Kenya (2000 – 2022)

From an empirical perspective, many of the earlier studies on sugarcane were focused on constraineds to sugarcane production in a mixed sense but not specifically to policy interventions and further not on revival of sugarcane farming. For example, in 2001, a survey was undertaken by Wawire *et al* (2001) to assess why despite several earlier studies, sugarcane yield in Kenya continued declining. The study identified old and emerging constraineds inclusive of poor record keeping, poor farmer's attitude towards contracts, and HIV/AIDS pandemic, low sugarcane prices as the causes. However, it did not address the underlying policy concerns although its conclusion indicates that some of the constraineds could be related to policy.

Similarly, several studies by KESREF extension workers in 2002 and 2003 reported several production constraineds. However, most of the studies were focused on agronomical or pathological challenges and therefore exclusive of policy interventions. Apart from this, these studies were based on extension service providers and out-grower organizations while excluding millers and most sugarcane farming householeld in spite of the fact that the millers and householeld are at the epicenter of sugarcane farming.Another study by Wawire *et al* (2006) investigated factors influencing the performance of public mills in Kenya but did cover and further did not consider strategies for revival of sugarcane farming besides being limited to private mills yet Kenya's sugar industry comprises of public and private mills.

A study by KESREF specifically by Wawire *et al* (2006) identified and ranked constraineds to sugarcane production and recommended intervention measures in accordance to the sugar production zones across Kenya but did not consider policy issues and even revival of sugarcane farming. Amolo *et al* (2006) looked at the influence of planting and Harvesting time on sugarcane productivity in Kenya and recommended different timelines of different sugar zones in Kenya without CAPturing anything with regard to policy and revival of sugarcane farming in the country.Muturi and Wawire (2006) looked at the effect of irrigation on sugarcane productivity and establishment that in Nyando Sugar Zone, irrigation increases sugarcane yields by an average of 45% while Wawire *et al* (2006) looked at cost reduction strategies in sugarcane production in Kenya, they established and ranked the causal factors for the high production cost. However, the two studies did not consider the policy environment of the time and further unlike the current study did not carry out the investigation in the light of reviving sugarcane farming.

Additionally, a study by Wawire *et al* (2006) assessed technology adoption in Kenya's sugar industry exclusive of the policy dimension. In 2009, a study by Otieno looked at corporate governance problems facing Kenya's sugar subsector but did link them to the policy frameworks within which corporate governance problems are experienced and further did not investigate the governance problems in the light of reviving sugarcane farming in Kenya. In 2010, a review of policy, legal and regulatory services within the sugar sub-sector in Kenya, as a case study of governance controversies affecting the sub-sector by Kenya anti-corruption commission concluded that Kenya's sugar subsector is highly corrupt due to legislative gaps. However, this study was skewed towards

identification and evaluation of crimes in the subsector and not the technical relationships between policy and sugarcane farming especially and particularly policy in the light of revival of sugarcane farming in Kenya.

A study by Nafuna (2012) investigated the challenges faced by KSB in implementing its service delivery strategy and identified indiscipline among the millers as the major barrier. However, the study did not capture how these impacts on revival of sugarcane farming in the country. Musee (2013) assessed the effects of Kenya's sugar protectionist policies on regional inter-state relations within the COMESA framework. The study established that the sugar policies have a significant influence on Kenya's relationship with other COMESA member states specifically the sugar exporters. However, this study looked at Kenya's policy it looked at the policy with the lens of inter-state relations and not revival of sugarcane farming (Musee, 2013).

In another study Odera (2014) evaluated factors influencing strategic planning processes by major sugar producing firms in Kenya but concentrated on technical issues of production at the expense of policy. Ojeara *et al* (2017) evaluated diagnostic control systems and overall firm performance of sugar firm in the Western Kenya Sugarbelt and established that diagnostic systems have a significant influence on performance and this did not include issues of policy and revival of farming.

Onyango *et al.,* (2016) looked at policy options for revitalization of sugar industry in Kenya but concentrated on sugarcane agronomy, extension provision of services and factory efficiency without considering the policy environment even though they recommended enforcement of contractual obligations. In an overview of the sugar industry in Kenya, Mati and Thomas (2019) investigated the prospects of sugarcane production at the Coast and identified due economic potential. However, the study did not consider policy issues and only considered the Coastal Region of Kenya and not Western Kenya Sugarbelt apart from the fact that it assessed the prospects of establishing and expanding sugarcane production contrary to this study which sought to assess revival of sugarcane farming.

A study (2018 to 2019) by the sugar industry stakeholder's task force appointed by the government investigated the challenges facing Kenya's sugar industry and made

suggestions for the way forward inclusive but not limited to policy interventions as deemed necessary. However, the task force over concentrated on factors with a negative influence and did not identify and rank current policy enablers to provide a platform for strategic planning. Finally, this task force became an immediate victim of policy limitations since its mandate as stipulated in the Kenya Gazette Notice No 9 of 2018 was limited to identification of existing challenges

Away from Kenya, a study by Kodituwakku (2013) evaluated and established that the governments of India and Thailand have so far boosted the performance of their Sugar subsectors by implementing several production promoting sugarcane and sugar policies. From these empirical reviews, it is evident that although policy interventions can boost up sugarcane farming, with regard to sugarcane farming in Kenya, so far most of the studies undertaken have been focused on agronomy, extension, factory and management but little has been done on policy in the light of revival of sugarcane farming. This is the origin of this study with regard to influence of policy on revival of sugarcane farming in the Western Kenya Sugarbelt where sugarcane farming was once vibrant and lucrative.

2.29 Methodological Approaches Relevant to the Study

Although a variety of methodological approaches may have the capacity to enable a given study, a researcher has to select and limit the focus of a study on one due to resource and time constraineds (Richinson & May, 2009). According to Australian Institute of criminology (2014), there are significant differences between methodologies used in studies in different places even when their target is the same. Globally, two broad research paradigms specifically phenomelogical paradigm and positivist paradigm are used in fact finding (Hair *et al.*, 2003). According to Hussey and Hussey (1997) phemenological paradigm explores a phenomenon from each participant or stakeholders' frame of reference. It is normally based on unstructured data obtained though qualitative methods like case studies that seek to address issues in accordance with categories of stakeholders.

However, phenomenology has a weakness of over focusing on participants' experiences which tend to be highly subjective besides limitation in measurement power due to focus on use of descriptive words instead of numbers and yet numbers are better in terms of articulating the degree of associations between study variables (Hair *et al.*, 2003).

On the other hand, positivist paradigm operates on the basis of quantitative or numerical based methods for empirical testing of hypothesis and the linkages between study variables (Hussey & Hussey, 1997). Due to the weakness of phenomenology and further to the fact the current study is guided by null hypothesis, positivist paradigm will be adopted although it was still possible to do the study based on phenomenology or a mixture of the two paradigms. The positivism paradigm will be adopted because it uses quantitative/number base research methods as opposed to qualitative (word-based) research method.

Quantitative based research methods can be based either on experimental or theory-based approaches depending on the nature of the study but theory-based approaches are best for social studies (Christie *et al.,* 2000). Given the social nature of this study in addition to time constraineds since the study has to serve an academic purpose with prescribed timelines, theory-based approaches will be employed. Social studies are open to methodological pluralism especially mixed-methods research but the researcher has to select the ones to engage depending on the context of the study (Arksey & O'Malley, 2005).

Further and according to Altio and Helman (2009) and Mugenda and Mugenda (1999) quantitative research can employ descriptive or explanatory approaches but descriptive approach is more suitable for studies involving geographically large areas of study. Pursuant to this, descriptive approach will be adopted due to the geographical vastness of the target study sites. Further to this and according to Altio and Helman (2009) and Nachmias and Nachmias (2005) descriptive studies can be based on longitudinal and cross-sectional survey designs.

Normally longitudinal designs involve study of a population over a long period of time while in cross-sectional survey all measurements are made at only one point in time without follow-up periods (Hair *et al.,* 2003). Use of descriptive studies approaches involves evaluative and correlational designs which provide an enabling platform for data analysis and interpretation (Lucien & Chakrabarti, 2009). Due to this and further to the recommendations of Hair *et al* (2003), according to whom cross-sectional designs are better suited for evaluation of variables in a one-touch study in addition to the fact that as

an academic study, this study guided by prescribed timing, it will be based on cross-sectional survey design.

In terms of collection of secondary data, it was possible to gather the data from mills, government officers and electronic systems but the researcher additionally engaged hand -searching of key journals, conferences and other relevant organizations. In terms of data analysis in descriptive studies, the resulting data could have been analyzed by excel, SPSS or both. However, in this study version 25 of SPSS was used. This is because according to Chantle *et al* (2000), SPSS program processes data in a way that is value-laden and has minimum bias.

On the overall several methodological approaches were feasible in this study. However, for logistical reasons it was not possible to engage all the feasible methods pursuant to this, some feasible methodological practices were not engaged.

2.30 Theories relevant to the Study

This study was anchored or modelled on two theories specifically on the Path -Goal theory developed by House in 1971 and revised in 1996 (House, 1996). This theory highlights ideas about attainment of organizational goals through adoption of different leadership pathways or approaches. This theory takes its intellectual foundations from the assumption that leaders that enable attainment of organizational goals are flexible and ready to change their approaches / pathways (Antonakis & House, 2014). The intellectual rationale of this theory is an appropriate platform for two specific objectives in the study, revival of sugarcane farming is the target goal while each policy issue whether as a constrained or enabler is analogous to selectable path towards achievement of the target goal.

Given that theoretical framework is the researcher's lens through which to view and perceive the variables and ultimately to support the findings of a study (Iqbal, 2007: Anderson*et al.,* 2006). The intellectual rationale of this theory is an appropriate platform or model for this study because the study focuses on revival of sugarcane farming as an economic goal of the government and the policies drawn from the parliamentary acts as the pathways for attainment of the goal.

In line with these intellectual foundations, this study which sought to establish the extent to which revival of sugarcane farming in the Western Kenya Sugarbelt as an economic goal of the public was influenced by policies drawn from AFA Act of 2013 and Crops Act No.16 of 2013 was modeled on the Path –Goal theory. Therefore, the study sought to test if each of these acts provides effective pathways or approaches to revival of sugarcane farming. This is in line with Grant and Osanhoo (2014) who established that a theory justifies a study by providing and sHaping its vision. Subsequently, the specific objectives that sought to investigate the extent to which policy issues constrain revival of sugarcane farming and the extent to which policy provisions enables revival of sugarcane farming were modeled on the Path -Goal theory.

The study was further guided by transformative leadership theory. This is because transformative leadership theory depends on policy and sometimes shapes and reshapes policy (Bahrain News Agency, 2019). Similarly, this study sought to establish the extent to which revival of sugarcane farming in the Western Kenya Sugarbelt depends on or is influenced by policy provisions drawn from the parliamentary acts.

Transformative leadership theory takes its intellectual foundations from the assumption that effective leaders create visions for the future and then motivate their subjects to achieve them (GDN online, 2019). This is analogous to setting of performance standards and then manipulating stakeholders towards attainment of each standard. This process is intellectually relevant to the specific objective that sought to determine the extent to which Kenya through local millers, AFA-SD and KALRO-SRI has complied with the COMESA standards for revival of sugarcane farming and to the objective that sought to determine the capacity of AFA-SD and KALRO-SRI to revive sugarcane farming under guidance of AFA Act of 2013 and the Crops Act of 2013. Therefore, Transformative leadership theory was adopted as a model for the two specific objectives.

2.31 Conceptual Framework

The theory selected for a study provides the conceptual basis for designing the study (Grant & Osanhoo, 2014). According to Arkey and O'Malley (2005) it is important to connect the setting of an ongoing study to previous theories because they form a foundation for the analysis, interpretation, inference and conclusion.

The process of designing a study entails integration of different issue s of a study and the theoretical framework through the process of concept mapping (Novak & Canas, 2006). Concept mapping involves organizing the study in terms of variables and then construction of concept maps to provide a pictorial or visual representation of relationships between the variables in the study as perceived through the lens and vision of the theoretical framework (Mennecke & Townsend, 2012).

It is against this situation that this study was conceptualized and modelled or map on path-goal theory and the theory of transformative leadership described above. On the basis of the theories, specific objectives and the variables of the study, the conceptual framework in Figure 2.1 guided the study.

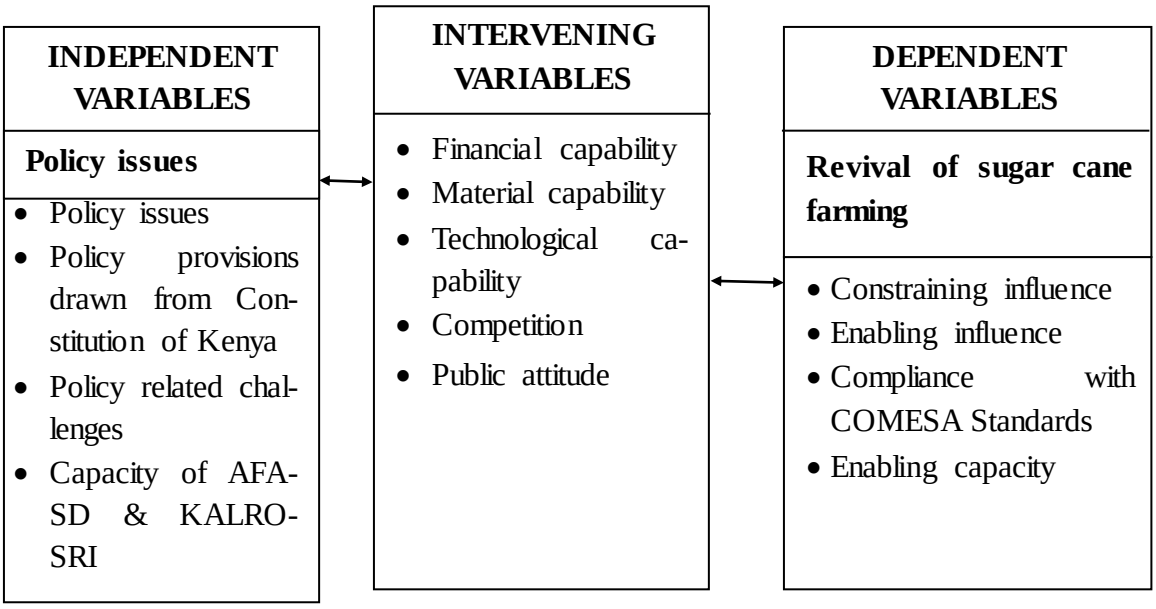

Figure 2.1: Policy issues vs. revival of cane farming in the Western Kenya Sugarbelt (Source: Researcher, 2021)

CHAPTER THREE
MATERIALS AND METHODS

3.1 Study Sites

The study focused on Western Kenya Sugarbelt. The choice of the study was guided by the fact Western Kenya Sugarbelt is a dominant sugar zone that caters for about 85% of Kenya's sugarcane production (GOK, 2019). The sugarcane varieties grown in the belt are Co421, Co945, N14, EAK 73 – 335 and KEN 83-737. The average yield is about 80 tons per hectare as reflected in productivity of 90-120 hectares per plant and 60-80 tons for per ratoon crop (NSC, 2020). NSC and WKSC which are public and private millers respectively with lengthy history of production were used as the baselines for the study. This is because in spite of many challenges, they were the pacesetters of the public and private millers respectively. Engagement of the two mills enabled evaluation of sugarcane farming in public and private perspectives. Additionally, the close proximity between them provided a reasonable basis for comparative evaluation.

NSC lies within Lower Midland I (LMI), Lower Midland II (LM2), Upper Midland I (UMI) and Upper Highland I (UHI) zone. It is located off the Webuye/Malaba highway opposite Bukembe Market in Bungoma County. According to KNBS (2010) the county has a population density of 453 persons per square kilometer with household of 4 to 6 members. It was established in 1975 on shareholding basis under the Companies Act CAP 486 of the Laws of Kenya and started operations in 1978. As a zone NSC lies between 1384 – 2100 meters above sea level and between 0" 34" 0" North, 34" 34" 0' East of the Equator. Its mission targets efficient, innovative and sustainably production and marketing of sugar and other products in a clean and safe environment to the satisfaction of all stakeholders. It is the leading producer among the public mills and the second largest producer of sugar in Kenya after WKSC. It commands 12% of the Kenya's sugar market sHare and is a candidate for the proposed privatization process. NSC produces sugarcane through its nucleus estate of about 3600 Ha and over 67,000 contracted outgrowers spanning 16,000 Ha in the former Bungom and Kakamega counties. It has a projection of 820,000 tons annually but actual production is 492, 000 tons or 60% and it has an active department of agriculture (NSC, 2020).

WKSC was established in 1979 as a private mill with a milling station in Malava Sub-County with an initial crushing capacity of 500 tons which has increased to 5000 tons. It started around Malava Sub County and had spread such that it is largely in Kakamega County, Bungoma, Trans Nzioa, Uasin Gishu and Nandi counties. It has established new milling points at Olepito, Ndhiwa, Kibos and Naitiri and further expanded beyond the Western region of Kenya. However, Its Department of Agriculture was skewed towards access and procurement of mature sugarcane instead of farming activities.

The geographical location of the study area is as shown in Figure 3.1.

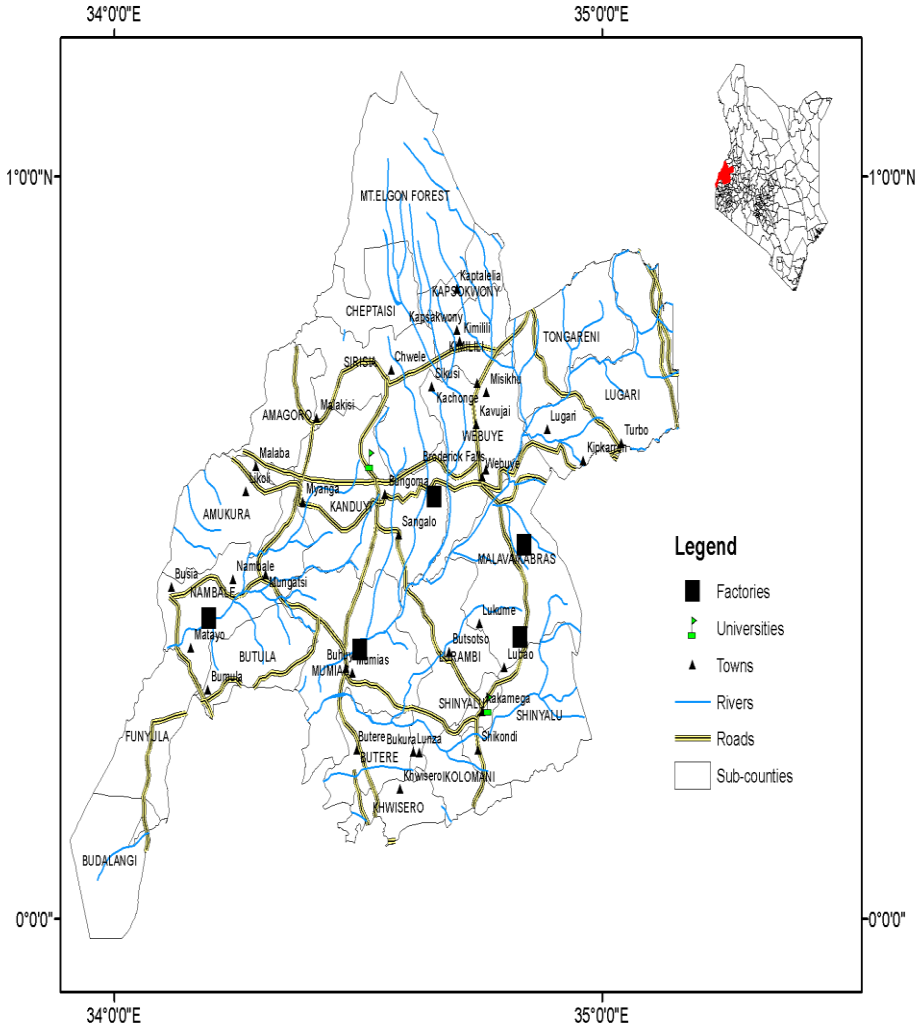

Figure 3.1: Location of Study Area-Western Kenya Sugarbelt

Source: Researcher, (2021)

3.2 Study Population

The study population consisted of public and private sugar mills plus KALRO-SRI and AFA-SDstations in the Western Kenya Sugarbelt. The target population comprised of farmers and the managers of sugar agencies. The accessible population comprised of the top management teams of the SD and KALRO-SRI Stations in the belt plus NSC and WKSC. NSC and WKSC were used as baselines. Numerically, the target population comprised of 71,000 farmers and the 14 managers of NSC, 61,000 farmers and 7 managers of WKSC, all members of the top management teams of KALRO-SRI and SD stations located in the region.

3.3. Research Designs

In this study, a mixture of research designs was adopted as summarized in Table 3.1 to enable effective coverage of all characteristics and variables of each specific objective as shown in Table 3.1.

Table 3.1: Research Design per objective / variable; Western Kenya Sugarbelt

Specific Objective	Measurable variables / indicators	Research design
Evaluate policy issues that have constraining influence on provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt	Farm policy issues Market policy issues Policy design issues Gaps in policy	Evaluation
Establish the extent to which policies drawn from the Constitution of Kenya enable provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt	Farm level enablers Market Level enablers	Correlational
Determine the policy-related challenges that limit compliance of sugar agencies with COMESA standards for revival of sugarcane farming in the Western Kenya Sugarbelt.	. Magnitude of challenges to compliance.	Correlational
Evaluate the capacity of SD and SRI to enable provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt in the perspective of policy.	Strength and opportunities challenges and threats	Evaluation

Source; Researcher, (2021)

3.4 Sampling Method

The sample frame for the study consisted of millers, farmers and the management teams of AFA- SD and KALRO-SRI. On the basis of the broad spectrum of the sample frame in this study, multi-stage sampling was employed beginning with cluster sampling. This ensured inclusion of all subsets of interest through division of the study population into mutually exclusive but exhaustive subject categories. This was sequentially followed by proportionate sampling to ensure fair representation of each cluster. Then in each cluster, individuals in management positions were purposively sampled as key informants. This is because purposive sampling is a non-probability sampling technique that facilitates inclusion of specific personnel believed to have the capacity to provide the necessary or useful data (Kothari & Garg, 2014)

For the cluster of farmers, the farmers affiliated to each miller were purposively sampled as a sub-cluster. This was followed by proportionate sampling to ensure fair representation of each sub-cluster then simple random sampling was applied to identify individual respondents. Simple random sampling was implemented using the random number technique as recommended by Aryl *et al.,* (2019).

3.4.1 Sample Size Determination

Determination of the sample size for farmers was guided by the expert recommendations of Mugenda and Mugenda (2009) and Wakhungu (2008). According to the recommendations for target population of at least 10,000, a representative sample size is determined using Fisher's formula (2004). Fisher's formula was adopted for the cluster of farmers as follows:

$$N = \frac{z^2pq}{d^2}$$

Whereby;

N =desired minimum sample size (for population of at least 10,000)

P= proportion of the target population estimated to have the characteristics under measurement.

q =1-P (proportion of the target population estimated as being without the characteristics being measured).

Z=Standard normal deviation at the required confidence interval (95%)

d = Level of statistical significance (set at 5%)

$Z^2 = 1.96^2$

N = 384

Therefore, for the cluster of farmers the study was expected to be based on a sample size of 384 but to enhance the reliability of the findings the study was based on a higher but rounded up figure of 400 farmers.

Determination of the sample size for the managers of the mills, AFA-SD and KALRO-SRI was based on the recommendations of Mugenda and Mugenda (1999) according to which in social science studies or research a sample size of at least 30% of the target population yields generaliazable findings.

For AFA-SD and KALRO-SRI, the sample was undertaken as census because of the limited numbers of management personnel. This is in line with Bordens and Abbot (2014) who recommend census approach when the target population is less than fifty in number.

On the basis of the workforce ratio between WKSC and NSC as provided by respective HRM Officers, the sample size for the study was as in Table 3.2.

Table 3.2: Sample size and Sampling method by population in the Western Kenya Sugarbelt

Study Population	Sampling Method	Sample Size
Farmers	Simple random sampling	400
Managers; WKSC	Purposive	7
Managers; NSC	Purposive	14
Regulators; SD	Census	15
Researchers; SRI	Census	9
Farmers -FGD	Quota	8

3.4.2 Sampling of Key Informants

In this study key informants were selected through purposive sampling on the basis of position in the target organization and ability to articulate policy issues with respect to revival of sugarcane farming in the study area. The key informants consisted of the managers of sugar companies and then the researchers and regulators who were members

of the Top management teams of the SRI and the SD respectively. In each company the managers of agriculture services or their representatives were purposively ncluded.

3.4.3 Focus Group Discussions

Focus Group Discussion (FGD) was used to enable gathering of in-depth information about different variables of the study. For selection of participants from the cluster of farmers purposive sampling was used based on farming experience, mode of contractual engagement, age, gender, number and size of land parcels under sugarcane farming and leadership position in matters of sugarcane farming . Four FGDs were held per Sugar Company and one for farmers who were not affiliated to any sugar company. Each Focus Group Discussion group was composed of nine members. During the Focus Group Discussons the researcher and research assistants acted as moderators and had an opportunity to probe for clarification of every information.

3.5 Data Collection Instruments

The study used Focus Group Discussion Guide, Key Informant Guides, Questionnaires, Observation Checklists and Document Content Analysis Guide as tools for data collection.

3.5.1. Questionnaire

Open and close-ended questionnaires (APPENDIX 1) were used to collect data from farmers. The close-ended questions are those questions in which possible answers are pre-specified and the respondents make the choice from pre-determined options. The open-ended questions were designed in such a way that they allowed the respondents to give their own views other than adoption of the pre-determined options. Use open and clost ended questionnaire items enabled the researcher to capture the respondents' views in totality. Questionnaires were adopted because they can ensure and assure the confidentiality of the respondents' information especially when administered by trained research assistants.

3. 5.2 Key Informant Interview Schedules

Interview guides (Appendix III) were used to compliment questionnaires in getting first hand information and reducing ambiguity in responses. The study used structured and semi structured interview guides to collect more data from farmers, the managers of NSC, WKSC, KALRO-SRI and AFA-SDstations in the study.

3. 5.3. Focus Group Discussion Guide

In this study, FGD Guides (Appendix IV) were used to collect data from farmers and the process was led by trained moderators in an organized meeting for one to two hours. This was undertaken because FGD provides insights into the problem of the study (Cooper & Schindler (2006). Focus group discussion was an appropriate data collection for managers as the subjects of the study were homogenous. Each group discussion was guided by a checklist structured according to themes and in a manner that allowed flexibility in raising questions (Appendix IV) and whenever necessary an interpreter was engaged to avoid distortion. This took care of the issues of group dynamics and quality control since through the discussions the respondents had an opportunity to hear each other's responses as they stimulate one another. For each mill two Focus Group Discussion sessions were held with farmers with due consideration to gender balance.

3. 5.4 Observation Checklist

To supplement the data collected through questionnaires and interviews observation checklist was used (Appendix V). Through observation the researcher evaluated variations in allocation of land to sugarcane farming in comparison to competing enterprises, quality of agronomic and farm management practices, infrastructural development and the suitability of the general agricultural environment in the study area with respect to revival of sugarcane farming.

3. 5.5 Document Content Analysis Guide; Secondary Data

A document is a written record produced to serve official functions of an organization and not specifically intended for research studies but could be a source of information that is significant for research purposes in terms of providing insight and understanding of research problems (National Science Foundation of America (2002). According to Dawson (2009) secondary data can be collected from libraries and archives. In this study, company documents particularly strategic plans , minutes of the Board of Management meetings, performance management contracts , service charters ,minutes of farmers cum company management meetings , minutes of policy review meetings , human resource records, factory operation records, sugar cane establishment and harvesting records, audited financial statements, relevant KSB and AFA Year Book of Sugar Statistics and sugar industry cane census reports were used as source of secondary data . In line with this more data was collected from institutional libraries and

where available archives. Additionally, relevant theses from different universities were also reviewed to address relevant issues of each specific objective. The instruments used in this study are in Table 3.3.

Table 3.3: Summary of Instrumentation per objective/ variable; Western Kenya Sugarbelt

Specific objective	Target population	Data collection Instrument	Appendix
Evaluate policy issues that have constraining influence on provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt	Farmers Company managers	Questionnaire Focus group discussion guide Interview schedules Key informant guide	1 3 4
Establish the extent to which policies drawn from the Constitution of Kenya enable provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt	Farm level enablers Market Level enablers	Questionnaire Focus group discussion guide Interview schedules Key informant guide	1 4
Determine the policy-related challenges that limit compliance of sugar agencies with COMESA standards for revival of sugarcane farming in the Western Kenya Sugarbelt.	Company managers KALRO-SRI AFA-SD	Questionnaire Key informant guide	2 3 4 7 8
Evaluate the capacity of SD and SRI to enable provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt in the perspective of policy.	KALRO-SRI AFA-SD	Questionnaire Interview schedules Observation checklist	3 4 7

Source; Researcher (2021)

3.6 Validity and Reliability of Data

3.6.1 Pilot study

A pilot study was undertaken to validate and standardize the research procedures and instruments prior to the main study. It focused on clarity, sensitivity and consistency of the research procedures and instruments. For the cluster of farmers, it was based on a sample of 40 respondents representing 10 % of the sample size of study while for the cluster of sugar companies all managers of Butali Sugar Mills were engaged. In brief for the instruments meant to collect data from farmers and sugar millers the pilot test was undertaken in Butali Sugar Company. For the researchers under the SRIpiloting was

undertaken in the KALRO-SRI station at Opapo in Migori County which neighbors the Western Kenya Sugar Belt and has similar characteristics as the study area. For the case of the SD ten percent of the regulators at the headquarters located in Nairobi were sampled and engaged in the pilot test and then excluded from the main study. The pilot was done for a period of five days and it gave the researcher and the research assistants an opportunity to understand the demands of each instrument and to improve where necessary.

3.6.2 Validity

In any and every research, the quality of findings depends on the appropriateness of the data collection instruments. This is because some instruments can effectively collect the target data but others cannot (Orodho, 2009). The appropriateness of an instrument is expressed in its validity which is a measure of how well an instrument measures what it is expected to measure (Kothari, 2010, Mugenda & Mugenda, 2003). Therefore, validity exists if or when the instrument in question generates data that measures what is supposed to be measured.

To ensure validity, in this study instruments were developed according to the specific objectives of the study. Then they were subjected to expert judgment or content – validation by the academic supervisors who assessed the relevancy, framing, sequencing or flow of question items and content validity indexing using the content validity formula of Amin (2005). According to the formula Content Validity Index is the ratio or fraction of the number of judges in this case university supervisors declaring a specific item as valid against the total number of items in the instrument. In line with recommendation of Amin (2005) any instrument scoring at least 80% is acceptable for use in survey studies. Otherwise, suggestions from the supervisors and other experts were used to improve the instruments through modifications, additions, deletions and review of question content, wording sequence and layout, additions, deletions, question difficulty modifications and clarity of instructions until each instrument attained a validity score of at least 80% prior to engagement. Further to this, the supervisors of the study oversaw the validation of the data collection instruments.

3.6.3 Reliability of Instruments

The quality of any research was reflected in the reliability and strength of the conclusions drawn from its findings while the quality of the findings depends on reliability of the data collection instruments (Orodho, 2009). According to Wakhungu (2008) prior to dissemination of research findings a researcher should measure and ascertain the reliability of his conclusions which are normally a reflection of the quality of data collection instruments. According to Saleemi (2014) a reliable instrument is one that has capacity to generate or produce the same outcome or responses when applied repeatedly under uniform circumstances or time after time. If an instrument repetitively to enhance or yields the same answers or responses from one particular set of respondents on different occasions then its reliable (MacDonald & Headlam, 2009). According to Kothari (2010) reliability is consistency of measurement. Therefore, to ensure quality findings a researcher needs to ensure that the instruments are reliable enough.

In this study, Split-half reliability test method which makes use of Split-half technique of reliability testing was used for reliability testing. The choice was informed by the fact that Split-half reliability test has capacity to enable elimination of cHance or random error and to ensure internal consistency (Saleemi, 2014). The scores for the items in each instrument were split into two halves based on odd and even numbering before being subjected to Crownbach's Alpha Coefficient Testing in accordance with the recommendations of Mugenda and Mugenda (2003).

To warranty engagement in the study each instrument was reviewed until it exhibited a Crownbach's alpha Coefficient score of at least 0.70. This is in accordance with Cohen *et al* (2018), Saleemi (2014) and Wakhungu (2008) according to whom any instrument with Crownbach's alpha Coefficient score of at least 0.7 is reliable enough and therefore acceptable for engagement in research. Further to the pilot study, reliability of each instrument was counter checked in the main study and the overall findings are in Table 3.4.

Table 3.4: Results of Reliability Test; Data Collection Instruments per Variable of Study in the Western Kenya Sugar Belt

Independent variable	Crown Bach Alpha co-efficient score		No of items	Remarks
	Pilot study	Main study		
Constraining Policy issues	0.72	0.756	19	Reliable
Enabling Policy Provisions	0.77	0.779	14	Reliable
Policy re-related challenges to compliance	0.75	0.7611	24	Reliable
Capacity -KALRO - SRI	0.773	0.78	16	Reliable
Capacity -AFFD - SD	0.81	0.821	21	Reliable
Overall	**0.7646**	**0.7792**		**Reliable**

Source: Researcher (2021)

The test yielded an overall mean score of 0.7646 for the pilot and 0.7792 for the main study respectively all of which are above the baseline score of 0.7. This implies that all questions or questionnaire items had attained appropriate levels of internal consistency therefore the data was accepted as reliable and adopted for further analysis.

Normality testing was undertaken in the study because it is impossible to draw accurate and reliable conclusions from a study unless the data under consideration follows normal distribution (Zikmund *et al.,* 2010). This is because statistical procedures like correlation, T-test and analysis of variance are based on the assumption that the data under consideration follows normal distribution (Mkalama, 2014). The primary data for this study was subjected to normality testing using Kolmonogorov-Smirnov Test. According to Zikmund *et al* (2010) Kolmonogorov – Smirnov test has the capacity to determine if two or more data sets differ significantly. In this study, the focus was on the data sets of NSC, WKSC, KALRO-SRI and AFA-SD. The results of the test are in Table 3.5.

Table 3.5: Results of normality test- Kolmonogorov – Smirnov test Policy vs Revival of Sugarcane Farming in Western Kenya Sugar Belt

	Kolmogorov – Smirnov			Shapiro-Wilk		
	Statistic	Sig	Df	Statistic	Sig	df
Revival of sugarcane farming	0.33	0.180	373	0.87	0.120	373

Source: Researcher (2021)

The results for Kolmogorov-Smirnov and Shapiro-Wilk statistics at 5 % significance level were 0.33 and 0.87 respectively while table values were 0.180 and 0.120 for Kolmogorov-Smirnov and Shapiro-Wilk statistics respectively. The decision rule is that the data is normal when the p score is more than the table value. In this case, since the P-values /scores for both tests were greater than the respective alpha value at significance level (0.05), the data is normal. After counter checking and confirmation by use of histograms as per the recommendations of Moore and Mccbe (2003), the study concluded that the data was originating from a normally distributed sample of population and was therefore adopted for further analysis.

3.7 Data Collection

The process of data collection started by the researcher recruiting and training six research assistants each of whom was at least a college student with proficiency in English, Kiswahili languages and the local languages of the farmers. The researcher then made an appointment with the respondents for data collection. With the help of the local administration the researcher then set an informal atmosphere for data collection. The data was collected from farmers' household, key informants and Focus Group Discussions. For observations, the researcher and research assistants used Field notebooks to record observation and enter evaluative comments against each observation.

For the cluster of farmers, data was collected from household heads. This is because in small-holder farming systems the family is the epicenter of operations, planning, decision-making and implementation while the household head occupies the position of

a manager (Kenya Institute for Public Policy Research and Analysis: KIPPRA, 2013). For collection of primary data, this study used a qualitative approach. This is because according to MacDonald and Headlam (2009) and Paton and Cochran (2002) qualitative approach enables a researcher to capture all dimensions of the problem under investigation. In line with the research protocol of the Republic of Kenya and of the Masinde Muliro University of Science and Technology as per the Science, Technology and Innovation Act No 28 of 2013, the researcher sought for the recommendation of the Directorate of post graduate Studies of MMUST to enable acquisition of Research Permit from the National Commission of Science Technology and Innovation (NACOSTI). Following acquisition of the permit the County governments of Kakamega and Bungoma in which the target sugar mills are located were briefed before the researcher proceeded to the mills where due protocol was observed. Protocol was also observed when dealing with all other respondents and government agents. In each mill and government office the process of data collection started with referencing and information sourcing from relevant company documents as per the predetermined document analysis guide. This was undertaken with the help of research assistants who were competitively recruited by the researcher.

A diversity of instruments developed by the researcher under the keen eye of the university supervisors were used to collect primary data after due validation. The use of diverse instruments catered for different situations of the study in terms of specific objectives, variables, response rate, time, target population, and differences in the characteristics of the subjects of the study. During development of the data collection instruments, factor analysis was adopted to enable optimization of the number indicators and retention of the indicators that are capable of explaining the relationship sought in the study in particular between policy issues and revival of sugarcane farming. The indicators with a minimum loading of 0.40 were included in the main study while the rest were discarded in line with the expert opinion of Hakanen, Schaufeli and Ahola (2008) according to which factor loading of at least 0.40 is good enough for survey studies. given that the study was a survey study the recommendations were recorded.
Primary data was collected from stakeholders on revival of sugarcane farming from 20th August to 6th October 2021.The major data collection instruments for the study were questionnaires composed of both clost ended and open-ended items. This was based on the expert opinion of Nachmias and Nachmias (2005) according to which

questionnaire approach has the advantage of anonyimty and accessibility to many respondents in many different places at minimal cost. Further to this, both structured and semi structured interview guides were used to compliment the questionnaires in collection of first-hand information. Additionally, FGDs led by a trained moderator in convenient and quiet environments were used to collect more data supplemented by a checklists structured according to themes and subthemes of the study. Use of local language was emphasized during the discussions to maximize information access. According to Cooper and Schindler (2006), FGDs generate quality data because of group dynamics and quality control since during the discussions the respondents hear, listen, stimulate and correct one another and even add more of the necessary information.

To supplement this, observation was used to enable investigation and evaluation of relevant policy documents like strategic plans and infrastructure records in the context of revival of sugarcane farming in the study area. The observation also provided an opportunity for counter checking the extent of document content analysis as per the document content analysis guide. The specific documents were the management and performance records or documentaries of sugar millers, AFA-SD and KALRO-SRI, Journal articles and visual images particularly charts, maps and photographs.

3.8 Data Processing, Analysis and Presentation

Assessement of response rate across clusters of respondents was the first step of data analysis and the findings are in Table 3.6.

Table 3.6: Response Rate per Cluster of study population, Western Kenya Sugarbelt

Study Population	Sample Size(N)	Positive Responses (N)	Response rate (%)
Farmers	400	373	93.25
Managers- WKSC	12	7	63.63
Managers- NSC	20	14	70.0
Regulators-SD	23	19	82.6
Researchers-SRI	21	16	76.19
Overall			**77.13**

Source: Researcher (2021)

The findings yielded an average response rate of 77.13% on the basis of which the data was adopted for further analysis. This is in line with the expert opinion of Mwangi (2015), Babbie (2004) and Mugenda and Mugenda (2003) all of which recommend a minimum response rate of 60% for survey studies. After adoption the raw data was edited for completeness, consistency and accuracy and then organized, summarized, coded and tabulated in a data base for analysis. The data was arranged into distinct sub-topics in accordance with the themes of the study and structure of the data collection instruments. The coded data was then entered into the computer and analyzed using both descriptive and inferential statistics as per version 25 of the statistical package for social sciences (SPSS).

Descriptive statistics were used to summarize the data in a manner to enable meaningful interpretation and description. This was in line with Kothari (2009) according to whom descriptive statistics enable researchers to summarize the data and further to describe meaningfully the distribution of measurements. The descriptive statistics applied in the study were frequency, percentages, mean scores, overall mean scores, standard deviation and standard error. The mean was extensively used because according to Mugenda and Mugenda (2003) it takes into account each score in the distribution.

Standard deviations (STD) were used to measure variance in the way and extent to which policy provisions influence revival of sugarcane farming. This was in line with Kothari and Gang (2014) according to whom STD deviation is the most widely used and stable measure of dispersion that takes into account each score in the distribution. A STD deviation score of more than one (>1) was interpreted as high variation in revival of sugarcane farming, a score of less than one indicated low variation, a score of 1.0 meant that the respondents were equally spread to the positive and to the negative side of variation. When the STD deviations are low it implied that the respondents generally agreed in their views and further that there were no cases of extremes or out liers in scoring during data collection. A high score STD deviation indicated a lower level of agreement or congruence among respondents in the scoring and vice versus (Kothari, 2009). For each variable the findings were then presented using tables and bar graphs according to specific objectives and thematic areas and due interpretation made.

Inferential analysis was conducted to guide drawing of conclusions about the relationship between variables based on observations from study samples. It was also used to determine whether the findings could be generalized to the population or not. Chi-square test was used for hypothesis testing when determining the significance of associative relationships between dependent and independent variables. According to Kothari (2010) Chi-square test effectively works with ordinal data to enable evaluation of findings on the basis of what is expected and what is observed.

Pursuant to this, this test was applied to the objective that sought to evaluate the capacity of AFA-SD and KALRO-SRI to revive sugarcane farming in the Western Kenya Sugarbelt. In this case the expectation was that at 5% significance level or 95% confidence limit each sugar agency had the capacity while the findings or results of the study as reflected in the calculated values represented the observations or observed values.

The test was further used to test the specific objective that sought to establish the extent to which policy related challenges limit government agencies from compliance with COMESA standards for revival of sugarcane farming. In this case the expectation was that at 5% significance level or 95% confidence limit the challenges have 100% limiting influence while the findings or results of the study as established represented the calculated or observed values.

T-test was used for hypothesis testing when determining relationships between unrelated samples. This is because T-test is the tool of choice when the study population is normal and finite regardless of whether the sample size is small or large, when the variance of the population is unknown and the alternative hypothesis is one-sided (Kothari, 2010: Mugenda & Mugenda ,2003). T-test is also effective with small samples of less than 30 regardless of whether the groups being compared have or do not have the same size (Kothari. 2010). Jooster and Fouric (2009) recommend use of T-test when dealing with two unrelated samples or when testing if two groups or categories are different to a significant level. In line with this, T-test was used to test the objective that focused on extent to which services for revival of sugarcane farming were constrained by policy provisions by comparing the extent to which policy isssues constrain or do not constrain services for revival of sugarcane farming and further for testing the objective that

focused on extent to which services for revival of sugarcane farming are enabled by comparing the categories of the enabled and unenabled services all at a significance level of 5%.

For each specific objective, analysis was based on null and alternative hypotheses at a significance level of 5% or 95% confidence limit. The critical question in the analysis was whether to accept or not to accept the null hypothesis at a significance level of 5% or confidential limit of 95%. The decision rule is to reject or fail to accept the null hypothesis when p-value is more than the table value at 5%. Further to this, hypothesis testing was carried out in the perspective of two types of errors specifically Type 1 Error or alpha error (α) which occurs when one rejects the null hypothesis that should have been accepted and Type 11 Error or beta error which occurs when one accepts a null hypothesis that should have been rejected.

3.9 Limitations of the Study

This study was constrained by the following limitations:

i. Lack of clear boundaries between NSC and WKSC; this was addressed by asking each farmer as a respondent to identify which of the two millers has been largely affiliated to during the focal period of the study (2000 to 2022).
ii. Geographical vastness of the study area. This was addressed through cluster sampling technique.
iii. Reluctance of some respodents to disclose information considered as sensitive. This limitation was addressed through clarification of the purpose of the study and observation of ethical standards.
iv. Limited access to key informants due to busy work schedules. This limitation was addressed by modifying the sampling process to incorporate more of the available but relevant personnel.

3.9.1 Assumptions of the Study

Although several assumptions were necessary for effective and scientifically correct accomplishment of this study. The following were considered and treated as critical;

i. Although NSC and WKSC are public and private millers respectively they are equal before every law save for the Law of Private Property.

ii. Apart from policy issues, all other issues that influence revival of sugarcane farming in the Western Kenya Sugarbelt were held constant during the study.
iii. Any issues or events at any stage of the sugar value chain can have forward or backward influence on provision of services for revival of sugarcane farming.
iv. Every Sugar Agency in Western Kenya Sugar Belt does its best to fulfill its mandate in provision of services for revival of sugarcane farming.

3.9.2 Ethical Considerations

This study was subjected to ethical screening procedures under the keen eye and ear of the supervisors. All published and unpublished literature used were duly cited and included in the reference list. Further to this, ethical standards as regards responsibility to professionals, respondents and the general public in terms of authorization, informed consent, confidentiality, voluntary participation, privacy and anonyimty were upheld with due observation of existing protocol. This is in line with Kombo and Tromp (2006) who assert that research activities are supposed to be underpinned and guided by ethical and legal principles for integrity purposes.

In the beginning the researcher sought for authorization from the Board of the School of Graduate Studies of MMUST. The authority was then used to acquire a Research Permit from the National Commission of Science, Technology and Innovation (NACOSTI). The permit was then used to acquire permission from the management of NSC, WKSC, AFA-SD and KALRO-SRI and of individual respondents prior to data collection. Ethics for protection of human rights resting on the principles of autonomy and fairness guided data collection process and each respondent was treated with respect, honesty and fairness.

CHAPTER FOUR

POLICY ISSUES CONSTRAINING REVIVAL OF SUGARCANE FARMING IN THE WESTERN KENYA SUGARBELT.

4.1. Introduction

This objective sought to evaluate the extent to which policy issues constrain provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt. Through factor analysis, the study identified farm related policy issues, market related policy issues, policy design issues and of gaps in the policy framework of the sugar subsector as the critical constraining policy attributes. Pursuant to this, each of these attributes was treated as a sub-theme of this study.

4.2 Socio-Economic and Demographic Characteristics of cane Farmers and Managers of Mills in the Western Kenya Sugarbelt

Given that the first objective of the study was was based on the opinion of farmers and millers, the study assessed the socio-economic and demographic characteristics of the farmers and managers of sugar mills. An assessment of the farmers by gender revealed male dominance (73%). In terms of distribution of the farmers by level of education, the study yielded the findings shown in Figure 4.1.

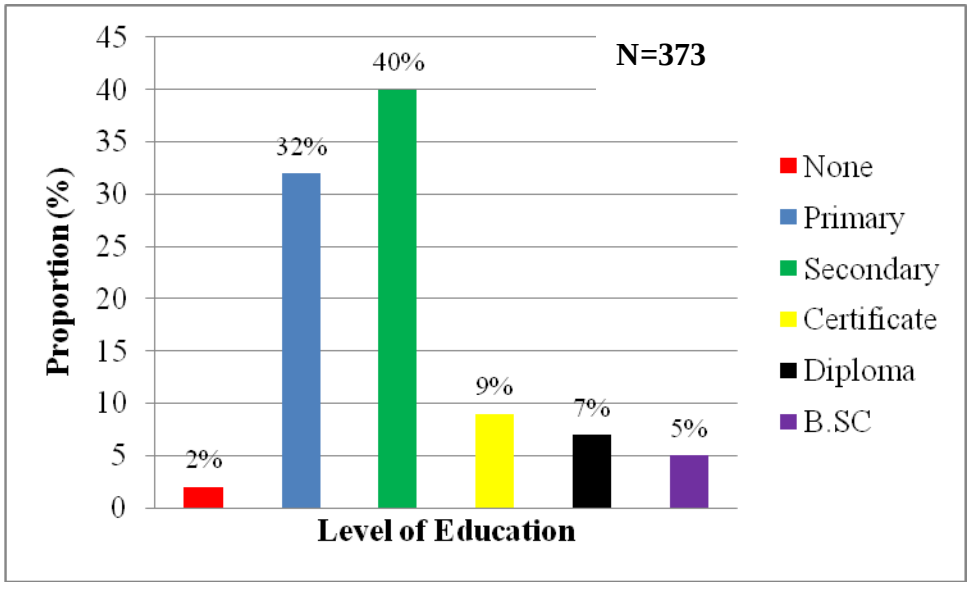

Figure 4.1: Distribution of farmers by Level of Education

The findings revealed that secondary school education was the modal level of education of the farmers in the study area (44 %, N =162). This was followed by primary education

(32%, N =120) and then 9 % (N =33) were certificate holders, 7 % (N =26) had diploma level of education while 5 % (N =19) had a first degree. In terms of distribution of farmers by land size, the study yielded the findings shown in Figure 4.2.

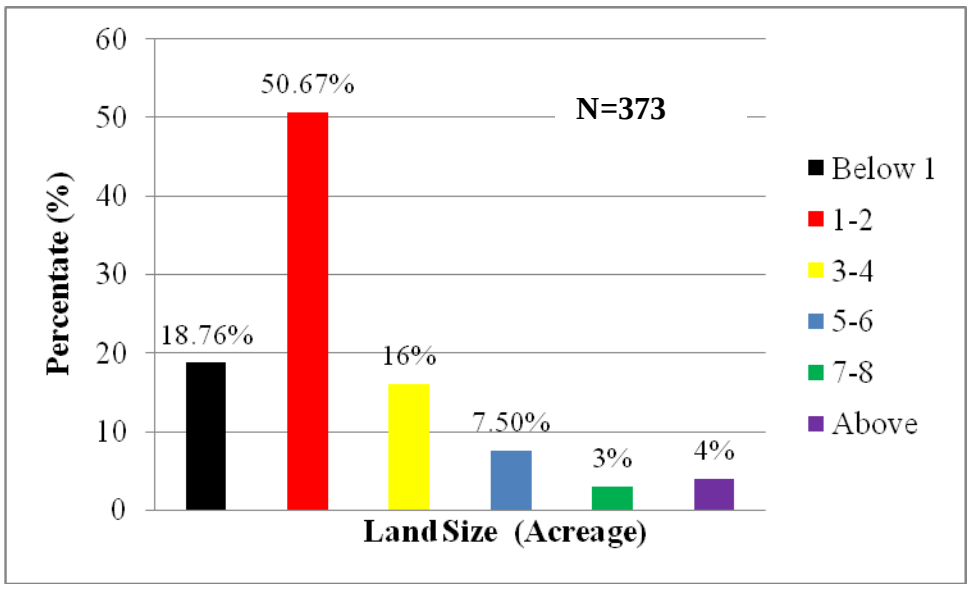

Figure 4.2: Distribution of farmers by Land Size.

According to the findings in Figure 4.2, a large majority of the farmers (69%; N=259) were engaging a maximum of two acres while 16% (N=60) engaged 2–3 acres, 8% (N=28) engaged 3-4 acres, 3% (N=11), 4– 5 acres as 4% (N=15) engaged over 5 acres. The concentration of the land holding around two acres pointed at the extent to which land subdivision has constrained sugarcane farming in the Western Kenya Sugarbelt. In addition to this, graphical evaluation of the trend of land allocation for sugar cane farming revealed that sugarcane farming was declining. Assessment of farmers experience in sugarcane farming data was collected on the basis of production cycle of one plant and two ratoon crops or a time range of six years as per the practice in the study. The findings are shown in Figure 4.3.

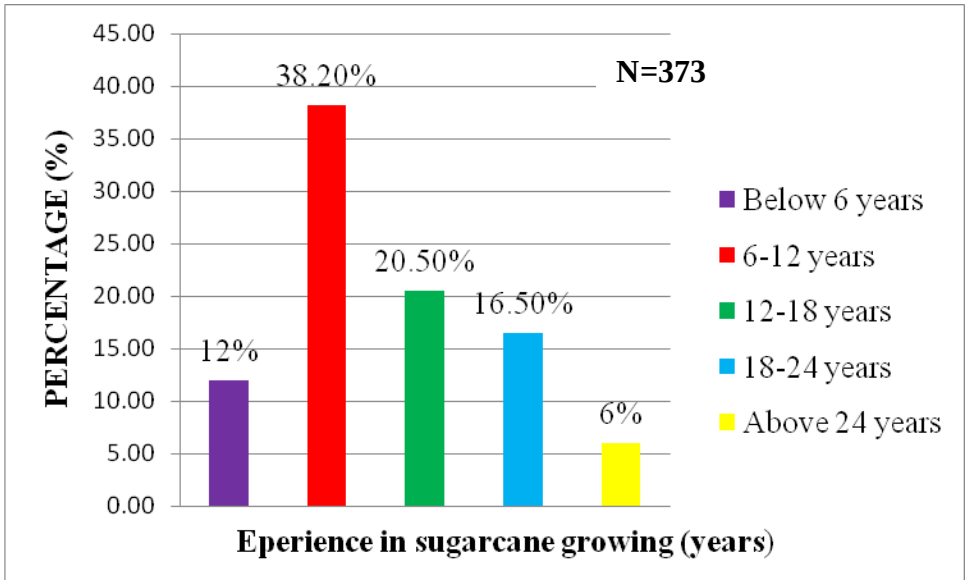

Figure 4.3: Distribution of farmers by Experience in Years

According to the findings in Figure 4.3 , the modal level of farmers experience was 6 – 12 years or a maximum two production cycles (38.25%; N=153). This was sequentially followed by experience levels of 12- 18 years or three production cycles (20.5% ;N =82) , 18-24 years or four production cycles(16.5%, N =66), five years or less than one production cycle (12% ; N =48) and lastly by the experience level of over 24 years or more than five more production cycles (6%;N=24). However, about 6.75% (N=7) of the farmers failed to declare their experience.

An assessment of farmers by mode of farming revealed that a majority (68.5%; N=274) of the farmers were engaging in non-contractual farming. An assessment of the contracted farmers yielded the findings shown in Figure 4.4.

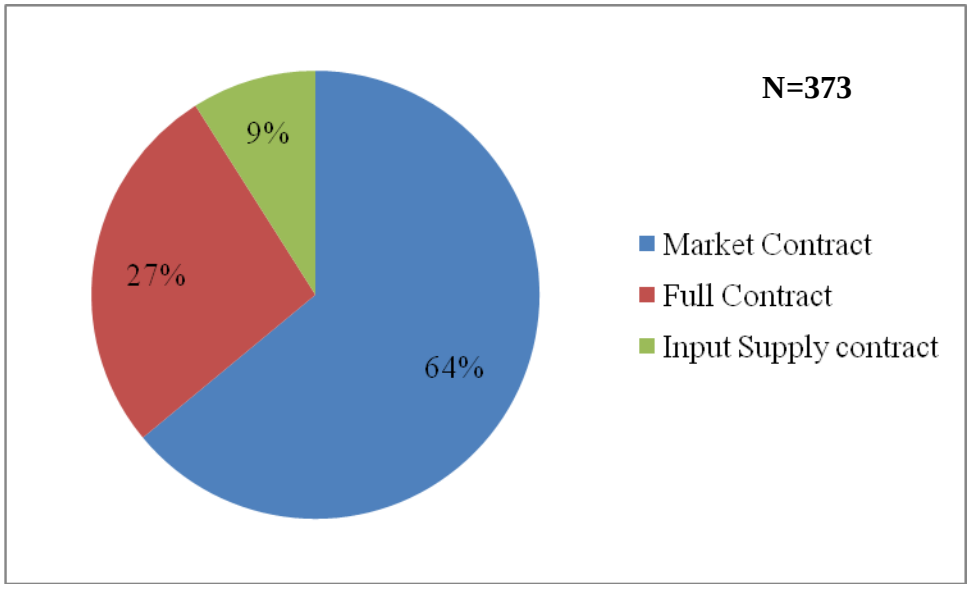

Figure 4.4: Distribution of cane farmers in the Western Kenya Sugar Belt by Contract Model

According to the findings most of the contracted farmers were on market contracts (64 %: N=63), 27% (N=27) were on full contract while 9% (N=9) were on input supply contracts. Assessment of the distribution of farmers across public and private mills revealed that most farmers (70.3%; N=275) were affiliated to private mills represented in the study by WKSC. About 25.0% (N=98) of the farmers were affiliated to public mills in this case NSC while 4.6% (N=18) were not affiliated to any specific category of mills.

Demography of the managers of sugar mills was investigated on the basis of gender, position in management service, level of education and management experience. The study revealed male dominance (71.42%; N=15) in management of sugar mills as assessment by position in management service yielded the findings shown in Figure 4.6.

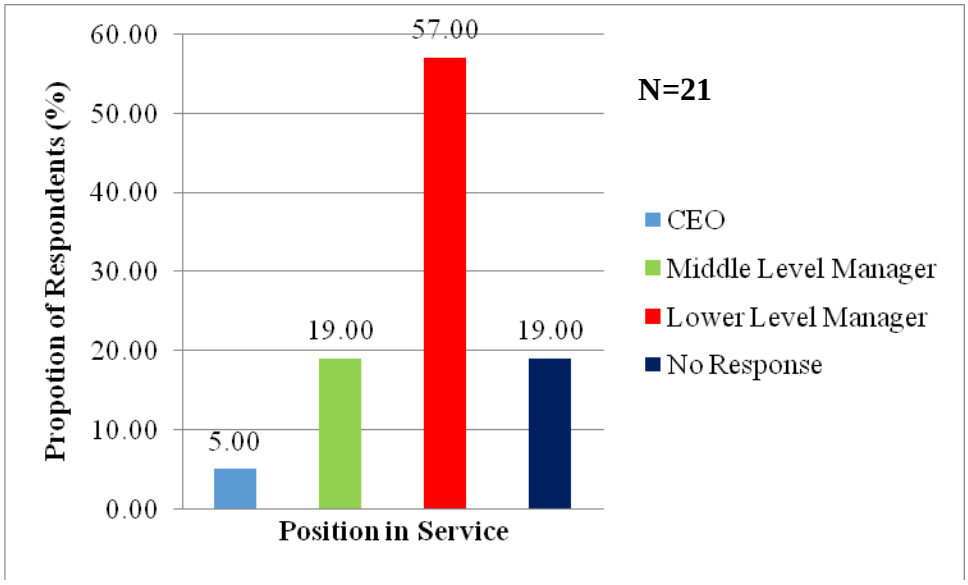

Figure 4.6: Distribution of Company Managers of Sugar Millers by Position

In terms of position in management service the findings indicated that the majority (57%, N=17) were lower-level managers, 19% (N=4) were middle level managers while 5% (N=1) were Chief Executive officers. When the managers were assessed by education the study yielded the findings shown in Figure 4.7.

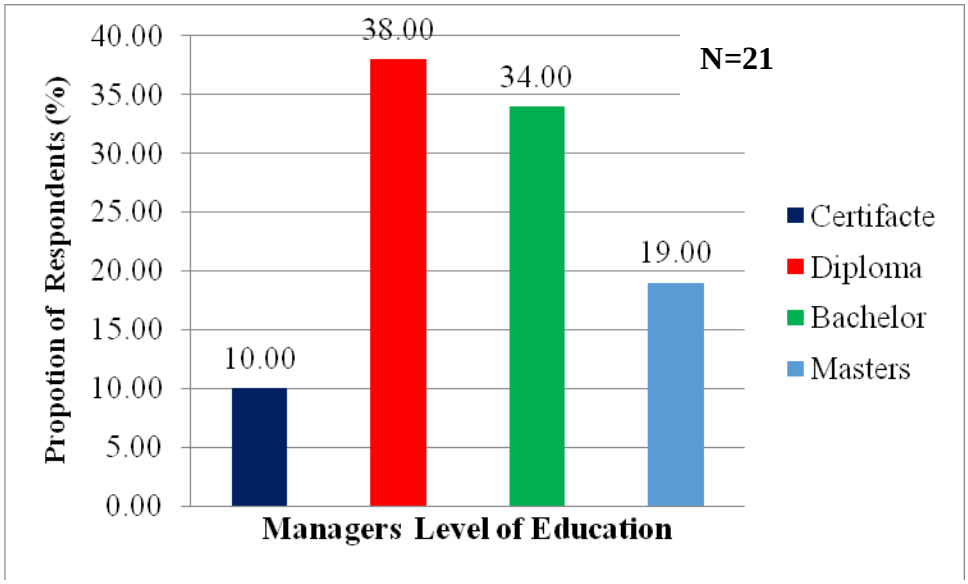

Figure 4.7: Distribution of Managers of Sugar Millers by Education

The findings revealed that the modal level of education for the managers was Diploma (38% N=8). It was closely followed by first degree (34% N=7) and then masters degree (19% N=4) and lastly certificate level of education (10% N=2). An assessment of the managers by work experience in years yielded the findings shown in Figure 4.8.

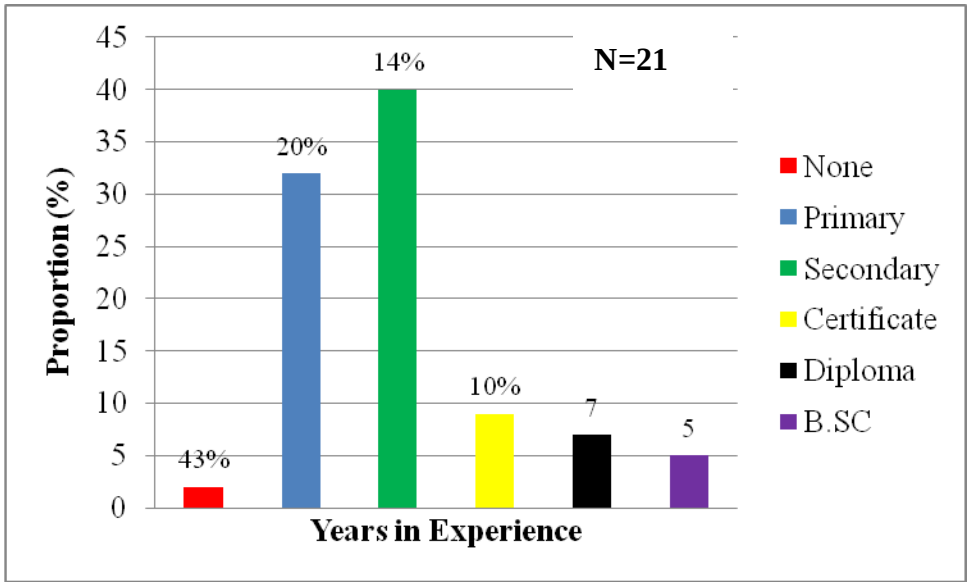

Figure 4.8: Distribution of managers of Sugar Mills in the Western Kenya Sugarbelt by Experience in Years

The study established that the modal level of experience was 6-10 years (43%; N=9). It was followed by 11-15 years 20 % (N= 4), 13% (N=7) then 16-20 years 14% (N=3), over 20 years 10% (N=2) and 20 % (N= 4) for experience of less than 5 years.

4.3 Evaluation of Farm Related Policy Issues Constraining Revival of Sugarcane Farming in Western Kenya Sugar Belt

Preliminary investigations through factor analysis identified farm related policy issues as one aspects of policy that had constraining influence on revival of suga cane farming in the Western Kenya Sugar Belt. Pursuant to this, the study investigated the policy issues and the findings were as in Table 4.1.

Table 4.1: Influence of to Farm- Related Policy Issues on Revival of Sugarcane Farming

Key; VW = Very Weak, W= Moderately Weak, NS = Not Sure, S = Moderately Strong, VS=Very Strong, SD=Standard Deviation, M=Mean.

Farm related policy issue	Level of Influence					
	Farmers' Perspective					
	VW (1)	W (2)	NS (3)	S (4)	VS (5)	Mean (μ)
Land Allocation	5% 19	32% 120	18% 64	33% 123	12% 45	3.79
Credit services	5% 19	24% 90	47% 176	9% 34	15% 56	3.76
Tractor Ploughing Service	5% 19	5% 19	49% 183	23% 86	18% 68	3.57
Sugarcane Transport Services	13% 49	33% 123	21% 79	23% 86	10% 38	3.16
Aggregate mean						3.74
	Millers' perspective					
Access / retention of land	14% 3	14% 3	14% 3	39% 8	19 % 3	4.33
contracts between farmers and millers	5% 1	14% 3	57% 12	14% 3	14% 3	3.95
Sugar cane transport services	14% 3	14% 3	24% 5	19% 4	29% 6	3.33
Aggregate mean						3.87

4.3.1 Household Resistance to Allocate Land to Sugarcane Farming

According the findings in Table 4.1 the study established that the issues of household resistance to allocate land to sugarcane farming and sugar cane transport challenges were constraining both farmers and millers from revival of sugarcane farming. For the farmers the critical issue was increasing resistance by farm families to allocate land to sugarcane farming while for millers the critical issue was limitation in access and retention of land under sugarcane farming. The influence of land issues was reflected in a mean score of 3.79 (μ) for farmers and 4.33 for millers. The scores are far above the test value or sample mean score of μ=3.00 indicating big level of influence. The finding was attributed to the Swynnerton Plan of 1954 which according to GOK (2019) and Swynnerton (1955) led to adoption of Individual land tenure system that led to land

subdivision to a level that could no longer support plantation crops like sugar cane. This finding was in line with Government of Kenya (2019) and Kenya Sugar Research Foundation (2009) reports which state that excessive land subdivision in the Kenya Western Sugarbelt has reduced the efficiency of farming services in Kenya. The finding was further attributed to lack of policy for land use control. This is because the Land Act No 6 of 2012 which is the baseline for land policies in Kenya has no provision for allocation of specific land or regions to sugarcane farming. This is worsened by existence of aging farmer population or old man syndrome which minimizes youth access to sugarcane farming. This view was captured through FGDs with young farmers in Bushiri Village in Malava Subcounty in Kakamega County as illustrated in Plate 4.1.

Key; Research Assistant

Plate 4.1: Research Assistant in FGD over issues of Aging Farmer Population - Bushiri Village in the Western Kenya Sugarbelt.

Further to this, in the Western Kenya Sugarbelt sugarcane is increasingly being out-competed by maize due to frequent delaying of farmers' payments. This is in line with Chidoko and Chimwai (2011) who established that households' choice of a farming project depends on potential return on investment. The influence of competition is greater on millers than farmers due to transfer of land by farmers or avoidance of land allocation to sugarcane farming. This finding was congruent with Waswa et al (2012) who established that Kenya's sugar industry is experiencing increasing transfer of agricultural resources to alternative projects. This was a common practice among farmers contracted to NSC because it was on public record for frequent delay of farmers' payments.

The study found that about 19 % (N=3) of the farmers and 12 % (N= 33) of the managers held the view that land issues had very big constraining influence on revival of sugarcane farming. This finding was attributed managers who had witnessed massive dropout of farmers particularly those that were affiliated to Nzoia Sugar Company. This is because NSChad lost more of the land surface that was previously under sugarcane than WKSC. In fact, the size of the Outgrower Zone of NSCwas diminishing fast. Further to this maize had become more popular than sugarcane around Nzoia than around WKSC.

Further to this, about 33% (N=90) of the farmers and about 14% (N=3) of the managers felt that the land issue had moderately big level of influence on revival of sugarcane farming. For farmers, this was attributed to those who were still engaging significantly large land sizes for sugarcane farming. For millers, this finding was attributed to WKSC due to ongoing expansion of its grower zone. However, approximately 18% (N=47) of the farmers and 14% (N=3) of the managers were not sure if this issue was constraining revival of sugarcane farming. For farmers, this was attributed to youthful farmers or new entrants who were inexperienced. For millers, the finding was attributed to managers whose line of duty did not involve land issues.

Further to this, about 32 % (N=88) of the farmers held the view that land issues had moderately small influence and while 5% (N=13) felt that it had very small influence on revival of sugarcane farming. For managers about 14% (N=3) felt that the issue land had moderately weak level of influence and another 14% (N=3) felt that it had very weak influence. For farmers these findings were attributed to households with significantly

large land parcels under sugarcane farming. For millers the findings were attributed to managers of WKSC. This is because during the study it was noted that WKSC appeared skewed towards procurement of mature sugarcane instead of establishment of new sugarcane fields.

4.3.2 Contracts between Millers and Farmers

For millers the next highly constraining land issue was difficulty in recruiting farmers for contractual farming. This finding was reflected in a mean score of 3.95 which is far above the sample mean or baseline of (μ) 3.00 thus indicating very big level of influence. This is because farmers were discouraged from contractual engagement because the collapse of outgrower's organizations (NOCO and WEKO) weakened their bargaining powers. In terms of policy, this finding was attributed to weaknesses in the Cooperative Act of 2012. For example, according to Waswa *et al* (2012) farmers had no say when their payments were delayed nor could they negotiate when the produce wass sub-standard. This is further supported by the findings of Kokeyo (2013) according to which in Kenya sugarcane farming contracts were not farmer-friendly. In terms of policy, this issue was attributed to contradictions among existing policies. For example, the contradiction between the Law of Contracts and the one for market liberalization and further in the case of the law of contracts versus the one for de-zoning of sugarcane farming areas as provided for in the Crops Act No 16 of 2013 (GOK,2010).

The study established that about 14% (N=3) of the managers felt that the issue of difficulty in recruiting farmers for contractual farming had very big constraining influence. This finding was attributed to managers from NSCwhich unlike WKSC heavily depends on contractual production. The finding was further attributed to long serving managers with experience of the past when contracts were the order of the day and sugarcane farming in the study area was vibrant and lucrative. This category of managers was associated with NSCwhich has been in existence for a longer time than WKSC.

The study further indicated that another (14%; N=3) of the managers held the view that the issue of difficulty in contracting farmers had moderately big level of influence. This was attributed to managers who had received complaints from contracted farmers about delivery of the contracted services. This category of managers is also likely to be from

Nzoia Sugar Company. This is because NSCwas facing increasing resistance from contracted farmers due to inability to pay farmers in time. The study also established that 14% (N=3) of the managers held the view that difficulty in contracting farmers had moderately weak level of influence while 5% (N=1) felt that it had very weak level of influence on provision of services for revival of sugarcane farming. These findings were attributed to managers of WKSC which was less dependent on contractual farming than Nzoia Sugar Company.

4.3.3 Sugarcane Transport Services

According to the study sugarcane transport services were constraining both farmers and millers. This was reflected in a mean score of μ=3.33 for millers andμ=3.16 for farmers. The two scores are close to the sample mean (μ) or baseline of 3.00 thus indicating low or limited influence. The millers are more influenced than farmers because they carry the burden of providing transport service for most farmers and were often overwhelmed. This finding was justified by the findings of KSB (2010) according to which in Kenya sugarcane harvesting and transportation services account for about 45% of the production costs. Further to this, Kenya has no policy for standardization of sugarcane transport services. Due to this sugarcane transport services and costs were not inspected, monitored or controlled by the government.

For farmers the criticality of transport issues was inability to engage personal means of transport due to poverty and further to transport losses due to poor infrastructure. This is congruent with the report of World of Sugar (2006) to the effect that in Kenya sugarcane farming areas are characterized by poverty. The influence of transport issue was further attributed to reforms that led to introduction of 16% VAT on transport services in 2002 because the cost is eventually loaded on farmers in line with the reforms in the Tax Amendment Act of 2012. In view of this new tax the situation is worse for farmers whose farms are distant from factories.

For millers, this finding was attributed to failure to harmonize supply and demand of transport services. This is because millers are increasingly losing control over cane establishment calendar due to massive shift of farmers from contracted to non-contracted farming model. The finding was further attributed to inadequacy of tractors because millers have limited access to credit services. For public mills like NSCthe issue is

further attributed to unregulated financial demands by the national treasury. According to COMESA (2015) poor infrastructure increases the influence of transport issues.

The study established that approximately 29% (N=6) of the managers and about 13% (N=49) of the farmers felt that transport issues had very strong influence. For millers this finding was attributed to transport managers of WKSC which was serving more farmers from distant places than NSC because farmers are attracted by timeliness of farmers' payments. For farmers the findings were attributed to those whose farms are located far from the factories and further to those who were linked to factories by poor roads.

The study further established that about 33% (N=123) of the farmers and 19% (N=4) of the managers felt that transport issues had moderately big level of influence. For farmers, this was attributed to those who were experiencing moderate transport losses and expenses due to the improving state of roads. For millers the findings were attributed to managers who were aware of communities or regions where sugarcane farming was moderately limited by transport issues.

Further to this, about 21% (N=79) of the farmers and about 24% (N=5) of the managers were not sure if transport issues were constraining revival of sugarcane farming or not. This was attributed to farmers who had the advantage of close proximity to sugar factories. For managers it was attributed to those without relevant experience or information because their line of duty did not involve transport. Furthermore about 23% (N=86) of the farmers and about 14% (N=3) of the managers felt that transport issues had moderately weak level of influence while 10% (N=38) of the farmers and 14% (N=3) of the managers felt that they had very weak level of influence on revival of sugarcane farming. For farmers these findings were attributed to those who were avoiding company transport as a credit service by engaging personal means of transport while for managers they were attributed to new recruits without experience and knowledge of relevant legislation.

4.3.4 Access to Credit Services

The study established that farmers were also constrained from reviving sugarcane farming by limited access to credit services. This was reflected in $\mu = 3.76$ and STD deviation of $\alpha = 1.290$. This was attributed to high cost of production and poverty among

the farming communities. This finding is congruent with the report of COMESA (2015). The finding was further attributed to the policy reform in Public Finance Management Act that abolished the SDL and further to the collapse of Farmers' Savings and Credit Cooperatives due to unresolved issues in the Cooperative Act of 2012. This levy had grown into an effective loan strategy for sugarcane farming (KSB, 2010). Additionally, millers had minimized credit services to farmers due to the risk of cane poaching. This finding was in line with KSB (2012) according to which market liberalization had provided avenues for sugarcane poaching. This was confirmed in 2014 through a report by the management of NSCto the Agriculture committee of parliament (KNA, 2014) and further when Kenya Sugar Board confirmed WKSC as the main poacher in the Western Kenya Sugarbelt (KSB, 2012).

The study established that about 15% (N=41) of the farmers held the view that limited access to credit services had big constraining influence on revival of sugarcane farming. These findings were attributed to farmers who were engaged in non-contractual farming because such farmers had no access to sugar cane-specific loan services. About 9% (N=25) of the farmers felt that the issue had moderately big constraining influence. Thwas attributed to contracted farmers. This is in line with Waswa *et al* (2009) who established that contracts enable farmers to access credit services.

However, about 47% (N=129) of the farmers were not sure if credit issues had constraining influence on revival of sugarcane farming. This was attributed to farmers who were funding sugarcane farming practices without loans or those who were comfort with millers' loan scheme. These farmers were associated with WKSC which unlike NSCwas more reliable financially. Additionally, about 24% (N=26) of the farmers held the view that the issue of credit service had moderately weak level of influence while 5% (N=13) felt that the issue had very weak level of influence on revival of sugarcane farming. These findings were attributed to farmers with capacity to fund farming activities independently.

4.3.5 Access to Tractor Services for Land Preparation

The study established that limited farmers' access to tractor ploughing service also was constraining revival of sugarcane farming. This was reflected in a mean score (μ) of 3.57 which is far above the baseline mean of 3.00 indicating big level of influence. This

finding was attributed to introduction of non-contractual farming which delinked most farmers from access to millers' tractor services. This finding is in line with Kokeyo (2013) and Waswa *et al* (2009) who affirmed that contracts enable farmers to access tractor services from millers. The situation was further attributed to high prevalence of poverty since most farmers could not afford tractors and yet subsidy was non-existent. In Kenya the Public Finance Management Act 2012 has no policy for subsidization of tractor services (KSB, 2010). The finding was further attributed to the fact that in the Western Kenya Sugarbelt farmers' access to tractor hire services was constrained by competition from maize farming.

In terms of law and policy, the issue of tractors results from adisconnect in service provision due to contradictions in law. This was due to contradiction between State Corporations Act of 2012 according to which public mills are parastatal and hence under national government and the Devolution Act of 2012 according to which farming which includes sugarcane farming is a function of county governments. On the ground only the County Governments have tractors which they engage for food crop production as per their mandate (GOK, 2019). Meanwhile, the national government is not directly connected to sugarcane farming activities.

According to the study about 18% (N=51) of the farmers felt that the issue of limited access to tractor services had very big level of influence on revival of sugarcane farming. These findings were attributed to non –contracted farmers with large land parcels. Further to this, about 23% (N=64) of the farmers held the view that this issue had moderately big level of influence. This was attributed to non-contracted farmers with moderately big land parcels. However, about 49% (N=136) of the farmers were not sure if this issue was constraining the revival of sugarcane farming. This finding was attributed to farmers under WKSC which had more effective tractor services. Further to this, 5% (N=15) of the farmers felt the issue had moderately weak level of influence as an equal proportion held the view that it had very weak level of influence on revival of sugarcane farming. These findings were attributed to contracted farmers who were satisfied with millers' tractor services and particularly those who were affiliated to WKSC since it had comparatively better services. The findings were further attributed to rich farmers owning tractors or thouse chould afford to hire.

4.4 Influence of farm related policy issues on Nzoia and West Kenya Sugar Companies

Further to this, comparison of the extent to which the performance of NSC and WKSC in terms of reviving sugarcane farming was being constra
ined by farm related policy issues yielded the findings were in Table 4.2.

Table 4.2: Influence of Farm related policy issues on NSC and WKSC in Western Kenya

Miller	Count	Mean	Std. Dev	S. E
West Kenya sugar company	7	3.0114	1.05624	0.29295
Nzoia sugar company	14	3.5036	1.15173	0.30781

According to the findings in Table 4.2 as reflected in mean scores, NSC was more constrained than WKSC (3.50>3.0114). This finding was attributed to the fact that policy reforms like de-zoning of the sugarcane production areas, liberalization of the sugar market and the proposed privatization intervention had had a constraining influence on NSC and on the contrary an enabling influence on WKSC. This was attributed to differences in finance empowerment and government interference with the operations of public and private mills. This finding was well reflected and supported by the fact that WKSC had expanded it's out grower activities up to the gate of NSC. Further to this, NSC had been deactivated by the proposed plan for privatization while the proposal was highly motivational to WKSC in terms of the desire to purchase and take over NSC and its production base. In fact, geographically WKSC had already taken over or displaced NSC since it had spread its out growers' coverage up to and around its gate.

The study further established that managers are highly congruent over the issues of differences in extent of constrain between the two millers. This was reflected in the low score of standard deviation (1.15173>1.05624) all close to the sample mean or baseline of α=1.00 and further in the slight difference in the scores of standard error (0.30781 >0.29295).

4.5 Influence of Market -Related Policy Issues on Revival of Cane Farming in the Western Kenya Sugarbelt

Market related policy issues were identified through factor analysis as having constraining influence on revival of sugarcane farming in the Western Kenya Sugar Belt. An investigation of the influence of these issues yielded the findings in Table 4.3.

Table 4.3: Constraining influence of Market related policy issues on revival of cane farming in the Western Kenya Sugarbelt

Market-related policy issues	**Level of Influence**					
	Farmers' perspective					
	VL (1)	**L (2)**	**NS (3)**	**S (4)**	**VS (5)**	**Mean (μ)**
Taxation	10% 38	9% 33	15% 56	36% 134	30% 111	3.89
Sourcing sugar from other countries	12% 41	12% 41	10% 37	34% 127	32% 120	3.76
Cane Pricing services	12% 41	11% 41	9% 34	31% 116	37% 138	3.70
Weighbridge services	10% 38	12% 41	15% 60	27% 100	36% 134	3.67
Delay of farmers' payments	38% 142	17% 64	8% 27	8% 30	29% 109	3.2
Aggregate mean						3.333
	Millers' perspective					
Sourcing sugar from other countries	33.3% 7	23.8% 5	18.8% 4	14.1% 3	9.4% 2	3.99
Taxation	4.7% 1	18.8% 4	18.8% 4	33.3% 7	23.8% 5	3.78
Timeliness of farmers' payments	14% 4	11% 2	19% 4	19% 4	29% 6	3.33
Aggregate mean						**3.70**

Key; VL= Very Low, L=Low, NS = Not Sure, H = High, VH=Very High, M=Mean

4.5.1 Sourcing of Cheap Sugar from Other Countries

According to the findings in Table 4.3 the study identified the practice of sourcing cheap sugar from other countries, taxation and delay of Farmers' payments as marketing issues that were constraining both farmers and millers from reviving sugarcane farming. The issue of sourcing sugar from outside had very big level of influence on revival of

sugarcane farming as reflected in a mean score (μ) of 3.99 for millers and 3.76 for farmers all of which are far above the sample mean or baseline of μ=3.00. This issue has more influence on millers than farmers (μ=3.99>μ=3.76). This is because millers experience the impacts of over flooding the domestic market with cheap sugar more significantly than individual farmers.

For millers the issue of sourcing sugar was most influential. The influence of the issue of sourcing sugar from outside was attributed to the fact that it erodes public pressure on the government to revival of sugarcane farming. This is because it comforts the government by ensuring that with or without domestic production no citizen misses sugar save for purchasing power. In extreme cases the domestic market was over flooded by cheap sugar from outside. This has a backward constraining influence on revival of sugarcane farming because it locks out the locally produced sugar due to price advantage. In terms of policy this finding was attributed to misuse of the Trade Licensing Act (2021) for regulation of the domestic sugar market and the Import, Export and Essential Supplies Act (2021). This act was meant to minimize sugar importation and maximize domestic production but it was being used otherwise (GOK, 2019).

According to the study, about 33.3 %(N=7) of the managers and 32% (N=120) of the farmers felt that this issue had very strong influence. For millers the findings were attributed to managers with long term experience in sugar marketing, recruitment of farmers and provision of agricultural extension services. For farmers the finding was attributed to those who experienced serious payment delays when the domestic market was flooded with sugar from outside. Further to this, about 23.8%, (N=5) of the managers and about 34% (N=127) of the farmers felt that the issue had moderately big level of influence. For millers this finding was attributed to managers with limited experience in sugar marketing and agricultural extension services. For farmers it was attributed to those with secondary school or higher level of education because such level enables understanding of causal relationships in agricultural marketing.

However, about 18.8% (N=4) of the managers and 10% (N=37) of the farmers were not sure if the issue of sourcing sugar from outside was constraining revival of sugarcane farming. For farmers this finding was attributed to new entrants who were yet to get relevant experience and knowledge. For millers the finding was also attributed to newly

recruited managers without knowledge and experience. On the contrary, about 14.1% (N=3) of the managers and 12% (N=41) of the farmers felt that the practice had moderately weak level of influence while about 9.4% (N=2) of the managers and 12% (N=41) of the farmers held the view that sourcing sugar from outside had very weak influence. These findings were attributed to managers who were both sugar producers and importers. According to focus group discussions among farmers, this was an attribute of WKSC. For farmers, this was attributed to those were too limited in education to understand marketing challenges.

4.5.2 Tax Isssues in Sugarcane Value Chain

The study established that taxation constrain revival of sugarcane farming as reflected in mean scores of 3.89 for farmers and 3.78 for millers. These findings were attributed to multiplicity and high levels of taxation that significantly reduce payee's income. This is similar to the case of Pakistan where taxation has negative influence on the sugar industry (Masinde & Shitsema, 2013). Farmers were more constrained than millers due to the economy of scale whereby farmers as individuals felt the pressure of taxation much more than millers which are corporate. Further to this, introduction of 16% VAT on transport services was being loaded on farmers. The finding was further attributed to extra taxation due to classification of sugar as a non-foodstuff. The practice is contrary to KSB (2009) according to which Kenya does not manufacture industrial Sugar but only manufactures table sugar.

The study established that approximately 30% (N=111) of the farmers and 23.8% (N=7) of the managers felt that issues of taxation had very strong influence on revival of sugarcane farming. For farmers these findings were attributed to those whose farms are far from factories. This is due to the introduction of 16% VAT on transport service and to the fact that transport charges are based on distance. For millers the findings were attributed to members of the top management teams because such managers directly experience the pressure of taxation. Further to this about 36% (N=134) of the farmers and 33.3 % (N=7) of the managers held the view that issues of taxation had moderately strong influence. For millers the findings were attributed to long serving managers who had witnessed mills develop financial challenges due to expenditure on tax. For farmers this finding was attributed to those with secondary school education since this level of education empowers one to understand the economics of taxation.

However, about 15 % (N= 56) of the farmers and about 18.8% (N=4) of the managers were not sure if issues of taxation constrained revival of sugarcane farming. For farmers this was attributed to those who were lowly educated or without knowledge of the economics of taxation. This was well supported by the fact that up to 34% of the farmers only had primary school education which does not cover principles and practices of taxation. For millers these findings were attributed to managers whose line of duty was exclusive of finance AFAirs. On the contrary, about 18.8% (N=4) of the managers and 9 %(N=33) of the farmers felt that issues of taxation had moderately weak level of influence while 4.7% (N=1) of the managers and 10% of the farmers felt that they had very weak level of influence on revival of sugarcane farming. These findings were attributed to managers and farmers who were blind to the reality of taxation due to sycophancy to government especially for the managers who were political appointees.

4.5.3 Policy for Timing of Farmer Payments

The study established that another issue that was constraining both farmers and millers was frequent delay of Farmers' payments. This was reflected in a mean score (μ) of 3.33 for millers and 3.2 for farmers. The finding was attributed to the fact that economic return from the farm is the critical factor that investors consider in choosing farming projects (Odera, 2014). The finding was in line with KNA (2014) according to which Kenya's sugar industry is characterized with frequent delay of farmers' dues. In terms of policy the finding was attributed to lack of an enabling clause in the Public Finance Management Act of 2018 specifying the time limits for Farmers' payments and the enforcement mechanism when necessary. For millers the findings were attributed to NSCwhich unlike WKSC is on public record for delaying of farmers'payments frequently due to management failures and unregulated financial demands from the National Treasury. This is because most of these demands were arising from misuse of the discretionary powers of the presidency. On the contrary WKSC is cushioned by the law of private property.

The finding was attributed to the fact that frequent delay of farmers' dues leads to drop out of farmers from the enterprise because their households depend on this income for livelihood and re-investment. This result is in agreement with the views of Odera (2014) to the effect that when payments are delayed farmers are incapacitated and further to

the views of Waswa *et al* (2012) according to which this issue discourages investment and re-investment . The study established that up to 29% (N=109) of the farmers and 29% (N=6) of the managers held the view that frequent delay of farmers' payments had very big constraining influence on revival of sugarcane farming. Further to this, about 8% (N=30) of the farmers and 19% (N=4) of the managers felt that this issue had moderately big level of influence. For both farmers and millers these findings were attributed to NSC because unlike WKSC it was characterized with frequent and long-term delay of farmers' dues.

However, about 19% (N=4) of the managers and 8% (N=27) of the farmers were not sure if the issue of frequent delay of Farmers' payments was constraining revival of sugarcane farming. For farmers this finding was attributed to those who were yet to experience payment delays because they were new entrants. For millers it was also attributed to managers who were new recruits and therefore yet to witness cases of payment delay. On the contrary, about 17% (N=64) of the farmers and 11% (N=2) of the managers felt that the issue had moderately weak level of influence while 14% (N=4) of the managers and 38% (N=142) of the farmers felt that frequent delay of farmers payments had very weak level of influence on revival of sugarcane farming. For both farmers and millers these findings were attributed to WKSC which was on public record for timely payment. In fact, timeliness of Farmers' payments was its key attractive strength.

4.5.4 Sugarcane Pricing Policy

For farmers the next most constraining issue was the issue sugarcane pricing (μ=3.70). This finding was contrary to the case of Sri Lanka because in Sri Lanka prices of sugarcane and sugar are the enabling instruments of the sugar industry (Keethipala, 1997). The finding was attributed to losses experienced by farmers due to pricing challenges like failure of the pricing committee to consider all elements of the production costs which was strongly expressed during Focus Group Discussions. In Kenya the pricing committee sets prices in accordance with sugar supply or availability in the domestic market and yet some of the available sugar is due to illegal influx of cheap sugar from other countries (GOK, 2019).

This finding was contrary to the case of India where pricing is guided by a pre-determined revenue-sharing scheme between growers and millers (Arjchariyaatong, 2006). However, for Kenya the situation was similar to what was being practiced 50 years ago. At that time the government through the Kenya National Trading Corporation exercised monopoly over prices (Wanyande, 2001). Cartels and middlemen also influence pricing of sugarcane and sugar to the disadvantage of farmers (COMESA, 2015). The pricing strategy rewards middlemen more than farmers (Government of Kenya, 2019).

According to the study, 37% (N=138) of the farmers held the view that the issue of sugarcane pricing had very strong influence on revival of sugarcane farming while 31% (N=116) felt it had moderately big level of influence. These finding was attributed to managers in agricultural extension service because of their exposure to public outcry about pricing issues. This finding was in agreement with the report of Kumar and Arora (2009) to the effect that poor remuneration demotivates farmers. The findings were attributed to farmers who were contracted to NSC which unlike WKSC sticks on the minimum price recommendations of the government. WKSC offers slightly higher prices in line with the Competition Act of 2012. Further to this about 9% (N=34) of the farmers were not sure if the issue of pricing was constraining revival of sugarcane farming. This was attributed to beginners or inexperienced farmers without experience and information and further to farmers who were ignorant or limited in education.

However, about 11% (N=41) of the farmers felt that the issue of pricing had moderately weak level of influence on revival of sugarcane farming. This finding was attributed to farmers who were contracted to WKSC. This is because unlike NSC, WKSC was offering relatively higher prices. Further to this, about 12% (N=41) of the farmers held the view that pricing had very weak influence. This was attributed to farmers who were not contracted or fixed to any company but instead operate on the principle of the highest bidder by targeting the best market at each time.

4.5.5 Manipulation of Weighbridge machines

For farmers another issue that was constraining revival of sugarcane farming as reflected in a mean score of 3.67 was the issue of manipulation of weighbridge service. This finding was attributed to failure of the government particularly the Department of

weights and measures to uphold the measurement standards as per the Standardization Act of 2012 (GOK, 2019). This is because millers were often suspected of manipulating weighbridges to favour themselves. Farmers were also suspicious about the accuracy of the weighbridges given that they were not represented during the weighing process since the weighing stations were out of bounds to the public.

According to the study, approximately 36% (N=134) of the farmers felt that the issue of manipulation of weighbridge service had very strong constraining influence on revival of sugarcane farming. While about 27% (N=100) felt that the issues had moderate influence. These findings were attributed to farmers who were associated with WKSC because during the study they expressed strong reservations through FGDs. However, about 15% (N=60) of the farmers were not sure if weighbridge issues constrained revival of sugarcane farming. This finding was attributed to farmers who were beginners and therefore inexperienced. On the contrary, about 12% (N=42) of the farmers felt that the issue of manipulation of weighbridge service had moderately weak level of influence while 10% (N=38) felt the issue of manipulation of weighbridge service had very weak level of influence on revival of sugarcane farming. These findings were attributed to farmers associated with NSC because unlike WKSC, NSC was least suspected since it was using a common weighbridge for purchasing sugarcane from farmers and weighing sugar for sale. This meant the weighbridge was serving the interests of the millers and farmers equally.

4.6 Comparative Influence of Market related policy issues on NSC and WKSC.

The results of the investigation on the extent to which millers were constrained by market services are in Table 4.4.

Table 4.4: Influence of market related policy issues on NSC and WKSC

	Miller	Count	Mean	Std. Devi	Std. Error
	West Kenya	7	3.5036	0.70418	0.26615
	Nzoia	14	3.9091	1.15173	0.30781

According to the findings in Table 4.4, both public and private mills were highly constrained by policy provisions with respect to sugarcane marketing services. This finding was attributed to the fact that the sugarcane market is no longer organized and

systematic due to liberalization. However, as reflected in the differences in mean scores NSC which is a public mill was more constrained than WKSC which is private (3.5036<3.9091). This finding was attributed to the fact that being a public mill NSC is obligated to adhere to the law than WKSC which operates selectively under protective advantage of the law of private property.

4.7 Constraining Influence of policy design issues on revival of cane farming

Aspects of policy design were identified among the broad policy issues that had constraining influence on revival of sugarcane farming in the Western Kenya Sugar Belt. An investigation of the influence of policy design issues on revival of sugarcane farming yielded the findings in Table 4.5.

Table 4.5: Aspects of policy design vs. Revival of cane farming in the Western Kenya Sugarbelt

Issue of Policy Design	**Constraining Influence**					
	VS (1)	**S (2)**	**NS (3)**	**B (4)**	**VB (5)**	**Mean (μ)**
Provision for Veto powers	10% 2	4.7% 1	4.7% 1	24.3% 5	57.4% 12	4.23
Amalgamation of Agricultural Services	10% 2	4.7% 1	10% 2	20% 4	57.4% 12	4.2
Adoption of Scattered Policy Sources	10% 2	4.7% 1	10% 2	24.3% 5	52.7% 11	4.12
Provision for Administrative choice of policy Reforms	10% 2	10% 2	0% 0	38% 8	43% 9	3.91
Provision for dispersed governance	10% 2	0% 0	24% 5	19% 4	48% 10	3.89
Cartelization of the policy design	10% 2	10% 2	10% 2	25% 5	45% 9	3.85
Provision for Discretionary Powers	14% 3	10% 2	14% 3	19% 4	43% 9	3.67
Limited legal backing for policies	14% 3	14% 3	29% 6	14% 3	29% 6	3.29

Key; VS= Very small , S= Small, NS = Not Sure, B= Big, VB=Very Big

4.7.1 Provision for Veto powers

Table 4.5 shows the study's findings, which identified presidential veto powers as the aspect of policy design that had the greatest constraining influence on the provision of services for the revival of sugarcane farming in the Western Kenya Sugarbelt. This influence of this aspect was reflected in a mean score (μ) of 4.23, which is very far above the baseline score of 3.00, indicating high level of influence. This finding was attributed to Articles 113 and 115 of the Constitution of Kenya which provide veto powers to the president of the Republic of Kenya. This was because president's decisions and directives often had serious consequences because the president is the head of government. This finding is in line with the fact that in Kenya the state was the main stakeholder in sugarcane farming (Njeru, 2016). However, on several occasions the power has been used to give directions that limit provision of services for sugarcane farming.

Further assessment revealed that about 57.4% (N=12) of the managers held the view that the aspect of veto powers to the presidency as in the policy design has very big constraining influence on provision of services for revival of sugarcane farming. This finding was attributed to an incident when a president who is now deceased advised sugarcane farmers to shift to guava farming. This had a lot of influence since every word from the president is perceived as a well-informed directive. In fact, one manager lamented that it was unfortunate that while millers were struggling to revive sugarcane farming, the president advised farmers to shift to guava production.

Further to this, about 24.3% (N=5) of the managers felt that the aspect of veto powers to the presidency as a component of the policy design had moderately big constraining influence on provision of services for revival of sugarcane farming. This finding was attributed to cases when the presidency applied this specific power by refusing to assent to some legislation. An example occurred when the power was used to cover the failure of the presidency to sign the Sugar Bill of 2019 into an Act of parliament yet according to the parliament and public the bill had great potential.

However, about 4.7% (N=1) of the managers were not sure if the aspect of veto powers to the presidency as a component of the policy design had constraining influence on provision of services for revival of sugarcane farming. These findings were attributed to

managers who were political appointees and hence unable to declare personal views. On the contrary another 4.7 %(N=1) of the managers felt this aspect had moderately small influence on provision of services for revival of sugarcane farming while about 10% (N=2) felt that it had very small influence. These findings were attributed to managers who were newly employed and yet to experience the influence of the veto powers.

4.7.2 Amalgamation of Agricultural Services

The influence of amalgamation of agricultural services under the Agriculture and Food Authority in the policy design had the second highest constraining influence on provision of services for revival of sugarcane farming as in Table 4.5. This was reflected in a mean score of 4.2. Amalgamation of agricultural services is based on the fact that agricultural value chains consist of inter-linkages between and within actors involved in production, processing, distribution of inputs, outputs as well as co-ordination and governance of the value chain (Furuholt & Matotay, 2011). The influence was attributed to replacement of the Sugar Act No 1 of 2001 by the AFA Act No 13 of 2013 and the Crops Act No 16 of 2013 (GOK,2019). This is because the new acts that created the SD and eight other directorates and amalgamated all of the farming issues under national directorate against the Devolution Act of 2012. This shifted sugarcane farming from being an independent or stand -alone aspect of the national policy framework and economy to a component of the single pool of crop directorates. The dynamics of amalgamation significantly reduced government attention or focus and by extension service provision for sugarcane farming. This finding was contrary to Sanga *et al* (2013) according to whom a strong link between value chain actors depends on policy and efficiency of communication and is essential for performance.

The study established that about 57.4% (N=12) of the managers held the view that the aspect of amalgamation of sugarcane farming under AFA as a component of the policy design had very big constraining influence on provision of services for revival of sugarcane farming. This was attributed to failure to incorporate the specific requirements of sugarcane farming in the amalgamation process. This resulted in disorganization and reduction in funding of sugarcane farming services as from 2013 when amalgamation of services was adopted. This finding was attributed to managers who were experiencing challenges over provision of essential services for sugar canes farming that were occasioned by the aspect of amalgamation.

Further to this, about 20% (N=4) of the managers felt that the aspect of amalgamation of sugarcane farming under AFA as in the policy design had moderately big level of influence on provision of services for revival of sugarcane farming. This finding was attributed to the fact that for some time the Agriculture and Food Authority could not provide basic services for sugarcane farming due to limited human resource. This is because for a long time the authority operated with limited staff and more critically without a Board of Management and, therefore, could not hire more staff to satisfy the existing human resource demand.

However, about 10% (N=2) of the managers were not sure if the aspect of amalgamation of farming services under AFA had constraining influence on provision of services for revival of sugarcane farming. This finding was attributed to managers who could not declare their views due to loyalty to the political class. Alternatively, the findings were attributed to managers who were employed after the amalgamation process and therefore had no alternative experience for comparison. On the contrary about 4.7% (N=1) of the managers felt that the aspect had moderately small influence on provision of services for revival of sugarcane farming while about 10% (N=2) felt that it had very small influence. These findings were also attributed to managers who were employed after amalgamation of sugarcane farming under Agriculture and Food Authority and therefore had limited relevant experience.

4.7.3 Issue of Scattered Sources of Policy

According to the study, the issue of scattered sources of policy had a mean score of 4.2 implying that it had the next high-ranking influence on provision of services for revival of sugarcane farming. This level of influence was attributed to lack of coordination or alignment of services that are guided by policies from different acts and agencies of government. This is informed by the fact that agricultural value chains consist of inter-linkages between and within actors involved in production, processing, distribution of inputs, outputs as well as co-ordination and governance of the chain (Furuholt & Matotay, 2011). This leads to confusion and misunderstanding among service agencies, an issue that eventually reduces the policy implementation capacity of each stakeholder hence was constraining provision of services for revival of sugarcane farming. This finding was in line with KSB (2010) which established that in Kenya policy implementation differs across policies and stakeholders due to dispersed governance that

characterizes scattered policies. However, in the case of Kenya, stakeholders in the sugar industry had several conflicts due to wide diversity of policy issues (Wanyande, 2001).

The study established that about 52.7 % (N=11) of the managers felt that the aspect of scattered sources of policy as a component of the policy design for the sugar subsector had very big constraining influence on provision of services for revival of sugarcane farming. This finding was attributed to managers who were involved in provision of legal services and particularly members of the top management teams of the sugar companies. This is because the top management teams are in charge of planning and execution of service provision strategies and are, therefore, aware of how scattered policy sources complicate and interfere with provision of essential services. Further to this, about 24.3% (N=5) of the managers held the view that the aspect of scattered sources of policy had moderately big constraining influence on provision of services for revival of sugarcane farming. This finding was attributed to long serving managers who had witnessed gaps in provision of services due to confusion, challenges and debates among service providers about who should do what at what time. This finding was in line with the with of Bali and Ramash (2018) who established that in cases of several stakeholders' service provision often suffers from challenges of limited co-ordination, complementary, coherence, consistency and congruence. However, about 10 % (N=2) of the managers were not sure if the aspect of scattered sources of policy as a component of policy design had constraining influence on provision of services for revival of sugarcane farming. This finding was attributed to newly recruited managers who were yet to know how the policy framework for the sugar subsector was complex and scattered. On the contrary, about 14.7 % (N=1) of the managers felt that the aspect of scattered sources of policy had moderately small constraining influence on provision of services for revival of sugarcane farming while about 10 % (N=2) felt that it had very small influence. These findings were attributed to managers who held the view that the challenges of service provision were due to failure of service providers to take responsibility.

4.7.4 Provision for Choosing Policy Reforms Adiministratively

The influence of this aspect of policy design on provision of services for revival of sugar cane farming was reflected in a mean score of 3.91 which is far above the sample or baseline score of 3.00 meaning that the issue had very big level of influence. The finding was attributed to the policy vacuum that existed between 2002 and 2013 following the

administrative decision of the NARC government to repeal the Sugar Act No 1 of 2001 and to failure to provide an alternative law for about one decade. This led to disorder and service crisis in sugarcane farming (GOK, 2019). The influence of the aspect of choosing policy reforms adiministratively in the policy design was further reflected in several incidents of indeterminable conflicts and court cases in the sugar subsector as frequently witnessed during the policy vacuum.

The policy vacuum also provided opportunity for millers to disorganize, manipulate and destroy Farmers' outgrowers Organizations and hence constrained provision of services for revival of sugarcane farming. Further to this the Sugar Act of 2013 which replaced the Sugar Act No 1 of 2001 was repealed in the same year due to public pressure because it had its foundations in administratively chosen reforms. Further to this, the administrative decision that excluded sugar millers from direct involvement in road maintenance services is economically and technically inappropriate and had constraining influence on provision of services for revival of sugarcane farming. This is because millers are the main users of the roads in the sugar zones, know the road sections that need engineering attention and have the necessary financial capacity.

The study established that about 43% (N=9) of the managers felt that the aspect of choosing policy reforms adiministratively in the policy design had very big level of influence on provision of services for revival of sugar cane. This influence was attributed to managers who witnessed Kenya's sugar industry sink into a crisis due to the policy vacuum originating from the administrative decision to repeal the Sugar Act No 1 of 2001. This is because the changes led to dissolution of Kenya Sugar Board the then sugar regulator and further to scrapping of SDL which had made the sugar subsector financially independent. The critical issue is that the Sugar Act No 1 of 2001 had made the subsector financially self-reliant through the then SDL (GOK. 2019). According to the study about 38% (N=8) of the managers felt that the aspect of choosing policy reforms adiministratively in the policy design had moderately big level of influence on provision of services for revival of sugarcane farming. This finding was attributed to long serving managers who had witnessed significant changes in the performance of the sugar industry due to the administratively selected reforms. These findings were associated with managers from NSC which has been exposed to more reforms than WKSC because it was established earlier.

On the contrary, about 10% (N=2) of the managers held the view that the aspect of choosing policy reforms adiministratively in the policy design had moderately small influence on provision of services for revival of sugarcane farming and a similar proportion felt that the issue had very small influence. This finding was attributed to managers of WKSC a private mill that is on public record for benefiting from the confusion caused by the policy vacuum that occurred after the Sugar Act No 1 of 2001 was administratively repealed (KNA, 2014). This is because during the policy vacuum, NSC and other millers often complained about WKSC poaching their sugar cane. In fact, several legal suits were initiated against WKSC but the Law Courts were legislatively limited from acting.

4.7.5 Provision for Practising Dispersed Governance

The influence of this aspect of the policy design was reflected in a mean score of 3.89 which is far above the sample or baseline mean score of 3.00 thus indicating big level of influence. The constraining influence of this aspect was attributed to the fact different government agencies have governance mandate or responsibilities in the sugar subsector. For example, while the SD is in charge of sugar importation. Kenya Plant Health Inspectorate Service is in charge of importation of seed cane but in all cases the Kenya Bureau of Standards is in charge of quality issues (Njeru, 2016, KSB, 2012). As per SCA, other stakeholders in the governance of public mills are the treasury with regard to budget and remuneration and the investment appraisal committee's treasury, SCAC, the Inspector of State Corporations, the Controller of budget, the Auditor General and finally the Public Accounts Committee of Parliament (Atieno, 2009). Internally the administrative arrangements of Kenya sugar companies typically consist of Agriculture, Finance, Factory and Human Resource Departments although in some factories like Chemilil the factory department had been split into Quality Control and Engineering Departments (CGD, 2005). The influence of this aspect is also attributed to the fact that this governance approach is associated with limited co-ordination among the many service providers in sugarcane farming.

The study further established that about 48% (N=10) of the managers held the view that the aspect of provision for dispersed governance had very big level of influence on provision of services for revival of sugarcane farming. This finding was attributed to

managers who had severally witnessed challenges like delays in service delivery that were occasioned by issues of dispersed governance. Further to this, the findings were attributed to NSCwhich is subjected to all aspects of protocol in service provision and delivery because it is a public mill.

According to the study about 19% (N=4) of the managers felt that the aspect of dispersed governance had moderately big level of influence on provision of services for revival of sugarcane farming and This was attributed to moderately experienced managers. However, about 24% (N=5) of the managers were not sure if the aspect of dispersed governance constrained provision of the services for revival of sugarcane farming or not. While 10% (N=2) held the view that the aspect had very small influence. These findings were attributed to newly recruited managers and hence had no relevant experience or information.

4.7.6 Loophole for Interference by Sugar Cartels

According to the findings as reflected in a mean score (μ) of 3.85 the aspect of loophole for Interference by sugar cartels of the sugar subsector was the next high-ranking influencer in the Western Kenya Sugarbelt. The influence was attributed to illegitimate powers of sugar cartels characterized by financial mighty and political connections used to manipulate policy design for malicious and selfish interests (KACC, 2010). The finding was strongly attributed to manipulation of policy design to create loopholes for illegal transmission of cheap sugar into the domestic market to the disadvantage of local producers. The constraining influence of the aspect of cartelization was also manifested in failure of authorities to incorporate conflict resolution policies in the design. This provides opportunity for making decisions made based on the interests of the cartels instead of producers. During data collection one manager supported this view by commenting that “An example occurred during the establishment of Butali Sugar Mill to operate close to WKSC. Although it caused several physical and legal confrontations the illegal option was sustained and legalized through licensing due to overwhelming strength of cartels”.

The study further established that about 45 % (N=9) of the managers held the view that the aspect of cartelization of policy design had very big level of influence on provision of services for revival of sugarcane farming. This finding was attributed to managers

who were serving within the top management teams of the mills because such managers were the ones who were coming face to face with the cartels. Further to this, about 25% (N=5) of the managers felt that the aspect had moderately big level of influence. These findings were attributed to long serving managers who witnessed or experienced several incidents of cartelization in service provision, delivery and access occasioned by the issue of cartelized policy design.

However, about 10% (N=2) of the managers were not sure if the aspect of cartelization of policy design had constraining influence on provision of services for revival of sugarcane farming. This finding was attributed to new recruits who were yet to get relevant experiences. On the contrary, about 10% (N=2) of the managers held the view that the aspect of cartelization of policy design had moderately small constraining influence on provision of services for revival of sugarcane farming and a similar percentage felt that it had very small influence. These findings were attributed to the secretive nature and operations of the cartels due to which some of the managers may have lacked proper knowledge and information due to secretive nature of the activities of the cartels. In the alternative they could be part and parcel of the cartels.

4.7.7 Provision for Discretionary Powers

The study also established that the issue of provision for discretionary powers to the presidency as provided for in Articles 113 and 115 of the Kenya Constitution 2010 had constraining influence on revival of sugar cane farming. This was manifested in a mean score of (μ) 3.67 which is distantly above the sample or baseline mean score of 3.00 implying that the aspect had big level of influence. This finding was attributed to incidents when discretionary decisions had distorted provision of sugarcane farming services. This includes the unilateral decision by the cabinet secretary for Finance to abolish SDL and to the many other occasions when the cabinet secretaries for Agriculture and the National treasury jointly and separately order for funds from public mills without consideration to the financial and service demands of sugarcane farming. The finding was also attributed to cases of discretionary control over the appointment and operations of chief executive officers and boards of management of public mills and further to issuance of arbitrary orders to SDto import more and more sugar without due regard to the implications on local production.

These findings were in line with Khalaji (2014) who established that in Kenya ministerial interference often impairs the capacity of most parastatal boards to take logical steps. In fact, one manager complaint that "The office of the cabinet secretary uses the provision for discretion to manipulate the Planning Unit of the ministry of agriculture to discriminate against sugarcane farming in favour of tea and coffee ".
According to the study about 43% (N=9) of the managers felt that the aspect of discretionary powers had very big level of influence on provision of services for revival of sugarcane farming. This view was attributed to long serving managers and especially those who had witnessed several service challenges during the policy vacuum that existed between 2003 and 2013 when the subsector was fully or only operating on discretion (SUCAM, 2003). This is because at that time conflicts among the industry stakeholders significantly interfered with service provision and yet court cases were indeterminable due to legislative limitations. This finding was mainly attributed to managers from NSC because as a public mill it is more subjected to discretionary demands than WKSC which is private and hence protected by the law for private property.

Further to this, about 19% (N=4) of the managers felt that the aspect of discretionary powers had moderately big constraining influence on provision of services for revival of sugarcane farming. The finding was attributed to managers of WKSC who were in employment at the time when BSM was being established. This is because during the study some of the managers of WKSC lamented that discretion was maliciously used to license BSM within its neighbourhood leading to unfair competition. Further to this, the managers of WKSC which is a private company are often subjected to discretionary decisions of the financiers or investors who were the property owners.

On the contrary about 14% (N=3) of the managers were not sure if the aspect of discretionary powers had constraining influence on provision of services for revival of sugarcane farming. The findings were attributed to managers of WKSC who feared loss of employment due to release of information considered as confidential by their employer. On the contrary about 10 %(N=2) of the managers held the view that the aspect of discretionary powers had moderately small constraining influence on provision of services for revival of sugarcane farming while 14 %(N=3) felt that it had very small

influence. These findings were attributed to managers who were perceived as sycophants of the government or political appointees.

4.7.8 Limited Legal Backing for existing Policies

The study also established that the issue or aspect of limited legal backing for some of the existing policies had constraining influence on provision of services for revival of sugarcane farming. This was reflected in a mean score of (μ) 3.29 which was moderately above the sample mean or baseline of μ =3.00 thus indicative of a moderately big level of influence. This was well reflected in the fact that police officers had often arrested suspects over the matter of sugar smuggling but the courts often released them due to legislative limitations (KNA, 2014). This finding is also in line with World Bank Group (2015) report to the effect that provision of services in Kenya's sugar subsector was suffering from distortions because a significant proportion of the sugar policies were lacking legal backing.

The study established that up to 29 %(N=6) of the managers held the view that the aspect of some policies having limited legal backing had very big constraining influence on provision of services for revival of sugarcane farming while about 14% (N=3) felt that it had moderately big level of influence . These findings were attributed to long serving managers who had witnessed sugar millers reduce investment in farm inputs to minimize losses originating from cane poaching since there was no clear anti-poaching policy. However, about 29 % (N=6) of the managers were not sure if the aspect of some policies having limited legal backing has constraining influence on provision of services for revival of sugarcane farming . This finding was attributed to managers whose line of duty was far removed from legal matters. On the contrary about 14 %(N=3) of the managers felt that the aspect of some policies having limited legal backing had moderately small influence on provision of services for revival of sugarcane farming and an equal proportion felt that it had very small influence. These findings were attributed to sycophancy among managers due to political loyalty.

4.8 Influence of policy gaps on Revival of Cane Farming in the Western Kenya Sugarbelt

The fourth thematic area of the study investigated influence of service gaps on revival of sugarcane farming in the perspective of policy. This thematic area was premised on the idea that gaps in service chain have limiting influence on the final output. This view is line with KNA (2014) according to which Kenya's sugar subsector suffers from policy gaps. The study through FGDs and key informants investigated service gaps and their influence on revival of sugarcane farming in the policy perspective. Seed bulking and supply, input subsidization, soil testing services and inspection of the domestic sugar market were singled out as services that could have contributed significantly or enabled revival of sugarcane farming but are conspicuously missing or not being provided.

The service gap for provision of certified seed cane is due to lack of a national policy on seed bulking and supply and it explains why farmers randomly use any available sugarcane tops from the neighborhood as planting materials. This was constraining revival of sugarcane farming since farmers are circumstantially limited and only guided by the issue of availability of cane stems instead of more significant parameters like yield potential.

Absence of soil testing services was identified as a critical concern by key informants. This is because it could have enabled revival of sugarcane farming by providing a baseline for responsive soil fertility management strategies and development of appropriate or relevant crop rotation schemes. In fact due to gap and unlike NSC, WKSC does not bother with management of soil fertility and yet sugarcane is a heavy feeder. The study also established absence of inspection service of the domestic sugar market which is also attributed to lack of relevant policy. Sugar cartels often took advantage of this specific service gap to flood the domestic market with cheap sugar from outside at the expense of local production. Furthermore, through the FGDs and key informants, it was also established that so far there is no provision for subsidy for sugarcane farming yet most farmers were financially challenged. This is because the Kenya Constitution 2010 lacks relevant legislation. This service gap is well articulated in the farmers' outcry about the skyrocketing cost of production.These findings were in line with Brook (2010) according to whom government policies are needed to promote long-term development of agriculture-based industries by addressing market failures, ideally by tackling them at the source.

4.9 Hypotheses Testing

The first null hypothesis (H01) of the study was that there are no policy issues that have statistically significant constraining influence on provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt. When subjected to T-test at 95% confidence limit the study yielded the results in Table 4.6.

Table 4.6: Results: T-Test; policy issues vs Revival of Sugar Cane Farming

T	Df	Sig. (2-tailed)	Mean Difference (I-j)	Std. Error Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-2.341	13.429	.029	0..73686	0.30188	-1.38692	-.08680

The test yielded a T –score that is greater than the table or alpha value (2.341>.029). Given that in research the decision rule is to reject the Null hypothesis when the score or p-value is bigger than the table or alpha value at 5%, the null hypothesis is rejected and alternate hypothesis accepted. This meant that there are policy issues that have statistically significant constraining influence on provision of services for revival of sugarcane farming in the Western Kenya Sugarbelt.

CHAPTER FIVE

RESULTS AND DISCUSSIONS

EVALUATION OF ENABLING POLICY PROVISIONS ON PROVISION OF SERVICES FOR REVIVAL OF SUGARCANE FARMING

5.1 Introduction

This objective investigated the extent to which policy provisions from Articles and Acts in Kenya's Constitution were enabling revival of sugarcane farming in the Western Kenya Sugarbelt. This was premised on the fact that favorable policies enhance agriculture by attracting and retaining farmers (Susilowati, 2014). The objective was premised on the fact that in spite of several policy challenges and feasibility of several agricultural alternatives, sugarcane remains the cash crop of choice for the communities in the region. Pursuant to this, this objective sought to establish the enabling influence of policy provisions drawn from articles and acts in Kenya's Constitution on revival of sugarcane farming. The findings for this aspect of the study are in Table 5.1.

Table. 5.1: Enabling influence of policy provisions on revival of cane farming in the Western Kenya Sugarbelt

Policy Provision	Level of Influence: Farmers' perspective							
	VS (1)	S (2)	NS (3)	B (4)	VB (5)	Mean	Std dev	Std error
Provision for Liberalization of sugarcane Market	6% 22	12% 44	12% 44	41% 145	29% 102	3.73	1.178	.0.062
Provision for competitive pricing	9% 34	16% 56	10% 35	31% 111	34% 122	3.68	1.435	.0.076
Provision for access to private milling services	0% 0	36% 125)	8% 30	26% 91	30% 107	3.67	1.318	0.069
Provision for alternative farming strategies	13% 46	18% 64	9% 32	31% 107	28% 97	3.42	1.406	0.076
Provision for scheduled financial services.	34% 123	12% 42	10% 36	8% 29	35% 124	3.39	1.365	0.072
Aggregate mean						**3.58**	**1.342**	**0.071**
			Millers' perspective					
Provision for contractual farming	10% 2	0% 0	16% 3	32% 6	42% 8	3.95	1.268	0.291
Provision for integration into COMESA Protocol	19.1% 4	0% 0	0% 0	57.1 % 12	23.8 % 5	3.82	0.924	0.279
Provision for licensing of private millers	19% 4	0% 0	0% 0	52.38 % 11	28.6 % 6	3.80	1.25	0.377
Provision for competitive pricing	10% 2	5% 1	20% 4	40% 8	23.8 % 5	3.60	1.569	0.351
Provision for de-zoning of production area	24% 5	5% 1	24% 5	19% 4	29% 6	3.24	0.912	0.320
Aggregate Mean						**3.68**	**1.185**	**0.324**
Overall mean						**3.63**	**1.262**	**0.196**

Key; Vs= Very Small, S=Small, NS =Not Sure, B = Big, Vb=Very Big, STD = Standard Deviation, M=Mean, SE =Standard Error

According to the findings in Table 5.1, there are policy provisions specifically the provision for farmers' access to private milling services, provision for alternative farming strategies ,provision for competitive pricing and provision for de-zoning of

production area that have enabling or motivational influence on both farmers and millers while others are specific to farmers or millers .This is because choice of economic activity and ones level of engagement depends on motivation (Olafen & Ryan, 2017). Motivation is a process where goal-directed activities are enhanced, directed and sustained (Schunk & Usher, 2012). In this case the focus is on revival of sugarcane farming.

5.2 Policy Provision for Liberalization of Sugarcane Market

The study established that the policy provision for liberalization of sugarcane market had the biggest enabling or motivational influence on farmers' involvement in revival of sugarcane farming. It is drawn from the Public Finance Management Act of 2018 and Crops Act No 13 of 2013. According to Wanyande (2001) this is in line with SAP of the World Bank which sought to remove distortions that were blocking the emergence of functional markets in developing countries. According to Innes (2010), liberalization of the sugarcane market was implemented through removal of farming zones that had divided the sugarcane market according to mills as per the regulatory practice of KSB. In brief liberalization created a free trading environment (Njeru, 2016).

The enabling influence as in Table 5.1 was reflected in a mean score of (μ) 3.73 which is far above the sample mean or baseline of (μ) 3.00 thus indicative of very big level of enabling influence. This finding was attributed to the fact that this provision eliminates customer discrimination, opportunistic and monopolistic price manipulations and fixation of farmers on millers' harvesting schedules. It gives non-contracted farmers the freedom to harvest mature sugarcane without any restrictions due to open access to alternative markets. Additionally, it provides farmers with opportunity and advantage of engaging different farming models. The finding was further attributed to the fact that it forces millers to perfect marketing services to the advantage of farmers due to competition. Further to this, the policy provision for liberalization of sugarcane market opens up more marketing opportunities or space for the farmers since each farmer can freely access every space in the market. The provision also maximizes profitability of sugarcane farming by giving each farmer a free choice to engage the best miller or highest bidder of the time.

According to the study , about 29% (N=102) of the farmers held the view that the policy provision for liberalization of sugarcane market had very big enabling influence on revival of sugarcane farming , 41% (N=145) felt that it Has moderately big influence.

This implies that to a large majority of the farmers (70%; N=247) it promotes revival of sugarcane farming. These findings were attributed to farmers who have benefited from the policy provision in terms of getting an opportunity to address emerging financial issues by harvesting their cane without restriction from millers as is the case in contractual farming. Further to this, the findings were attributed to farmers who had experienced financial relief by shifting from public to private mills specifically from NSC to WKSC due to better and more timely payment .This was attributed to the fact that farmers dealing with NSC oftenly experienced delay of payments. This is because unlike NSC, WKSC is on public record for timely payment. In the alternative, the finding could be attributed to farmers who have more than one parcel of land and have taken advantage of market liberalization to produce sugarcane under two or more millers simultaneously and therefore have an opportunity for comparison and hence the view.

However, about 12% (N=44) of the farmers were not sure if the policy provision for liberalization of sugarcane market had enabling influence on revival of sugarcane farming or not. This finding was attributed to ex novo farmers. On the contrary, the study established that about 12% (N=44) of the farmers felt that the policy provision for liberalization of sugarcane market had moderately small enabling influence on revival of sugarcane farming. This was attributed to farmers who were comfortable or satisfied with the services as provided by the miller and the miller is likely to be NSC because the farmers under WKSC are satisfied with its services particularly in the matters of payment for sugarcane.

The study also established that about 6 %(N=22) of the farmers felt that the policy provision for liberalization of sugarcane market had very small enabling influence on revival of sugarcane farming. This finding was attributed to farmers within the immediate neighborhoods of NSC who were challenged to sell their sugarcane to WKSC in spite of the distance and associated extra expense or transport costs because NSC had limited financial capacity.

According to the study farmers were moderately congruent in their views on this policy provision. This is evident in a moderately low score of standard deviation (1.178). Further to this, it established that they were minimum differences in the views of farmers affiliated to WKSC and NSC as expressed in a very low score of standard error (0.062).

5.2.1 Provision for Licensing of Private Mills

The strength of this provision was reflected in a mean score of μ =3.80 for millers and 3.67 for farmers. The two scores are significantly above the baseline level of 3.00 implying big level of influence. According to the study the next high ranking policy provision in terms of enabling both millers and farmers to revive sugarcane farming was the provision for licensing of private mills drawn from articles of WTO, COMESA protocol and the Kenya Constitution 2010. This was attributed to the fact that from the onset of market liberalization in accordance with SAP, the government changed public policy to encourage private sugar production as it started decreasing its shareholding in the industry (Njeru, 2016). This attracted private investment and so far nine private mills have been established (GOK, 2019).

The finding was attributed to the fact that licensing of private mills significantly increased the milling capacity of the nation hence increased demand and market for sugar cane. This was encouraging more production and therefore revival of sugarcane farming. Further to this, the policy provision for licensing of private mills provided increased competition among millers to the advantage of the farmers thereby encouraging the revival process. According to FGDs the enabling power of the process of licensing private mills on revival of sugarcane farming lies in the fact that private millers and in particular WKSC are better than public mills in matters of timely payment of farmers, adherence to harvesting schedules and better prices. For farmers the influence of this policy provision was attributed to the fact that private millers are more responsive to farmers' financial needs in terms of price and adherence to payment schedules than public mills.

The study found that about 28.6% of the managers and 30% (N=107) of the farmers felt that the policy provision for licensing of private mills had very big level of enabling influence on revival of sugarcane farming while about 52.38% (11) of the managers and about 26% (N=91) of the farmers felt that it had moderately big level of enabling influence. For millers these findings were attributed to long serving managers specifically those who joint the service long before some of the newly established private mills were licensed. This is because such managers had witnessed positive changes in sugarcane farming that are attributable to the act of licensing of private millers. In the

alternative, the findings could be attributed to managers who were serving the industry under WKSC a private mill that was the best performing miller nationally. For farmers, these finding were attributed to those who were enjoying the good financial services of private millers. Alternatively, the findings were attributed to farmers who had shifted from NSC to WKSC due to better financial services and therefore to the bitter victims of financial disservice.

However, and about 8% (N=30) of the farmers and none of the managers (0%) were not sure if the policy provision for access to private milling services had enabling influence on revival of sugarcane farming or not. This was attributable to farmers who either remained loyal to NSC or had been circumstantially confined to NSC due to geographical and subsequently transport advantage. Alternatively, the findings could be attributed to farmers who were officials of NOCO a farmers' association under NSC because such farmers could be economic with the truth for the sake of their association. Contrary to this, the finding could be attributed to farmers who had only produced sugarcane under a WKSC private mill and therefore had no alternative experiences.
The study also established that (0%) none of the managers felt that licensing of private mills had moderately small influence on revival of sugarcane farming. However , about 36% (N=125) of the farmers felt that the policy provision for farmer's access to private milling services had moderately small enabling influence on revival of sugarcane farming . These findings were attributed to the fact that the promotional influence of private mills on revival of sugarcane farming is in public domain.

On the contrary about 19% [N=4] of the managers and none of the farmers (0%) holds the view that the policy provision for licensing of private mills had moderately small enabling influence on revival of sugarcane farming. These findings were attributed to managers of WKSC which handles sugarcane farming issues in a manner to suggest that the farming process is more of business to the millers than to the farmers. Furthermore, WKSC is lowly involved in provision of agricultural extension services. The finding was also attributed to long serving managers of NSC a public mill that had severally been drawn into conflicts over sugarcane poaching by WKSC and other emerging private companies. The view could also be attributed to the fact that some of the emerging private millers inclusive of WKSC are associated with cartelization of the operations of

the industry at the expense of the farmers and yet farmers are the most critical players in revival of sugarcane farming.

5.2.2 Provision for Competitive Pricing of Sugarcane

The enabling influence of this provision was reflected in a mean score of 3.68 for farmers and 3.60 for millers. The two scores are far above the sample or baseline mean score of 3.00 thus indicators of very big level of influence. The policy is drawn from the Competition Act of 2012. For millers the enabling influence was attributed to the fact that the provision creates competition among millers which eventually attracts more and more farmers hence revival of sugarcane farming. Further to this, the provision has helped some millers particularly WKSC to re-attract or to lure back some of the farmers who had otherwise dropped out of sugarcane farming. For farmers, this finding was attributed to the fact that farmers were comfortable with the government approach to pricing of sugar cane. The approach involves a pricing committee that only sets the minimum price level but allows individual millers to pay prices above this specific level. This enhances competition among the millers as each struggle to attract farmers a process that eventually contributes to revival of sugarcane farming. The finding was further attributed to the fact that the policy for competitive pricing provides opportunity for farmers to maximize their return on investment since it provides opportunity for sale of one's produce to the highest bidder. This is important because economic return from the farm as the critical driver for investment in farming (Olafen and Ryan, 2017).

The study established that about 34% (N=122) of the farmers and about of 23.8 % [N=5] of the managers felt that the policy provision for competitive pricing had big level of enabling influence on revival of sugarcane farming. For farmers these findings were attributed to the farmers who have at least engaged with both WKSC and NSC and hence the comparison. Alternatively, the findings were attributed to long serving farmers who had once produced sugarcane under the previous policy of unified pricing and now under the policy provision for competitive pricing. For managers the finding was attributed to the managers serving WKSC. This is because ,WKSC had applied this strategy as bait for self-popularity by using it to attract more and more farmers from the neighboring millers especially NSC and more importantly to capture and retain more land under its influence and benefit.

Further to this about 31% (N=111) of the farmers and approximately 40% [N=8] of the managers held the view that the policy for competitive pricing had moderately big level of influence on revival of sugarcane farming. For millers this was attributed to experienced managers who knew that although the policy allows individual millers to modify the minimum prices recommended by the government, in most cases the price adjustments were not big enough to cause significant change in farmers' income levels although it lures some farmers hence the state of moderate influence. For farmers the finding was attributed to speculative farmers who keep shifting from one miller to another depending on price differences or to farmers who were beneficiaries of the higher prices.

Further to this, none of the managers (0%) and about 10% (N=35) of the farmers were not sure if the policy for competitive pricing had enabling influence on revival of sugarcane farming. This was attributed to the ex-novo category of farmers who were yet to be informed about the determinants of sugarcane prices. In the alternative, the finding was attributed to farmers who were lowly educated and hence unable to make due judgment or to farmers who have only produced sugarcane under NSC which strictly sticks to the minimum prices as recommended by the government.

However, about 5% (N=1) of the managers and about 16 % (N=56) of the farmers felt the policy provision for competitive pricing had moderately small enabling influence on revival of sugarcane farming. However, about 10 % (N= 1) of the managers and 9% (N=34) of the farmers felt that the policy provision for competitive pricing had very small influence. For managers these findings were attributed to long serving managers who have noticed over time that in spite of the competitive prices, some households could no longer allocate more land for sugarcane farming due to population pressure.

For farmer these findings were attributed to small holder farmers whose farm sizes obstructed them from experiencing significant changes in income due to the price adjustments occasioned by competitive pricing. Alternatively, the findings could be attributed to farmers who could not benefit significantly from competitive pricing because their farm attract high transport costs due to being geographically far from the factories.The finding was further attributable to farmers operating under NSC which operates on the lower price limit.

5.2.3 Provision for Freedom to Engage Alternative Farmimg Approaches

The study further established that for farmers the policy provision for freedom to engage alternative farming strategies drawn from the Crops Act No 16 of 2013 also had enabling influence on revival of sugarcane farming. This is in line with the SAP interventions of the World Bank (Waswa *et al*., 2012). This finding was reflected in a mean score of 3.42 which was moderately above the baseline which indicates that it was a moderately big level of influence. This finding was attributed to the differences in farmers profit levels with respect to different farming approaches. It may also be attributed to non-contracted farmers who enjoy the convenience of harvesting mature cane without the contractual restrictions.The finding was further attributed to the fact that the policy provision for freedom to engage alternative farming strategies provides for liberalized sugarcane marketing.

The finding was further attributed to the fact that policy aspect provides for participation of all kinds of farmers in terms of both contractual and non-contractual engagements with millers, for different models of contractual engagement and even for self and company sponsored farming each of which contributes to revival of sugarcane farming. According to the findings, 28% (N=97) of the farmers felt that the policy provision for freedom to engage alternative farming strategies had very big level of influence on revival of sugarcane farming. These finding was attributed to farmers who had shifted and re-shifted between contractual and non-contractual farming depending on return to investment. This enables continuous participation in revival of sugarcane farming. The finding was also attributed to the fact that this approach gives the farmer an opportunity to sell their sugarcane to the best miller with respect to price and timelines of payment. According to the findings, about 31% (N=107) of the farmers held the view that policy provision for freedom to engage alternative farming strategies had moderately big influence on revival of sugarcane farming. This finding was attributed to farmers who were initially challenged by the restrictions of contractual farming but have since been enabled by this policy provision to shift to non-contractual farming.

However, about 9% (N=32) of the farmers were not sure if the policy provision for freedom to engage alternative farming strategies had enabling influence on revival of sugarcane farming or not . This was attributed to farmers who were beginners and therefore yet to experience alternative farming approaches. In the alternative, the findings could be attributed to farmers who had all along practiced one specific model of

farming and therefore have not had alternative experiences. On the contrary about 31 %(N=107) of the farmers felt that the policy provision for freedom to engage alternative farming strategies had moderately small influence on revival of sugarcane farming. This was attributed to new entrants and especially those who were originating from households that have not been participating in sugarcane farming, to farmers who have not produced sugarcane under alternative models or to farmers from regions that had not been previously engaged in sugarcane farming like the area around the Naitiri and Ndalu schemes in Trans Nzioa County.

Farmers held divergent views over the influence of the policy provision for freedom to engage alternative farming strategies. This is articulated in high score of STD deviation [α=1.406]. The divergence was attributed to variations in farmers' experiences with regard to contractual and non-contractual farming engagements. Further to this farmers are divided into distinct groups or clusters as reflected in high score of STD error.

5.2.4 Provision for Scheduling Farmers Finance Services

The study identified the policy provision for scheduling Farmers' payments as the next high ranking policy enabler for revival of sugarcane farming by farmers. This provision is drawn from the Public Finance Magement Act of 2012. This finding is in line with Waswa *et al* (2012) according to whom financial income is the main driver for engagegement in cash crop production. Its enabling influence was reflected in a mean score of 3.39 as in Table 5.1. This score is significantly above the sample or baseline mean score of 3.00 implying that the provision had a significant influence. This finding was attributed to the fact that sugarcane is a cash crop and desire for money was what was pushing farmers into cash crop production.

Further to this, scheduling provides farmers with assurance of income from sugarcane enterprises at a specific time. This provides an opportunity for timely and strategic financial planning for revival of sugarcane farming. In fact one of the farmers commented that; "The policy provision for scheduling farmers' dues encourages sugarcanepreneurship" whereby financially able farmers hire either land for cane establishment or fields of sugarcane for business. This significantly contributes to revival of sugarcane farming.

According to the study approximately, 35% (N=124) of the farmers held the view that the policy provision for scheduling farmers' payments Has very big level of influence on revival of sugarcane farming while about 8% (N=29) felt that it had moderately big level of influence . These findings were attributed to farmers who were under WKSC which was on public record for scheduling and adhering to the farmers' payment schedules. In fact, during the data collection exercise through FGDs farmers sharply commented that "WKSC is the miller of choice in the Western Kenya Sugarbelt because it pays us in time".

On the contrary, about 10% (N=36) of the farmers were not sure if the policy provision for scheduling Farmers' payments had enabling influence on revival of sugarcane farming. This was attributable to new entrants who were yet to experience the challenges or stress of untimely payment services. Further to this, the study also established that approximately, 12% (N=42) of the farmers felt that this policy provision had moderately small enabling influence on revival of sugarcane farming while about 34% (N=123) felt that it had very small influence. These findings were attributed to farmers who wait for payments for so long after delivering sugarcane specifically to NSC which was on public record for delaying farmers' dues.

The study also established that farmers were not congruent over the enabling influence of this policy aspect as manifested in a high level of STD deviation above the baseline (1.365>1.00). However, the farmers under NSC and those under WKSC do not hold significantly different views about this policy aspect as expressed in a low score of STD error.

5.2.5 Provision for Contractual Farming

The finding as shown in Table 5.1 indicated that for this aspect of the study had mean score of (μ) 3.95 which is far above the sample or baseline mean score of 3.00 implying that it was a very big enabler. This finding was attributed to the fact that contracts commit both millers and famers through a legal agreement or tool. Further to this, contracting assures millers of cane supply at the projected time as it also assures the farmers of market for their produce. Contracts further attract millers into sugarcane farming by providing them with an extra business opportunity in terms of supplying farmers with farm inputs on credit. This benefits the miller in terms of accrued interests. For the sugar millers, the policy provision for contractual farming drawn from the Public

Finance Management Act of 2012 was identified as the biggest enablers for revival of sugarcane farming. This is because contracts enable the farmers to access credit and transport services, inputs and guarantees sugarcane markets while for millers' contracts facilitate access to more land for production and ensures delivery of raw materials in bulk for processing making them to benefit from the economy of scale (Boraras *et al*., 2015: Kokeyo, 2013).

According to the findings, about 42% of the managers felt the policy provision for contractual engagement of farmers had very big level of enabling influence on revival of sugarcane farming. These findings were attributed to managers who had successfully convinced a significant number of individuals and households into the enterprise of sugarcane farming on the basis of the advantages of contractual farming like access to inputs on credit.

Further to this, the findings indicated that about 32 %(N=6) of the managers held the view that the policy provision for contractual engagement of farmers had moderately big level of enabling influence on revival of sugarcane farming. This finding was attributed to long serving managers because such farmers have witnessed several effects of the contract on sugarcane farming. Further to this, the findings were attributed to members of the top management teams of the companies and in particular those who had participated in recruitment of cane farmers. This is because the top management team is responsible for execution of the contracts. In the alternative, the findings could be attributed to managers who had witnessed decline in performance of NSC because NSC had just experienced a significant drop in the population of the contracted farmers. According to the findings, approximately 16% [N=3] of the managers were not sure if engagement of farmers on contract enables or promotes revival of sugarcane farming. This finding was attributed to newly employed managers who were yet to get experience and information.

The study further established that none of the managers (0%) held the view that the policy provision for contractual engagement had moderately low influence on revival of sugarcane farming. However, up to 10% [N=2] of the managers felt that it had very low motivating influence. These findings were attributed to managers who had witnessed an exodus of farmers to non-contracted farming due to the associated financial. Alternatively, the finding could be attributed to managers serving in regions where most

farmers were independently acquiring farm inputs and could not easily be enticed by the contacts since they are financially sound.

5.2.6 Provision for Intergration into COMESA Market

For millers, the study identified the policy provision for integration of Kenya's sugar subsector into COMESA market drawn which is drawn from Article 2 of the Constitution of Kenya as the next high ranking enabler for revival of sugarcane farming as in Table 5.1 . This was attributed to the COMESA safeguard measures that protected the uncompetitive sugar subsector of Kenya from market forces as per the safeguard clause (Article 61) of the COMESA protocol (Sean, 2016) and further due to the fact that Kenya was conditioned to achieve and adhere to the COMESA standards for revival of sugarcane farming (COMESA, 2018). The enabling strength of this policy provision was reflected in a mean score (μ) of 3.82 which is far above the baseline value of (μ) 3.00 indicating big level of influence.

This finding was attributed to the fact that between 2003 and 2013 the COMESA protocol was the only law that guided sugarcane farming in Kenya since the Sugar Act No 1 of 2001 was repealed and not replaced until the enactment of the AFA and the Crops Acts No 13 in 2013. The finding was further attributed to the benefits of the COMESA standards as basic requirements for revival of sugarcane farming in Kenya and the enforcement mechanism of COMESA council of ministers through a series of safeguard measures. In fact the safeguard measures provided a mechanism for continuous monitoring and evaluation of Kenya's sugar industry thereby influencing the revival process. This is further supported by the fact that during the policy vacuum at the national level Kenya benefited from several extensions of the safeguard measures.

According to the study, a majority of the managers [80.9%; N=17] held the view that the COMESA protocol had big level of enabling or promotional influence on revival of sugarcane farming in Kenya. These findings were attributed to the benefits of the COMESA safeguard measures and more critically to the COMESA standards. Further assessment revealed that about 23.8% (N=5) of the managers felt that the policy provision for integration of Kenya's sugar subsector into COMESA market had very big level of enabling influence on revival of sugarcane farming. This was attributed to long

serving managers especially those who were in the service during the policy vacuum. This is because this group of managers witnessed the performance of the subsector under the full guidance of the protocol since by then there was no national policy framework for the subsector. The findings were further attributed to managers who believe that the millers are highly motivated by the COMESA standards to revive sugarcane farming.

Further to this, about 57.1 %(N=12) of the managers felt that the policy provision for integration of Kenya's sugar subsector into COMESA market had moderately big enabling influence on revival of sugarcane farming. This finding was attributable to managers who were in charge of their firm's compliance to the COMESA standards and therefore are well informed. However , about 19.1% [N=4] of the managers were not sure if the policy provision for integration of Kenya's sugar subsector into COMESA market had enabling influence on revival of sugarcane farming or not. This finding was attributed to newly recruited managers who were not yet informed of the influence of the COMESA Protocol on Kenya's sugar industry.

5.2.7 Policy for Dezoning of Sugarcane Farming Areas

According to the findings in Table 5.1, the next high ranking policy enabler for revival of sugarcane farming by sugar millers as reflected in mean score was the policy for de-zoning of the sugarcane farming areas. This finding was attributed to the fact the policy for de-zoning eliminated restrictions and geographical discrimination associated with zoning or farming boundaries for millers. This is because the geographical zoning had indirectly reintroduced de-zoning of the sugarcane markets to the disadvantage of the farmers. According to Innes (2010), dezonining enabled removal of farming zones as barriers that divided the sugarcane market according to mills as per the regulatory policy of KSB without due consideration to several other factors.

The study established that about 29% [N=6] of the managers felt that the policy for de-zoning of the sugarcane farming areas had very big level of enabling influence on revival of sugarcane farming while 19% [N=4] felt that it had moderately big level of influence . These findings were attributed to long serving managers who had witnessed increase in land surface under sugarcane due to this specific policy. Further to this, the managers who felt that it had very big motivational influence were most likely to be those from WKSC. This is because unlike NSC, WKSC had taken advantage of this provision to expand out grower services around and beyond the study area. Additionally,

WKSC was procuring sugarcane across the Western Kenya Sugarbelt due to the freedom created by this specific policy provision. This meant that the policy had created market for non-contracted production.

However, about 24% [N=5] of the managers were not sure if the policy for de-zoning of the sugarcane farming areas had any influence on revival of sugarcane farming. Thwas attributed to newly employed managers who were yet to experience the influence of the policy. Furthermore, approximately 5% [N=1] of the managers held the view that the policy for de-zoning of the sugarcane farming areas had moderately small enabling influence on revival of sugarcane farming while 24% [N=5] felt that it had very low motivational influence. These findings were attributed to transport managers due to the fact that they are the ones who experience the cost implications of transporting raw cane over long distances. Additionally, the finding could be attributed to managers serving under NSC because NSC had not experienced changes in production or any other performance measures that could be attributed to the policy for de-zoning of the sugarcane farming areas. In brief, the study established that policy provisions for sugarcane farming have more enabling influence on millers than farmers. This is manifested in the differences in aggregate mean scores (μ; 3.68>3.58) as in Table 5.1 .This finding was attributed to the collapse of farmers organizations which were meant to be the farmers' eyes.

The study further established that managers are strongly in agreement over the influence of the enabling policy provisions. This was reflected in low score or level of STD deviation [α=0.912].Additionally, it established that there is no significant difference between views of the managers of WKSC and those of NSC or any other clusters of managers in the study area and this is justified by the low level of STD error [α=0.320].

5.3 Hypothesis Testing

For this objective the null hypothesis (H01) was; there are no policy provisions that have statistically significant enabling influence on revival of sugarcane farming in the Western Kenya Sugarbelt. The Alternative Hypothesis was Ha1: there are policy provisions that have statistically significant enabling influence on revival of sugarcane farming in the Western Kenya Sugarbelt. When subjected to T-test at 95% confidence limit the findings of the study yielded the results in Tables 5.2.

Table 5.2: Results: T-Test; influence of Enabling Policy Provisions on Revival of cane Farming in the Western Kenya Sugarbelt

T	Df	Sig. (2-tailed)	Mean Difference (I-j)	Std. Error Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-1.341	14.122	.032	-.56365	0 .20108	-1.28692	-.072342

The findings yielded a T-score that is greater than the alpha or Table value (1.341> 0.05). Givent that the decision rule is to reject the null hypothesis when p-value is bigger than the alpha value at 5%, the null hypothesis is rejected. This meant that there were policy provisions drawn from the Constitution of Kenya that had statistically significant enabling influence on revival of sugarcane farming in the Western Kenya Sugarbelt.

CHAPTER SIX
RESULTS AND DISCUSSIONS
EVALUATION OF CHALLENGES LIMITING SUGAR AGENCIES FROM COMPLIANCE WITH COMESA STANDARDS

6.1 Introduction

This objective originated from the fact that Kenya's sugar subsector was and is still too uncompetitive for independent survival in the COMESA market. Pursuant to this, Kenya

sought for and in response the COMESA council of ministers provided temporary safeguard measures for its sugar subsector by invoking Article 61 of the protocol. This was on condition that Kenya fulfills prescribed COMESA standards for revival of sugarcane farming. Pursuant to this, sugar agencies in Kenya particularly the Sugar Directorate, Sugar millers and the SRI were expected to fulfill the recommendations through compliance as spelled out in COMESA Directive No.1 of 2007. However, by the time of this study none of the agencies had fully complied with the recommended standards. This objective sought to investigate the challenges limiting the agencies from compliance. Through factor analysis the study established that the sugar agencies that were playing critical roles in sugarcane farming were the sugar millers who were both a producers or in this case sugarcane farming agencies and sugarcane market for farmers and manufacturers or processors of sugar , KALRO-SRI which is the research component and AFA-SD which is the subsector regulator. Pursuant to this, each of these agencies was treated as a sub theme of this objective. The findings are in Table 6.1.

Table 6.1: Challenges Limiting Sugar Agencies in the Western Kenya Sugarbelt from Compliance with COMESA Standards

Challenge	Level of Influence :Millers' perspective							
	VS (1)	S (2)	N (3)	B (4)	VB (5)	mean (μ)	Std Dev (α)	Std Error
Logistics of strategic planning	9.52% 2	4.7% 1	19.04 % 4	33.3 % 7	38% 8	3.81	1.328	0.332
Sharing income from co-production and co-generation	14.28 % 3	9.52% 2	19.04 % 4	42.85 % 9	14.28 % 3	3.44	1.315	0.329

logistics of proposed privatization	23.8% 5	19.04 % 4	23.8% 5	23.8 % 5	9.52% 2	3.19	1.515	.379
Aggregate Mean						3.41	1.56	0.386
KALRO-SRI								
Financial limitations	0% 0	0% 0	0% 0	50% 4	50% 4	4.5	0.535	0.189
Limited Autonomy	33% 3	0% 0	0% 0	56% 5	11% 1	4.22	1.302	0.434
Lack of seed policy	0% 0	22% 2	22% 2	33% 3	22% 2	3.7	1.26	0.52
Limited Technology Dissemination Capacity	0% 0	22% 2	22% 2	44% 4	11%1	3.67	1.658	0.553
Logistics of strategic planning	11% 1	11% 1	33% 3	22% 2	11% 1	3.33	1.204	0.301
Aggregate Mean AFA- SD						3.74	1.21	0.390
Weak policy and plan implementation strategy	6.25% 1	12.5% 2	25% 4	31.25 % 5	25% 4	3.77	1.312	0 .335
Political interference	0% 0	18.5% 3	18.5% 3	43.75 % 7	18.5% 3	3.63	1.412	0 .235
Logistics of strategic planning	6.25% 1	6.25% 1	18.5% 3	50% 8	18.5% 3	3.50	1.225	0.635
Gaps in policy framework	18.5% 3	18.5% 3	50% 8	6.25 % 1	6.25% 1	3.33	0.983	0.415
Aggregate Mean						3.59	1.26	0.251
Overall mean						3.58	1.34	0.342

Key; VS= Very Small, S= Small, NS =Not Sure, B= Big, VB=Very Big, STD=Standard Deviation, M= Mean, SE =Standard Error.

6.2.1 Logistics of Strategic Planning

According to the findings, for millers the biggest challenge was the issue of logistics of strategic planning. The constraining strength of this challenge as in Table 6.1 was reflected in a mean score of μ=3.81 which is far above the sample mean or baseline of 3.00 and hence an indicator of a big challenge. This challenge originated from the fact that at the onset of the safeguard measures each miller had a strategic plan under implementation with specific themes and targets in line with the Public Finance Management Act of 2012. Contrary to this, the COMESA council of ministers came up with the COMESA standards and demanded for compliance. This caused a mixture of confusion and resistance from millers. This is because each miller was expected to adjust its strategic plan. Millers found this to be a challenge due to the financial implications

given that the COMESA market was not funding any of its recommendations. Additionally, the millers and the associated farmers had covered their land parcels with alternative varieties of sugarcane as per the existing strategic plans.

Further assessment of the findings revealed that about 38% (N=8) of the managers felt that the issue of logistics of strategic planning was a very big challenge while about 33.3% (N=7) felt that it was a moderately big challenge to millers compliance with the COMESA standards for revival of sugarcane farming. These findings were attributed to managers who were members of the top management teams of the mills. This is because it is this specific team that carries out strategic planning and makes adjustment as demanded by emerging situations inclusive of the COMESA standards. Apart from this, this team is also responsible for execution of the plans hence the pressure and this specific view. Additionally, the study established that about 19.04% (N=4) of the managers were not sure if the issues of logistics of strategic planning are a challenge to millers or not.This finding was attributed to managers who do not participate in strategic planning because participants are expected to be informed. Furthermore, the findings were attributed to WKSC because for and in WKSC, strategic planning was a preserve of the business owners while managers were only supervising service provision.

Further assessment revealed that about 4.7% (N=1) of the managers felt the issue of logistics of strategic planning was a moderately small challenge to millers compliance with the COMESA standards for revival of sugarcane farming while 9.52% (N=2) held the view that it was a very small challenge. These findings were attributed to managers who were not accessible to the right information specifically agricultural and planning information because their line of duty was not including agricultural services and or strategic planning.

The study indicates that the managers were moderately congruent in their views over this aspect of the study. This was reflected a score of STD deviation that was moderately above the baseline (1.328).Further to this, the study established that the managers from NSC and those from WKSC were not distinctly different in views as reflected in a low score of the STD error (0.332).

6.2.2 Sharing of Potential Income from Co-production and Co-generation

The strength of this challenge as in Table 6.1 was reflected in a means score of 3.44 which was moderately above the baseline value of 3.00 and hence an indicator of a moderately big challenge. This challenge was attributed to the fact that the COMESA standards like the one seeking for shift from basing sugarcane payments on tonnage to sucrose indexing are only feasible in a situation of multiple production and co-production. Therefore, the shift would imply that apart from payment for sucrose, millers should also be ready to pay for all other components or products of sugarcane yet Kenyan millers were lacking the necessary capacity. This finding is in line with Waswa *et al* (2012) according to whom financial income is the reason why people engage in cash crop production.

Further assessment of the findings revealed that about 14.28% (N=3) of the managers felt that the issue of sharing of the potential income from co-production and co-generation was a very big challenge while 42.85% (N=9) felt that the issue of sharing of the income from co-production and co-generation was a moderately big challenge to millers compliance. These findings were attributed to managers who had tried to engage farmers over compliance with the standard without success. This is because the farmers were demanding to be paid for alternative products from sugarcane inclusive of bagasse yet the millers have no financial mechanism or preparation for that.

Further assessment revealed that about 19.4% (N=4) of the managers were not sure if the issue of sharing of the potential income from co-production and co-generation was a challenge to millers with respect to compliance with the standard or not. These findings were attributed to managers whose profession and line of duty did not include factory and agriculture AFAirs. This is because the managers of these specific affairs wereresponsible for responding to farmers demands.

Further to this, about 19.52% (N=4) of the managers felt that the issue of sharing of the potential income from co-production and co-generation was a moderately small challenge while 14.28 %(N=3) felt that it was a very small challenge to millers compliance with the COMESA standards for revival of sugarcane farming. These findings were attributed to managers who held a belief that with proper planning and empowerment the millers can effectively comply with the standards and effectively pay farmers for the alternative products.

Further to this, the study revealed that the managers were moderately congruent in their views over the issue of sharing of the income from co-production and co-generation. This was reflected a score of STD deviation that was moderately above the baseline (1.315).Further to this, the study established that the managers from NSC and those from WKSC were not distinctly different in views as reflected in a low score of the STD error (0.329).

6.2.3 Conflicts over the Issue of Proposed Privatization of Public Mills

According to the study, another challenge to millers' compliance was the issue of conflicts over the proposed privatization of public mills as reflected in Table 6.1. This was attributed to the fact that in Kenya, stakeholders in the sugar industry had several conflicts due to a diversity of policy issues (GOK, 2019, Wanyande, 2001). The strength of this attribute was reflected in a mean score of (μ) 3.19 which is slightly above the sample mean (μ) or baseline of 3.00 and hence an indicator of a small challenge. This challenge was attributed to public experience with MSC which once was the biggest miller in the country but collapsed immediately after privatization. Further to this, the workers in public mills were opposed to the privatization programme since it did not adequately provide a way forward for them and all these were compounded by court matters that were yet to be heard and determined.

Pursuant to this, public mills like NSC and one of the candidates for the proposed privatization took a wait and see stand failing to comply with the standards. Further assessment of the findings revealed that about 9.52% (N=2) of the managers held the view that the conflicts over the issue of proposed privatization of public mills was a very big challenge while 23.8% (N=5) felt that it was a moderately big challenge to millers compliance with the COMESA standards for revival of sugarcane farming. These findings were attributed to the managers of NSC. This is because as a public mill, NSC was a candidate for privatization and therefore experiencing the associated challenges.

Further to this, about 23.8% (N=5) of the managers were not sure if the conflicts over the issue of proposed privatization of public mills was a challenger to millers with respect to compliance to the standards or not. This finding could be attributed to newly employed managers who had not witnessed the politics and confusion that emerged at the time. However, about 19.04 %(N=4) of the managers held the view that the issue of the

proposed privatization of public mills was a moderately small challenge while 23.8 % (N=5) felt that it was a very small challenge to millers' compliance with the COMESA standards. These findings were attributed to the managers of WKSC because being a private mill WKSC was not exposed to the challenges of privatization.

6.2.4 Comparison of Challenges to Compliance to COMESA Standards; NSC and WKSC

Further to this, the study compared the extent to which WKSC and NSC are challenged with respect to compliance and the findings are in Table 6.2.

Table 6.2: Challenges vs.Compliance with COMESA Standards: NSC and WKSC

Miller	Count N	Mean	Std. Deviation	Std. Error
NSC	14	3.62	0.87240	0.23316
WKSC	7	3.5013	0.89995	0.63636

According to the study as reflected in respective mean scores, NSC which is a public mill is more challenged than WKSC which is a private mill (3.62 >3.5013).These findings were attributed to the fact that WKSC was better endored financially and further to the fact unlike NSC which is a public, WKSC and its workers were not stressed by the challenges and threats of the imminent or proposed privatization process and program. At the same time the findings as reflected in the scores of standard deviation revealed that both managers of WKSC and NSC are highly congruent in the views. This is because the scores are close but lower than the sample mean or baseline of α=1.00.

6.3 Challenges Limiting KALRO-SRI from Compliance with COMESA standards.

An assessment of the challenges that were limiting KALRO-SRI from Compliance with COMESA standards gave the findings between 6.3.1 and 6.3.6.

6.3.1 Socio-Economic and Demographic Characteristics of KALRO-SRI as in the Western Kenya Sugabelt

An evaluation of the profile of KALRO-SRI established that it has its headquarters at Kibos, Kisumu, a breeding centre at Mtwapa in Kilifi county and branches in Opapo in Migori County and Mumias in Kakamega County. Further to this, it had a very lean staff of which 67% (N=6) were male while 33% (N=3) were female.

When subjected to normality test the data for distribution of the researchers under KALRO-SRI in the Western Kenya Sugarbelt by level of education yielded the findings in Table 6.3. Presentation of the findings using histograms confirmed that the data is normally distributed as illustrated in Figure 6.1.

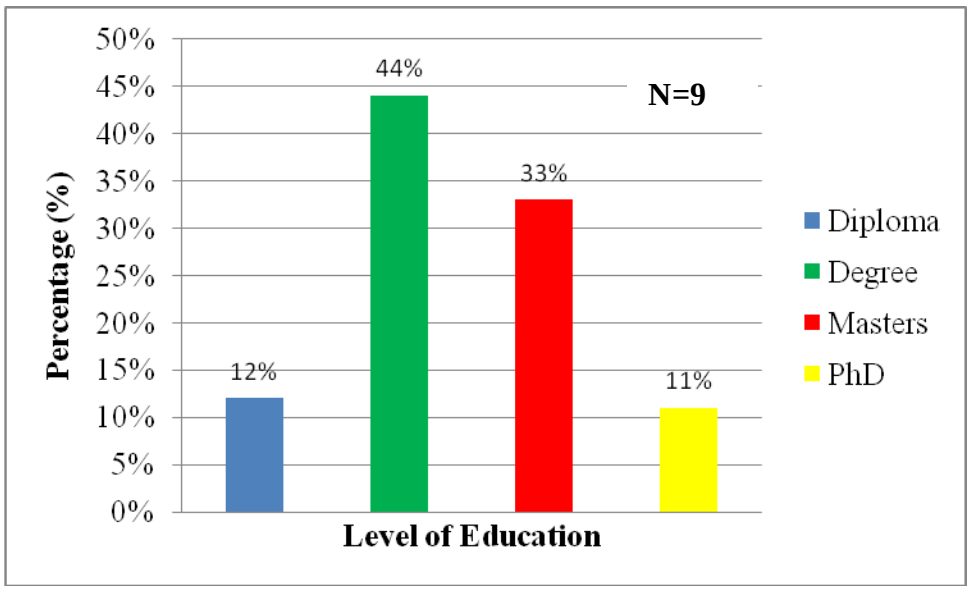

Figure 6.1; Distribution of Researchers by Level of Education.

The findings revealed that the modal level of education for the researchers is a First Degree or Bachelor's Degree. 44% (N=4) of the researchers were holding a first degree, 33% (N=3) had master's degree, 11% (N=1) had doctoral degrees while another 11% (N=1) had Diploma level of education.This indicated that the findings of the study were largely views of persons with undergraduate qualifications. Further to this, presentation of the findings using histograms confirmed that the data is not normally distributed as illustrated in Figure 6.2.

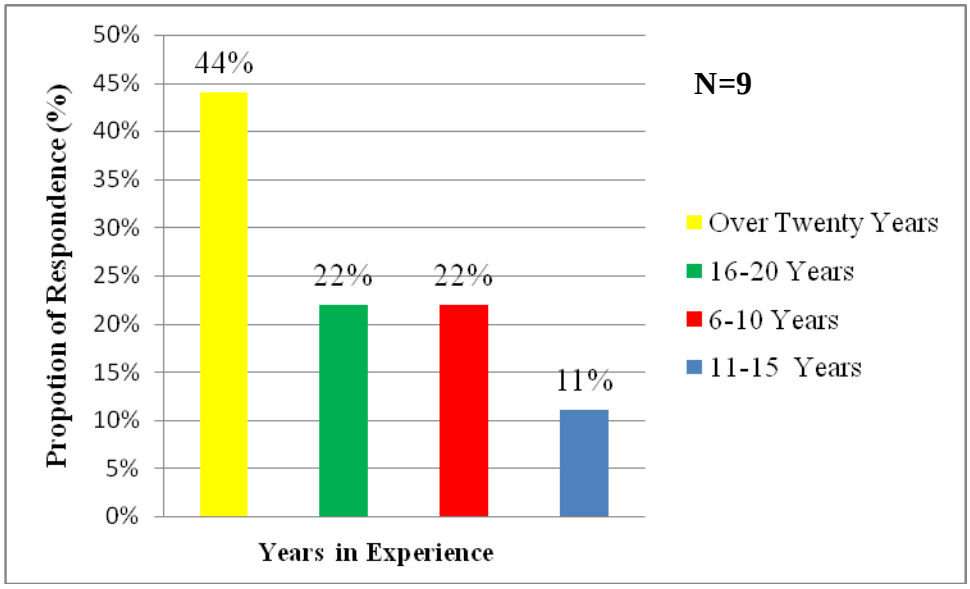

Figure 6.2: Distribution of KALRO-SRI researchers in the Western Kenya Sugarbelt by years of experience

The findings indicated that a majority of the researchers had a work experience of over twenty years (44%: N=4).This was followed by experience of 16-20 years (22%: N=2), 6-10 years (22%: N=2) and 11-15 years (11%: N=1).

6.3.2 Issue of Limited Financé

For KALRO-SRI the biggest challenge was the issue of limited finance as shown in appendix 10. According to GOK (2019) this challenge was attributed to the policy reform that repealed the sugar develoment levy which was the financial source for sugar research .The strength of this challenge was reflected in a mean score of μ=4.5 which is far above the sample mean or baseline of 3.00 hence an indicator of a very big challenge. This finding was attributed to abolition of SDL and to excessive dependence on the national treasury which was also financially challenged. The financial challenge of KALRO-SRI was reflected in the fact that save for the headquarters at Kisumu the other research stations were dormant. The situation is worsened by lack of alternative funding or sponsorship except for the scanty intervention of European Union under the EU Sugar Reform Programme. Further to this, the issue of financial limitation leads to inadequacy of human capital. This is a concern since the few employees available cannot deliver the services required for compliance within the timeframe stipulated by the COMESA Council of Ministers. This was compounded by the fact that income generated by researchers through consultancy was little and yet the COMESA market was not funding any compliance interventions.

The findings of the study revealed that all the researchers (100%; N=8) attested to the idea that issue of limited finance was a big challenge to KALRO-SRI and this indeed confirmed financial limitation as an issue. About 50% (N=4) of the researchers felt that the issue of limited finance was a very big challenge. This specific finding was attributed to researchers who were members of the top management team and hence dully informed. Further to this, another 50% (N=4) of the researchers felt that the issue of limited finance was a moderately big challenge and this was attributed to researchers who were generating some income from consultancy services.

6.3.3 Issue of Limited Autonomy

The study established that the next high ranking challenge to KALRO-SRI in terms of compliance with the COMESA standards was the issue of limited autonomy. This is due to several policy reforms particularly the ones that repealed the Sugar Act of 2001 and more critically the enactment of the Crops Act No.16 of 2013 which amalgamated sugarcane farming services under Agriculture and Food Authority. The strength of this challenge was reflected in a mean score of (μ) 4.22 which is far above the sample mean (μ) or baseline of 3.00 which indicates that it was a big challenge as shown in appendix 10. This challenge was attributed to KALRO- SRI amalgamation undertaken in accordance with KALRO Act of 2013 as contained in the fourth schedule of the Kenya Constitution (2010).The concern is that amalgamation disoriented the focus of sugar research services through incorporation into a bigger pool of research plans (GOK, 2019).This is besides centralization of research funding which further led to significant reduction in funding. Apart from this, it created undue or extra levels of bureaucracy in the administrative and management matters of the research process that led to delay in decision making. Further to this, the process also interfered with implementation of existing strategic plans inclusive of the strategies for compliance.

According to the study about 11% (N=1) of the researchers felt that the issue of limited autonomy was a very big challenge while 56% (N=5) felt that it was a moderately big challenge to revival of sugarcane farming. These findings were attributed to researchers who were limited from provision of essential services by hurdles originating from amalgamation. The study established that no researcher (0%) was not sure of the issue of limited autonomy as a challenge and further that none of the researchers (0%) held the view that the issue of limited autonomy was a moderately small challenge on revival of

sugarcane farming, about 33% (N=3) of the researchers felt that the issue of limited autonomy was a very small challenge. This finding was attributed to newly recruited researchers who were yet to experience and fully understand the challenges of working in an amalgamated service framework.

6.3.4 Lack of Seed Cane Policy

The study also established that the issue of lack of a seed cane policy is another challenge to KALRO-SRI specifically with respect to the standard that sought for adoption of recommended sugarcane varieties. This view is line with KNA (2014) according to which Kenya's sugar subsector suffers from policy gaps .The finding was attributed to the fact that due to lack of guiding policy KALRO-SRI is limited in terms of multiplication and distribution of the recommended seed cane materials.The strength of this challenge was reflected in a mean score of 3.7 which is far above the baseline value of (μ) 3.00 and thus an indicator of a big challenge as shown in shown in appendix 10. Further assessment indicates that up to 55 % (N=5) of the researchers held the view that the issue of lack of a seed cane policy was a big challenge to compliance with the COMESA standards for revival of sugarcane farming, among these, 22 %(N=2) felt that the issue was a very big challenge while 33 %(N=3) felt that it was a moderately big challenge to compliance with the COMESA standards for revival of sugarcane farming. These findings were attributed to the researchers who were within the top management team of KALRO-SRI. This is because it is the top management team who engage in strategic planning and policy matters of their organizations.

However, about 22 % (N=2) of the researchers were not sure if the issue of lack of a seed cane policy was a challenge to KALRO-SRI or not. This finding was attributed to researchers who were not directly involved in matters of compliance to the standards. However, on the contrary about 22 % (N=2) of the researchers held the view that the issue of lack of seed policy was a small challenge to compliance.This finding was attributed to researchers who believe that seed policy is silently provided for under and within the mandate of KALRO-SRI as a researcher and therefore the critical concern is the capacity tomultiply and supply the seed and not policy.

6.3.5 Issue of Limited Technology Dissemination Capacity

Further to this, the study also established that the issue of limitation in capacity to disseminate technology is another challenge to KALRO-SRI. This was reflected in a mean score of (μ) 3.67 which is far above the sample mean or baseline of 3.00 and thus an indicator of a big challenge as shown in Appendix 10.

The issue of limited technology dissemination capacity as a challenge is well reflected in the fact that KALRO-SRI had achieved higher compliance with the standard for generation of new varieties but very low compliance with the one for adoption of the varieties. This challenge is majorly attributed to human capital limitation which is further attributed to financial challenges and to the extra burecreucy in the procedure of staff recruitment that was introduced by amalgamating KALRO and SRI. The issue of limited capacity to disseminate technology as a challenge to researchers' compliance to the COMESA standards is also reflected in poor linkage with the sugar millers and yet the millers are the technology consumers.

Further to this, the study established that up to 55% (N=5) of the researchers held the view that the issue of limited capacity to generate and disseminate technology was a big challenge to researchers compliance with the COMESA recommendations. Among these, 11% (N=1) fee that the issue of limited capacity to disseminate technology was a very big challenge while 44% (N=1) felt that it was a moderately big challenge to researchers compliance. These findings were attributed to researchers who participated in generation of the new varieties that had not been adopted due to limited dissemination. Further assessment revealed that about 22% (N=2) of the researchers were not sure if the issue of limited capacity to disseminate technology was a challenge to researchers' compliance with the COMESA standards for revival of sugarcane farming or not. This finding was attributed to researchers whose duties do not include technology dissemination. Further on the contrary, approximately 22% (N=2) of the researchers held the view that the issue of limited capacity to disseminate technology was a moderately small challenge but none (0%) of them felt that it was a very small challenge. This was attributed to researchers who believed that KALRO-SRI was yet to generate the correct and adequate technologies as per the demands of the COMESA safeguard measures. This meant that to them the critical issue was technology generation and not yet dissemination. This was confirmed through interactions with key informants as evident in Plate 6.1.

Plate.6.1: An interaction with Key Informant; Researcher and Dr George; CEO-SRI-Kisumu.

6.3.6 Logistics of Strategic Planning

According to the study, the next high ranking challenge to KALRO-SRI was the issue of logistics of strategic planning. This was informed by the fact that agricultural value chains consist of inter-linkages between and within actors involved in production, processing, distribution of inputs, outputs as well as co-ordination and governance of the chain (Furuholt & Matotay, 2011). However, in the matter of compliance to COMESA standards, researchers under KALRO-SRI were not provided with due opportunity. The constraining strength of the issues of logistics of strategic planning was reflected in a mean score of 3.33 which was moderately above the sample mean (μ) or baseline of 3.00 and hence indicative of a moderately big challenge as shown in appendix 10.

This challenge originated from conflict in the time horizons of the researchers and that of the COMESA Council of Ministers. This is because as a research institution KALRO-SRI had its own strategic plan by the time the COMESA Council of Ministers invoked the safeguard measures and the COMESA standards. However, the COMESA council of ministers demanded for timely action without due consideration to this state of affairs. This generated an immediate need for strategic re-planning of the ongoing research

activities and interventions. The re-planning process came along with new financial demands and hurdles (NSC, 2012).

According to the study, about 11% (N=1) of the researchers felt that the issue of logistics of strategic planning was a very big challenge while 22% (N=2) felt that it had a moderately big challenge to researchers compliance with the COMESA standards. These findings were attributed to researchers who were members of the top management team of KALRO-SRI. This is because they the ones who were directly experiencing the challenges of strategic re-planning and the associated financial pressure. Further to this, the study established that about 33% (N=3) of the researchers were not sure if the issue of logistics of strategic planning influences researchers compliance with the standards or not. This finding was attributed to researchers who were not members of the top management team and further to those who were not associated with ensuring that KALRO-SRI complies with the COMESA standards.

On the contrary, about 11% (N=1) of the researchers felt that the issue of logistics of strategic planning was a moderately small challenge as a similar proportion held the view that it was a very small challenge. These findings were attributed to employees of KALRO-SRI who were providers of support services and not the core research service. The study also established that the researchers were moderately congruent in their views over this challenge. This was reflected in the moderately low level of standard deviation (ð=1.204>ð=1.00) as shown in appendix 10.

6.4 Challenges Limiting SDfrom Compliance with COMESA Standards in the Western Kenya Sugarbelt.

Investigation of the challenges limiting the SDfrom full compliance with COMESA standards was based on regulators as informed by demography. It yielded the findings shown in appendix 10.

6.4.1 Socio-Economic and Demographic Characteristics of AFA-SDin the Western Kenya Sugabelt

This was undertaken on the basis of education level and work experience in years. When subjected to normality test the data for distribution of the regulators under the SDin the Western Kenya Sugarbelt by level of education yielded the findings in Figure 6.3.

The findings indicated that the data is normally distributed as reflected in Figure 6.3.

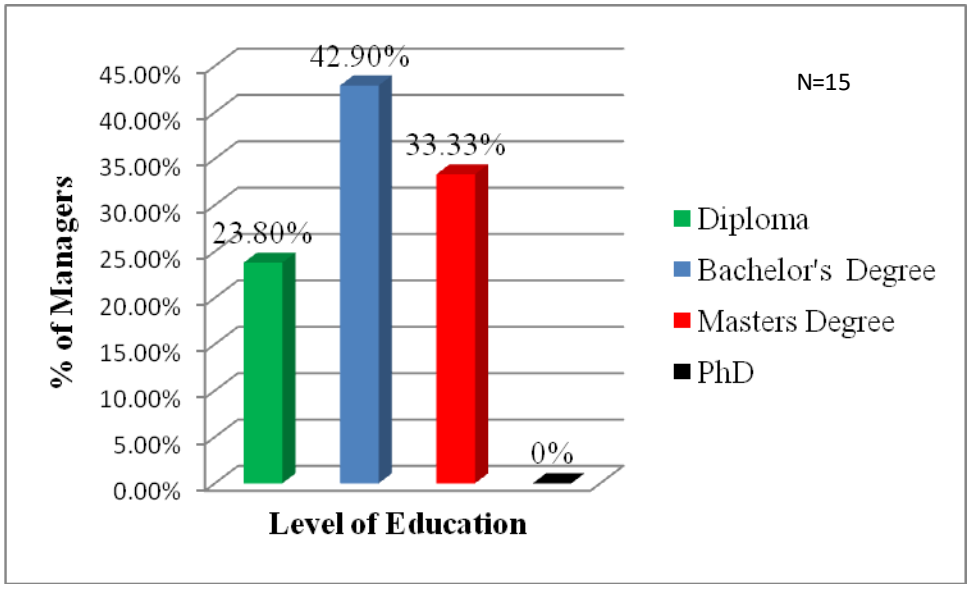

Figure 6.3: Distribution of of the Sugar Regulators under SD in the Western Kenya Sugarbelt by Level of Education

According to the findings, the modal level of education for the regulators was a first degree (42.90%, N=6). It was followed by masters degree (33.3% N=5) and then diploma (23.8% N= 4). This meant that the findings of this study were largely views of persons with first and second degrees.

When subjected to normality test the data for distribution of the regulators under the SD in the Western Kenya Sugarbelt by level of education yielded the findings in Figure 6.4.

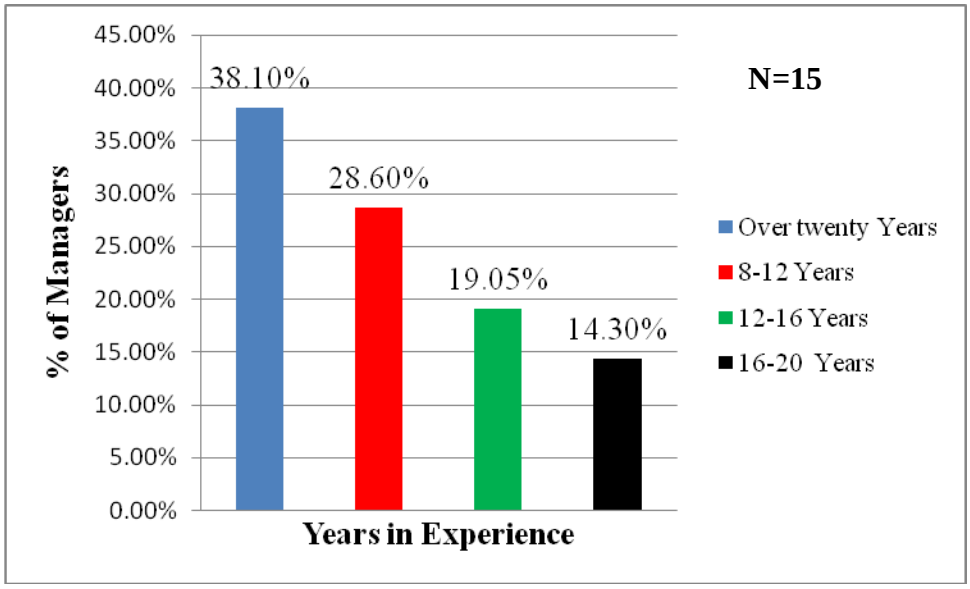

Figure 6.4: Distribution of Regulators under SD in the Western Kenya Sugarbelt by Level of Education

The findings indicated that (38.1 %, N=6) of the regulators had work experience of over 20 years. This was followed by those with experience of 8-12 years (28.6 %, N=4) then with 12-16 years at 19.05 %(N=3), and lastly 16-20 years at 14.3 %(N=2). This meant that the findings of the study are largely attributable to regulators with a work experience of 16 years.

6.4.2 Weak Policy Implementation Strategy

For the sugar regulators under AFA-SD, the study established that the biggest challenge limiting compliance with the COMESA standards was the issue of weak policy and plan implementation strategy at the national level. This is contrary to Wanyende (2001) according to whom the value of any policy depends on its implementation. The strength of this challenge was reflected in a mean score of (μ) 3.77 which is far above the sample or baseline mean score of 3.00 and thus an indicator of a big challenge as shown in appendix 10.

According to the findings, about 25% (N=4) of the regulators felt that the issue of weak policy and plan implementation strategy at the national level was a very big challenge while 31.25% (N=5) felt it had a moderately big challenge to regulators' compliance to the standards. These findings were attributed to the fact that the nationalwide planing is the most critical step for nationwide compliance.

Further to this, the findings were attributed to regulators who were members of the Kenya's COMESA Adhoc committee because these were the individuals who had relevant information. This challenge is further attributed to delay in transposition of the safeguard measures and the COMESA standards which happened because members of the National Assembly were pre-occupied with campaigns for general elections that were coming up in 2002.

Further assessment of the findings revealed that about 25% (N=4) of the regulators were not sure if the issue of weak policy and plan implementation strategy at the national level was a challenge to AFA-SDwith regard to compliance or not. This was attributable to regulators who had not had an opportunity to serve on the COMESA adhoc committee. On the contrary, about (12.5%; N=2) of the regulators held the view that these issues comprised a moderately small challenge while about 6.25% (N=1) felt that the issue of

weak policy and plan implementation strategy at the national level comprised a very small challenge.These findings were attributed to regulators who were perceived sycophants of the government .The study further revealed that the regulators were moderately congruent in their views over this specific challenge. This was reflected in moderately high level of standard deviation above the baseline (ð=1.312>ð=1.00).

6.4.3 Political Interference

According to the study, the next challenge to regulators' compliance was the issue of political interference. This is in line with Waswa et al (2012) accoding to whom in Kenya sugarcane farming Has always been a politically contentiuos issue . The strength of this challenge was reflected in a mean score of (μ) 3.63 which is far above the sample or baseline mean score of 3.00 and thus an indicator of a big challenge. According to FGDS and key informants, the challenge of political interference is clearly articulated in the matter of the standard that concerns the proposed for privatization of public mills. This is because the proposal of privatization attracted political reactions that were suppressive to the struggle for compliance. Further to this, according to FGDs politics emerges out of the fact that the sugarcane farmers were perceiving the presidency as favoring alternative cash crops particularly tea and coffee at the expense of sugarcane.

Further assessment revealed that about 18.5% (N=3) of the regulators felt that the issue of state interference was a very big challenge to regulators compliance with the COMESA standards. This finding was attributed to regulators who were members of the top management team of AFA-SD because these are the officers who plan and execute compliance activities and hence well informed. Further to this , about 43.75% (N=7) of the regulators held the view that the issue of political interference was moderately big challenge to the regulators compliance to COMESA standards and this state of affairs was attributed to regulators who were members of COMESA Adhoc Committee.

However, about 18.5% (N=3) of the regulators were not sure if the issue of political interference was a challenge to AFA-SD with respect to compliance to the COMESA Standards. In the alternative, they were not informed of how politics impacts on the struggle to comply with the COMESA standards. This finding was attributed to regulators who were perceived as engaging in sycophancy to the political class. Additionally, about 18.5% (N=3) of the regulators held the view that political interference was a moderately small challenge on attainment of the standards while (0%) felt that it was a very a small challenge. These findings were also attributed to those who

perceived as sycophants or political appointees. The study also established high level of divergence in the regulators' opinions. This was reflected in high score of standard deviation far above the baseline (ð=1.412>ð=1.00) as shown in appendix 10.

6.4.4 Logistics of Strategic Planning

The study further established that the issue of logistics of strategic planning was also a challenge to regulators' compliance. This was arttributed to the fact that effective regulation depends on effective inter-linkages between and within actors in the sugar value chain. The strength of this challenge was reflected in a mean score of (µ) 3.50 which is well above the sample mean (µ) or baseline of 3.00 which implied that it was a moderately big challenge. This challenge was attributed to the fact that by the time the COMESA standards were being enacted, AFA-SD had an ongoing strategic plan. The situation demanded for immediate review of the strategic plan and yet unlike the safeguard measures which were designed for periods of twelve months the ongoing plans were designed against a time horizon of five years.

The findings revealed that about 18.5% (N=3) of the regulators felt that the issue of logistics of strategic planning was a very big challenge to regulators' compliance with the COMESA standards for revival of sugarcane farming while 50% (N=8) held the view that it was a moderately big challenge. These findings were attributed to regulators who were members of the planning committee of the Sugar Directorate.This is because they were the ones who faced the challenge of strategic re-planning and execution of the new plan.

However, 18.5% (N=3) of the regulators were not sure if the issue of the logistics of strategic planning was a challenge to regulators' compliance with the COMESA standards for revival of sugarcane farming. Furthermore, about 6.25% (N=1) of the regulators held the view that the issue of logistics of strategic planning was a moderately small challenge while another 6.25% (N=1) felt that it was a very small challenge to regulators' compliance. These findings were attributed to regulators with a belief that AFA-SD had the necessary capacity to comply with the standards. The study also established that the regulators were moderately congruent in their views as expressed in standard error (ð=1.225>1.00).

6.4.5 Policy Gaps in the Sugar Subsector

The study further established that the issue of gaps in the policy of the sugar subsector is also a challenge to regulators compliance with the COMESA standards for revival of sugarcane farming. This view is line with KNA (2014) according to which Kenya's sugar subsector suffers from policy gaps.The strength of this challenge was reflected in a mean score of (μ) 3.33 which was moderately above the sample or baseline mean score of (μ) 3.00 which indicates that it was a moderately big challenge. This finding was attributed to lack of seedcane policy. This is because a majority of the COMESA standards were focused on seed cane for new varieties to enable adoption.

Additionally, about 6.25% (N=1) of the regulators felt that the issue of policy gaps in the sugar subsector was a very big challenge to regulators compliance with the COMESA Standards. This finding was attributed to regulators who were serving in the legal section of AFA-SD. Further to this another 6.25% (N=1) of the regulators held the view that the issue of policy gaps in the sugar subsector was a moderately big challenge. This was attributed to regulators whose duty involved enabling adoption of new sugarcane varieties a service that was highly constrained by lack of seed cane policy.

The study further established that about one half of the regulators, 50% (N=8) were not sure if the issue of policy gaps in the sugar subsector was a challenge to regulators' compliance with the COMESA Standards. This finding was attributed to newly recruited regulators who were yet to experience the challenges attributable to gaps in the policy framework. Additionally, the study established that about 18.5% (N=3) of the regulators held the view that the issue of policy gaps in the sugar subsector was moderately small challenge as another 18.5 % (N=3) held the view that it was a very small challenge. These findings were attributed to regulators who believed that the legal framework of AFA-SD could adequately enable due compliance to the COMESA standards. Further to this, the study established that regulators were strongly congruent in their opinions over this aspect of the study. This was reflected in low divergence in their views as manifested in a low score of standard deviation that is slightly below the baseline (ð=0.983<ð=1.00).

6.5 Hypothesis Testing

For this specific objective which sought to evaluate policy related challenges limiting Compliance of sugar agencies with COMESA standards for revival of sugarcane farming

in the Western Kenya Sugarbelt. The null hypothesis was H01: there are no policy-related challenges that have statistically significant limiting influence on sugar agecies 'compliance with COMESA standards for revival of sugarcane farming in the Western Kenya Sugarbelt. The alternative hypothesis was **Ha_1**: there are policy-related challenges that have statistically significant limiting influence on sugar agecies 'compliance with COMESA standards for revival of sugarcane farming in the Western Kenya Sugarbelt. When subjected to X2-Test at 95% confidence limit the findings of the study yielded the findings in Table 6.7.

Table 6.7: X2-Test; Millers' compliance with COMESA standards in the Western Kenya Sugarbelt

Degree of Freedom	p-value/sig (p<0.05)	X2 calculated/observed	X2 tabulated/expected
4	Significant	627.211	7.2311

Given that the findings yielded an X2 calculated value that is greater than the X2 tabulated value (627.211>7.2311) and the decision rule is to reject the null hypothesis when X2 calculated value is more than the X2 tabulated value at 5% level of signifince the null hypotheses is rejected. On the basis of this decision, the researcher avoided committing Type 11 Error or beta error which occurs when one accepts a null hypothesis that should have been rejected but risked committing Type 1 Error or alpha error (α) which occurs when one rejects a Null hypothesis that should have been accepted. Ultimately the study accepts the alternate hypothesis which means that there are policy-related challenges that have statistically significant limiting influence on sugar agencies' compliance with COMESA standards for revival of sugarcane farming.

CHAPTER SEVEN
RESULTS AND DISCUSSIONS
AN EVALUATION OF THE CAPACITY OF AFA-SD AND KALRO-SRI TO ENABLE REVIVAL OF SUGARCANE FARMING-POLICY PERSPECTIVE.

7.1 Introduction

This objective sought to evaluate the capacity of KALRO-SRI as a research agency and AFA-SDas a regulatory agency to enable revival of sugarcane farming. The investigation was guided by attributes of strengths, opportunities, challenges and threats.

7.2. Capacity of AFA-SD to enable revival of sugarcane farming in the Western Kenya Sugarbelt

According to Ricardo and Wade (2001) institutional performance is the capability to maximize on strengths while overcoming challenges and taking advantage of opportunities to achieve organizational objectives while neutralizing threats. This meant that while strengths and opportunities are capacitating attributes in the current and future perspectives respectively challenges and threats were incapacitating attributes in the current and future perspectives respectively. Pursuant to this, in this study AFA-SD and KALRO-SRI were each treated as thematic areas and their capacities were investigated on the basis of strengths, challenges, opportunities and threats or in brief on the basis of SCOT analysis.

AFA-SDwas established by the AFA Act of 2013 as a government agency with mandate to regulate the sugar industry in Kenya. It replaced the former Kenya Sugar Board. However, it had not yet succeded to revive sugarcane farming in the country. The study established that AFA-SD draws significant strength and unexploited opportunities which are from a range of mandates as provided by the Constitution of Kenya 2010 and other enabling legislations like the COMESA protocol. The findings for the attributes of strengths and opportunities are in Table 7.1.

Table 7.1: Strengths and opportunities of AFA-SDto revive cane farming in the Western Kenya Sugarbelt

Attributes of Strength	Level of Influence VW (1)	W (2)	N (3)	S (4)	VS (5)	Mean (μ)	Std Dev (α)	Std Error
	Attributes of Policy related Strengths							
Provision for Mandate to License private millers	5.26% 1	10.5% 2	10.5% 2	21.05% 4	52.63 % 10	4.12	0.533	0.221
Provision for Mandate to review prices	5.26% 1	10.5% 2	26.3% 5	31.59% 6	26.3% 5	3.843	1.22	0 .211
Adoption of COMESA standards	5.26% 1	21.05% 4	10.5% 2	21.05% 4	42.1% 8	3.65	1.13	0.753
Mandate to regulate sugar importation	10.5% 2	21.05% 4	10.5% 2	10.5% 2	42.1% 8	3.58	1.501	1.272
Positive Work Relations with Millers	10.5% 2	10.5% 2	21.05% 4	42.1% 8	15.79% 3	3.43	1.11	0.335
Structuring AFA-SD into Departments.	5.26 % 1	10.5% 2	47.37% 9	21.05% 4	15.79% 3	3.40	1.13	0.331
Aggregate Mean						3.67	1.10	0.407
Attributes of Policy related opportunities								
Seek for intervention of the presidency	5.26% 1	5.26% 1	21.05% 4	52.63 % 10	10.5% 2	3.90	1.251	0.432
Intensification of surveillance services	5.26% 1	15.79% 3	21.05% 4	47.37% 9	10.5% 2	3.72	1.43	0.244
Enhancement of stakeholder engagement	10.5% 2	21.05% 4	10.5% 2	10.5% 2	47.37% 9	3.58	1.41	0.38
Review of strategic plan	21.05% 4	15.79% 3	10.5% 2	10.5% 2	42.37% 8	3.43	1.093	0.467
Aggregate Mean						3.62	1.26	0.371
Overall mean						3.64	1.18	0.389

Key; VW= Very Weak, L=Weak, NS =Not Sure, S =Strong, Vs=Very Strong, STD=Standard Deviation, M=Mean, SE =Standard Error

7.2.1 Mandate to Licence Private Millers: AFA-SD

According to the study, the biggest strength of AFA-SD for enabling revival of sugarcane farming was the attribute of the policy provision for mandate to license private millers. This is provided for by Crops Act No 16 of 2013. This finding was reflected in a mean score (μ) of 4.12 as in Table 7.1 which is far above the sample mean (μ) or baseline of 3.00 indicating high level of strength. The finding was attributed to the fact that WKSC and other private mills were attractive to farmers because they were offering comparatively higher prices for sugar cane than the public mills. They were also more time conscious in delivery of essential services inclusive of farmers' payments.

Further assessment revealed that up to 52.6% (N =10) of the regulators felt that the attribute of the policy provision for mandate to license private millers provided very big strength to AFA-SDfor revival of sugarcane farming while 21.5% (N =4) held the view that it provided moderately big strength. These findings were attributed to long serving regulatory officers who had witnessed the advantages and attractiveness of WKSC and other private mills to farmers. However, about 10.5% (N=2) of the regulatory officers were not sure if the attribute of the policy provision for mandate to license private millers provided strength to AFA-SD for revival of sugarcane farming or not . This finding was attributed to regulatory officers who were not directly involved in matters of licensing mills or in interactions with farmers.

On the contrary, about 10.5% (N=2) of the regulators held the view that the attribute of the policy provision for mandate to license private millers provided moderately small strength for revival of sugarcane farming while about 5.6% (N=1) of the regulators felt that it was providing very small strength .These findings were attributed to regulators who knew how WKSC a private mill frustrates and demotivates farmers through vices like manipulation of weighbridges and selective provision of cane harvesting permits.
According to the findings, regulators are congruent in their views about influence of the mandate of AFA-SD to license private mills as strength for revival of sugarcane farming. This was reflected in a low level of standard deviation (α=0.533< α=1.00).

7.2.2 Mandate to Review Sugarcane Prices: AFA-SD

The second high ranking strength attributed to AFA-SD to revive sugarcane farming was the attribute of the policy provision for mandate to AFA-SD to review sugar cane prices. This finding was close to the situation in India where according to

Arjchariyaatong (2006) sugarcane price is decided according to a revenue-sharing scheme between growers and millers. As in Table 7.1 the strength of this attribute was reflected in a mean score of (μ) 3.843 which is far above the sample mean (μ) or baseline of 3.00 which indicated very big strength. The finding was attributed to the fact that through competitive pricing AFA-SD through the cane pricing committee encourages and attracts more and more farmers into the enterprise. This is because it sets the minimum price limit while providing an allowance for individual millers to offer higher prices hence providing opportunity for maximization of farmers'profits. Further to this, it creates competition among the millers who in turn struggle to attract more farmers into the enterprise. The findings were further attributed to price reviews that often catered for dynamics of production costs. This helped to ensure that at all times sugarcane farming was profitable, an issue that had motivational influence on farmers. Further to this, by ensuring inclusion of Farmers' organizations and millers in the pricing committee, AFA-SD captured the attention of the key players in sugarcane farming hence promoted the revival process.

According to the study about 26.3% (N=5) of the regulatory officers felt that the policy provision that mandates AFA-SD to carry out price review provided very big strength to AFA-SD for revival of sugarcane farming. Additionally , about 31.5% (N=9) of the officers felt that it provided moderately big strength .These findings were attributed to long serving regulators and especially those who were members of the sugar pricing committee due to experience in review of prices.

On the contrary , about 26.3% (N=5) of the regulatory officers were not sure if the policy provision that mandates AFA-SD to carry out price review provided strengths to AFA-SD to revive sugarcane farming or not . This finding was attributed to officers of AFA-SD who were not members of the sugar pricing committee and further to those whose line of duty excluded matters of price review.

Further to this, about 10.5% (N=2) of the regulators held the view that the policy provision that mandates AFA-SD to carry out price review provided moderately small strengths while about 5.26% (N=1) felt that it provided very small strength to AFA-SD to revive sugarcane farming. These findings were attributed to regulators whose line of duty did not include marketing issues and therefore did not have due experience and

information. Alternatively, they were attributed to officers who were not satisfied with the existing mode of price review.

According the findings, officers working for the regulators were moderately congruent over these findings. This was justified by the moderately high score of standard deviation above the baseline (μ=1.22 > μ=1.00). This indicated that their views were closely clustered around the mean. Further to this, the low scores for SE (0.211) further confirmed that the regulatory officers were operating as a team since it indicated uniformity or lack of distinct clusters.

7.2.3 Policy for Adoption of COMESA Standards

Another policy attribute of AFA-SDthat provides it with strength for revival of sugarcane farming is the policy for adoption of the COMESA safeguard measures and the COMESA Standards. This is in line with Article 2 of the constitution (Kenya Constitution 2010). This was attributed to the fact that the measures and standards were designed to revive sugarcane farming in a protected context or environment as is the case in Kenya presently. Evidence for this was captured through inspection of improved sugarcane varieties developed by KALRO-SRI at Kibos-Kisumu as reflected in Plate 7.1 and further through Focus Group Discussions with farmers about the performance of different varietis as evident in Plate 7.2.

Plate 7.1: Researcher and Research Assistant Inspect Improved Cane Varietes at the headquatres of Sugar Research Institute; Kibos-Kisumu in the Western Kenya Sugar Belt

Key: Research Assistant

Plate 7.2: Researcher in FGD in Bukhakunga Village in the Western Kenya Sugar Belt on performance of new cane varieties.

As in Table 7.1 the strengths of this engagement was reflected in a mean score of (μ) 3.65 which is far above the sample mean (μ)or baseline of 3.00 as in Table 7.1 thus indicative of big strength. Further assessment revealed that about 42.1% (N=8) of the regulators held the view that the policy for adoption of the COMESA safeguard measures and standards provided AFA-SD with very big strength for revival of sugarcane farming . 21.5% (N=4) held the view that it provided moderately big strength. These findings were attributed to the fact that each of the COMESA standards was a scientifically proven strategy for revival of sugarcane farming within the agro-ecological circumstance or context of Kenya.

However, about 10.5% (N=2) of the regulatory officers were not sure if the policy for adoption of the COMESA safeguard measures and the COMESA standards provided strength for revival of sugarcane farming or not. The finding was attributed to regulatory officers who were limited in information because they had not been involved in matters of COMESA safeguard measures and standards. On the contrary, about 21.5% (N=4) of the regulatory officers felt that the policy for adoption of the COMESA safeguard

measures and standards provided moderately small strength to AFA-SD while 5.26% (N=1) felt that it provided very small strength . These findings were attributed to regulators who were not within the Department of Agriculture where changes in sugarcane farming due to compliance with the COMESA standards could be manifested. In the alternative, the findings could be attributed to regulators who felt that adoption of the COMESA safeguard measures and standards could enable AFA-SD to revive sugarcane farming due to the limited timeframes of two years as reflected in each extension of the measures. The findings could also be attributed to regulators who were privy to extra information about the weaknesses of AFA-SDin terms of applying or invoking the standards to revive sugarcane farming but could not disclose due to the oath of secrecy for civil servants.

Further assessment revealed that the regulators were moderately congruent over these findings. This was reflected in a score of standard deviation that is only slightly above the sample mean or baseline of α=1.00 α =1.13 > α =1.00). This indicates that the views of the individual regulators are closely clustered around the mean or closely fluctuate around the mean. This is further confirmed by a low score for Standard Error (SE=0.753) which indicates that the regulators were not divided into distinct groups.

7.2.4 Mandate for AFA-SD to Regulate Sugar Importation

The study further established that the policy provision for mandate for AFA-SD to regulate sugar importation also provided strength for revival of sugarcane farming. This mandate is drawn from the Crops Act No 16 of 2013 and Public Finance Management Act of 2012. As in Table 7.1 the strength of this mandate was reflected in a mean score (μ) of 3.58 which is above the sample mean (μ) or baseline of 3.00 and hence an indicator of big strength. This finding was attributed to the fact that the provision ensures local producers were not locked out of the domestic market by sugar importers due to the higher cost of local production.

Further assessment revealed that up to 42.1% (N=8) of the regulators held the view that the policy provision for mandate of AFA-SD to regulate sugar importation provided AFA-SD with very big strength. 10.5% (N=2) felt that it provided moderately big strength .These findings were attributed to long serving regulatory officers especially those who were dealing with farming issues had severally witnessed challenges in

sugarcane farming that were attributable to over importation of sugar. In the alternative, the findings were attributed to regulators who were handling millers' complaints in the matters of sugarcane and marketing. Additionally, the findings were strongly attributed regulatory officers serving in the marketing department of the SD where the issues of sugar and even sugarcane marketing were handled.

However, 10.5% (N=2) of the regulators were not sure if the policy provision for mandate of AFA-SD to regulate sugar importation provides it with strength for revival of sugarcane farming or not. This finding was attributed to regulatory officers who may be associated with defense of sugar cartels and barons. This is because cartels and their accomplice are focused on profit maximization from importation and subsequently are against domestic production.

On the contrary, about 21.5% (N=4) of the regulatory officers felt that the policy provision for mandate of AFA-SD to regulate sugar importation provided it with moderately small strength for revival of sugarcane farming while 10.5% (N=2) felt that it provided very small strength. These findings were attributed to regulators who were not satisfied with the mode and the extent to which AFA-SDregulates sugar importation. This view is well supported by the fact that in Kenya there has never been linearity between sugar importation and deficit in tonnage and further that importation is always significantly above the level of deficit.

Further assessment revealed that the regulatory officers were in distant agreement over these specific findings. This is articulated in the high score of standard deviation far above the baseline ((μ=1.501 > μ=1.00). This indicates that the views of individual regulators are widely scattered around the mean. This is further confirmed by a high score of standard error above the baseline (SE =1.272>SE=1.00) indicating existence of distinct clusters among the regulators. This could be attributed to the idea that while a group of regulators are skewed towards farmers as producers another group appeared skewedtowards importers.

7.2.5 Good Work Relationship between AFA-SD and Sugar Millers

The study further established that the attribute of good work relationship between AFA-SD and millers also provided AFA-SD with strength for revival of sugarcane farming.

This is because millers as stakeholders have both backward and forward influence on sugarcane farming. Therefore, a good relationship with them contributes to motivation of the public towards sugarcane farming. The motivational strength was reflected in a mean score (μ) of 3.43 as in Table 7.1 which is moderately above the sample mean or baseline of μ =3.00. This finding was attributed to the fact that since the onset of commercial sugar production in Kenya, no miller and especially the private millers had relocated from the country due to issues of hostile work environment. In fact the finding was attributed to the fact that due to the conducive work environment the millers especially the private millers were being motivated to increase investment in sugarcane farming.

Further assessment established that about 15.7 %(N=3) of the regulators felt that the attribute of positive working relationship between AFA-SD and millers provided AFA-SD with very big strength for revival of sugarcane farming while 42.1 % (N=8) felt it provided moderately big strength. These findings were attributed to managers who understand the significant role played by millers in sugarcane farming both as producers and as the market.

However, 21.5% (N=4) of the regulators were not sure if the attribute of positive working relationship between AFA-SD and millers provided AFA-SD with strength for revival of sugarcane farming. This finding was attributed to officers serving AFA-SD in sections that were not associated with linkages and partnerships or those who were limited to provision of support services like financial affairs and not core regulatory functions. In spite of this, about 10.5 %(N=2) of the regulators felt that the attribute of good working relationship between AFA-SD and millers provided AFA-SD with moderately small strength for revival of sugarcane farming as another 10.5% (N=2) felt that it provides very small strength.

These findings were attributed to regulatory officers who have had negative experiences with private millers especially the ones associated with Asians. This is because WKSC as a private miller over- empHas izes the law of private property to an extent of occasionally locking out AFA-SD officers. In the alternative, the findings were attributed to regulators whose personal desires or favors were not met by the millers given the high level of corruption in the sugar subsector. Further in the alternative, the findings were

attributed to regulatory officers who were skewed towards sugar importers and cartels at the expense of millers.

7.2.6 Policy Provision for Structuring AFA-SD into Departments

The study also established that the policy attribute for structuring of AFA-SD into departments specifically the regulations and compliance department, market research and product development, technical and advisory services and then the corporate affairs department also provides it with strength to revive sugarcane farming. This is because departmentalization ensures comprehensive coverage of an organization's mandate. As shwn in Table 7.1, the strength of departmentalization process was reflected in a mean score of 3.40 which was moderately above the sample mean (μ) or baseline of 3.00 implying that departmentalization had moderately strong influence on revival of sugarcane farming.

According to the study about 15.7% (N=3) of the regulatory officers felt that the policy attribute of structuring of AFA-SD into departments provided AFA-SDwith very big strength for revival of sugarcane farming while 21.05 % (N=4) felt that it provided moderately big strength. These findings were attributed regulators who were serving within the top management team AFA-SD and therefore privy to the fact that departmentalization had enhanced delivery of essential services for revival of sugarcane farming.

However, about 47.3% (N=9) of the regulators were not sure if the policy attribute of structuring of AFA-SD into departments provided AFA-SD with strength to revive sugarcane farming or not. This finding was attributed to regulators who were not members of the top management team of AFA-SD because such regulatory officers did not participate in planning, monitoring or evaluation of service delivery and yet revival of sugarcane farming depends on standards of service. On the contrary, about 15.76 % (N=3) of the regulatory officers held the view that the policy attribute of structuring of AFA-SDinto departments provided AFA-SD with moderately small strength for revival of sugarcane farming while 5.26% (N=1) held the view that it provides very small strength. This finding was attributed to regulators who were dissatisfied with the service charter and structure of AFA-SD. In the alternative, the findings may be attributed to regulatory officers whose suggestions towards service organization or reorganization of

the service charter and structure as their potential contribution to revival of sugarcane farming were rejected.

Further assessment revealed a moderate level of convergence among regulatory officers over the attribute of departmentalization as a source of strength. This view is justified by a moderate score of standard deviation (μ=1.13 > μ=1.00). This indicates that the views of individual regulators are closely clustered around the meanas confirmed by a low score of standard error (SE=0.331).

7.3 Opportunity for AFA-SD to Revive Sugarcane Farming in the Western Kenya Sugarbelt

An evaluation of the capacity of AFA-SD to revive sugarcane farming in the Western Kenya Sugarbelt yielded the findings in 7.3.1 to 7.3.5.

7.3.1 Opportunity to Seek for the Intervention of the Presidency: AFA-SD

The study further investigated and ranked the opportunities that AFA-SD as a regulator can exploit to revive sugarcane farming and established that the greatest opportunity lies in seeking for intervention of the presidency. The potentiality of this opportunity was reflected in a mean score (μ) of 3.90 as in Table 7.1 which is far above the sample mean (μ) or baseline of 3.00 3.00 thus indicative of very high potential. The potential of this opportunity was attributed to the fact that correction of policy is a critical requirement for the success of the revival process and the presidency has the necessary powers.

Further to this, a majority of the regulatory officers (63.13% N=12 held the view that intervention of the presidency had a high potential to enable AFA-SDto revive sugarcane farming. Among these regulatory officers 10.5% (N=2) felt that engaging the presidency had very high potential while 52.63% (N=10) held the view that it had moderately high potential. These findings were attributed to the fact that through SUPAC the presidency has the capacity to convert the Sugar Bill of 2019 and many other policy concerns into an act that can improve the sugar subsector. Further to this, the presidency could also address the issue of heavy taxation which had high constraining influence not to mention re-establishment of SDL to make the sugar subsector self-reliant financially.

According to the findings, about 21.05% (N=4) of the regulatory officers were not sure if seeking for the intervention of the presidency Has any potential in terms of enabling

revival of sugarcane farming or not. This was attributed to the fact that the presidency may not adopt some of the recommendations of AFA-SDfor personal reasons. On the contrary, about (10.50% ; N=2) of the regulatory officers held the view that engaging the presidency had low potential of improving the capacity of AFA-SD to revive sugarcane farming. Among these, 5.26% (N=1) held the view that the action had moderately low potential while another 5.26% (N=1) felt that it had very low potential. These findings were attributed to regulatory officers who may had made several attempts to revive sugarcane farming by engaging the presidency and had failed to get due assistance. In the alternative, the findings were attributed to regulatory officers who believed that the presidency had limited goodwill towards revival of sugarcane farming.

Further assessment revealed that the regulators were moderately congruent in their views over the potential value of engaging the presidency. This was reflected in a moderately low score of the standard deviation (μ=1.251> μ=1.00) and further confirmed by low score of standard error (SE=0.432).

7.3.2 Opportunity for Enhancement of Surveillance Services

The study further established that there is an opportunity in enhancement of surveillance services. This was reflected in a mean score of (μ) 3.72 as in Table 7.1. The potentiality of this aspect was attributed to the fact that perfecting surveillance services in the contexts of border and domestic market will stop flooding of the domestic market with illegally transmitted cheap sugar. Further to this, surveillance in the perspective of the domestic market will help to eliminate the sale of illegally transmitted sugar and associated vices like malicious repackaging. This will significantly expand the market space for locally produced sugar thereby encouraging revival of local production.

The findings revealed that a majority of the regulatory officers (57.87%; N=11) felt that this approach had a high potential to enable AFA-SD to revive sugarcane farming. Among these regulators 10.5% (N=2) held the view that enhancement of surveillance services had very high potential while 47.37% felt that it had moderately high potential. These findings were attributed to regulators who were within the top management team of AFA-SD and therefore aware of how illegally transmitted sugar reduces market opportunities for locally produced sugar. Alternatively, findings were attributed to regulatory officers who had served or are serving AFA-SD in the surveillance team and hence dully informed.

However, about 21.05% (N=4) of the regulatory officers were not sure if enhancement of surveillance services had any potential to enable AFA-SD to revive sugarcane farming. This finding was attributed to officers who were not within the core regulatory framework of AFA-SD and therefore not fully informed. Further assessment revealed that about 21.05% (N=4) of the regulatory officers held the view that enhancement of surveillance services has low potential to revive sugarcane farming. Among these, about 15.79% (N=3) felt that it had moderately low potential while 5.26% (N=1) held the view that it had very low potential. These findings were attributed to regulators who see the hand of senior government officers in the illegal transmission of sugar. This meant that according to these regulators the potential success will be blocked by the high level powers especially the discretionary powers associated with the presidency.

However, the study also established that the regulators were distantly congruent in their views over this issue. This was reflected in a high score of standard deviation above the baseline (α=1.43>1.00).This meant that the views of the regulators fluctuate widely around the mean. On the contrary, a low score of the standard error (SE=0.244) revealed that there are no distinct clusters among the regulatory officers as concerns this opportunity.

7.3.4 Opportunity for Enhancement of Stakeholder Engagement

According to the findings, the next opportunity for AFA-SD to revive sugarcane farming lies in enhancement of stakeholder engagement. The potentiality of this opportunity was reflected in a mean score (μ) of 3.58 as in Table 7.1 which is far above the baseline score of μ =3.00 and thus an indicator of high potentiality. The potential of this specific opportunity was attributed to the fact that it will ensure that every stakeholder plays an additive role. The potential of this strategy depends on the extent of inclusion of farmers, farmers' organizations and millers.

Further assessment indicated that a (57.87%; N=11) majority of the regulatory officers held the view that enhancement of stakeholder engagement had high potential of enabling AFA-SD to enable revival of sugarcane farming. Among these regulatory officers 47.37% (N=9) held the view that it had very high potential while 10.5% (N=2) held the view that it had moderately high potential. These findings were attributed to the regulatory officers who were members of the top management team of AFA-SD and

more especially to long serving regulatory officers. This is because long serving officers have interacted with virtually all stakeholders and therefore have a picture of the potential contribution of each of them towards revival of sugarcane farming. However, up to 10.5% (N=2) of the regulatory officers were not sure if enhancement of stakeholder engagement could influence revival of sugarcane farming or not. This finding was attributed to regulatory officers who were newly employed and therefore yet to interact and understand the potential of each or different stakeholders.

Furthermore, about 31.55% (N=6) of the regulatory officers held the view that the strategy had low potential. Among these 21.05% (N=4) felt that it had moderately low potential while 10.5% (N=2) held the view that it had very low potential to enable AFA-SD to enable revival of sugarcane farming. These findings were attributed to the regulatory officers who were not members of the top management team of AFA-SD because issues of stakeholder engagement are a function of the top management team. The study further established that the regulatory officers were moderately in agreement over the potential of this strategy. This was reflected in moderate score of the standard deviation above the baseline (μ=1.41> 1.00) and further by the low score of the standard error (SE=0.38).

7.3.5 Opportunity for Enhancement of Strategic Plan

Further to this, the study established that another opportunity for revival of sugarcane farming lies in enhancement of the strategic plan of AFA-SD.This opportunity was reflected in a mean score of 3.43 as in Table 7.1 which was moderately above the sample mean or baseline of 3.00 and thus an indicator of moderately big opportunity. The finding was attributed to the idea that strategic planning can be reframed to be more responsive to the emerging challenges of sugarcane farming. The findings revealed that a majority of the regulatory officers (52.87%; N=10) held the view that enhancement of the strategic plan of AFA-SD had high potential to enable revival of sugarcane farming. Among these, 42.37% (N=8) held the view that it had very high potential while 10.5% (N=2) felt that enhancement of the strategic plan of AFA-SD had moderately high potential. These findings were attributed to regulatory officers who were within the top management team. This is because this is the team that is responsible for strategic planning. Alternatively, the findings could be attributed to junior but ambitious regulatory officers who were not members of the top management team.

However, about 10.5% (N=2) of the regulatory officers were not sure if enhancement of the strategic plan of AFA-SD provides any opportunity for AFA-SDto revive sugarcane. The finding was attributed to newly employed regulators who were yet to get due experience in matters of planning and sugarcane farming. Further assessment revealed that about 36.84% (N=7) of the regulatory officers felt that the issue of enhancement of the strategic plan of AFA-SD had low potential to enable AFA-SD to revive sugarcane farming. Among these regulators 15.79% (N=3) believed that it had moderately low potential while 21.05% (N=4) felt it had very low potential. This was attributed to regulatory officers who held the view that the challenge of AFA-SD with respect to revival of sugarcane farming was not an attribute of planning but an element of strategy implementation. In other words, they felt that even very good plans may not add value due to challenges of implementation.

Further assessment of the findings indicated that the regulatory officers were highly congruent over this opportunity aspect. This was reflected a score of standard deviation that is only slightly higher than the baseline value (μ=1.0937>1.00). This meant that the responses of individual regulators fluctuate closely around the mean. This is further confirmed by a low score of standard error (SE=0.467) which confirms that the regulators were not divisible into distinct clusters.

7.4 Challenges limiting AFA-SD from enabling revival of sugarcane farming in the Western Kenya Sugarbelt.

This sub -theme of the study evaluated policy related issues that limit the SD from enabling revival of sugarcane farming in the perspective of challenges for now and threats for the future. The study established that by then AFA-SD had no capacity to provide perfect service for revival of sugarcane farming due to some challenges and even in the future due to some threats. The study established that the challenges and threats ranged from issues of outdated policies, inappropriate policy reforms, gaps in policy and emerging issues. Pursuant to this, this section of the study investigated the attributes of challenges and threats. The findings are in Table 7.1.

7.4.1 Challenge of Individual Land Tenure System

The study identified individual land tenure system as the biggest challenge and threat to revival of sugarcane farming. According to KSB (2010) the system is responsible for excessive land subdivision far beyond the land demands of sugarcane and other plantation crops. According to the study this issue is stronger as a threat than as a challenge. As in Table 7.1, this was reflected in a mean score of 3.95 for the aspect of threat and 3.80 for challenge respectively. All of which are far above the sample mean or baseline of $\mu = 3.00$ thus indicative of big level of influence. The findings imply that unless controlled the issue of Individual land tenure system will have more constraining influence on revival of sugarcane farming in future than now since it presents itself as more of a threat than challenge.

The challenge of individual land tenure system was attributed to continuous land sub division due to population growth. The critical issue is that sugarcane is a plantation crop yet the parcels that have so far resulted from land subdivision are inappropriate for plantation farming in logistic and mechanization perspectives. Additionally, a substantial proportion of the resultant land parcels are transferred to alternative uses. This issue is likely to have more constraining impact on revival of sugarcane farming in future than now because of exponential increase in human population. In terms of policy this challenge and threat were attributed to the Swynnerton Plan of 1954 for providing a foundation for the individual land ownership system in Kenya (Swynnerton, 1955).

The study established that while about 17.76% (N=3) of the regulatory officers held the view that the issue of individual land tenure system was a very big challenge to revival of sugarcane a majority (52.63%; N=12) felt that it was a very big threat. This finding was attributed to fast increase in human population and continuous transfer of the new land parcels from sugarcane farming to alternative uses. Further to this about 47.37 % (N=9) of the regulatory officers felt that the issue of Individual land tenure system was a moderately big challenge as about 21.05% (N=4) held the view that in terms of the future it was a moderately big threat. These findings were attributed to regulatory officers who had witnessed significant drop in land surface under sugarcane farming due to land sub-division and have fears about the future of sugarcane farming due to reducing land sizes. During the study the regulatory officers commented that ‘’we wish to revive sugarcane but the challenge is that we have no powers over farmers’ land use practices’’ (interview, April 21, 2022; Sugar Directorate–Nairobi”.

However, about 21.05 %(N=4) of regulatory officers were not sure if the issue of individual land tenure system was a challenge to revival of sugarcane farming and an equal proportion were not sure if it is a threat . This is finding was attributed to officers of the SD who were within support departments like financial AFAirs and not in the core regulatory services. On the contrary while about 5.26 % (N=1) of the regulatory officers felt that this issue was a small challenge to revival of sugarcane farming about 20.06% (N=3) held the view that the issue was a small threat. This finding was attributed to regulatory officers who were new recruits and therefore still lacking relevant knowledge or information. Alternatively, the finding was attributed to regulatory officers with a view that the issue was controllable through land administration interventions by the National Land Commission.

7.4.2 Challenge of Discretionary Powers

As in Table 7.1, the next issue that is both a challenge and threat to revival of sugarcane farming is the policy provision for discretionary powers to the presidency. This is provided for in Articles 113 and 115 of the Constitution of Kenya 2010 (Njeru, 2016). The strength of this challenge was reflected in mean scores (μ) of 3.93 for challenge and 3.73 for threat respectively. The scores are far above the sample mean or baseline of μ =3.00 which indicates that the issue had big level of influence. Further to this, the issue is likely to have lesser influence on revival of sugarcane farming in future than now because it is stronger as a threat (μ; 3.73<3.93). This view was attributed to regulatory officers with expectations for positive policy reforms.

The influence of this provision as a challenge to revival of sugarcane farming was attributed to the fact that it gives the presidency an opportunity to make arbitrary decisions and give directives regardless of the existing farming challenges, legislations and strategic plans. This eventually interferes with the regulators' programme for revival of sugarcane farming. In fact by discretion, the cabinet secretary for treasury significantly reduced the capacity of the regulatory officers to revive sugarcane farming by abolishing SDL a critical financial source for the sugar subsector. A part from this, the political class often misused these powers by ordering the regulators under the SD to allow excessive sugar importation without consideration to domestic production yet domestic production is the baseline for revival interventions. The powers are also applied in making appointments in the industry without due regard to qualification and

performance measures. Eventually this has negative influence on revival of sugarcane farming. One of the regulators lamented that;"Discretion is exercised in accordance with good will, self-interests or political affiliations and not professionalism and sugar demand" (interview, April 21, 2022; Sugar Directorate–Nairobi).

According to the study about 47.37% of the regulatory officers held the view that the issue of discretionary powers was a very big challenge to revival of sugarcane farming while about 10.5 % felt that it was a very big threat. Further to this, about 15.79% (N=3) of the regulatory officers felt that the issue of discretionary powers was a moderately big challenge. However a bigger proportion 47.37% felt that it was a moderately big threat to revival of sugarcane farming. These findings were attributed to regulatory officers who were within the top management team of the Sugar Directorate. This is because it is the top management team who receive discretionary or arbitrary directives and orders from the presidency for implementation on as is basis regardless of existing strategic plan and programs.

However, about 21.5 % of the regulatory officers were not sure if the issue of discretionary powers was a challenge and an equal proportion was not sure if the issue was a threat to revival of sugarcane farming or not . This finding was attributed to regulatory officers who were newly recruited and yet to witness or experience interference from the presidency due to the discretionary powers. Alternatively, the finding was attributed to regulatory officers who could not declare their opinion due to the oath of secrecy for civil servants.

On the contrary about 10.5% of the regulatory officers held the view that the issue of discretionary powers was a moderately small challenge to revival of sugarcane farming. However, a bigger proportion 15.79% felt that the provision was a moderately small threat. These findings were attributed to regulatory officers who were not members of the top management team. This is because such officers may lack due information since they were not directly receiving orders from the presidency. According to the study about 5.26 % of the regulatory officers felt that the issue of discretionary powers was a very small challenge to revival of sugarcane farming and an equal proportion felt that it was a very small threat. This was attributed to regulatory officers who were perceived by the public as blind to reality due to sycophancy to top government officers or to political appointees.

7.4.3 Challenge of Porous Borders and Sugar Cartels to AFA-SD

The next issue identified in the study as both a challenge and threat to revival of sugarcane farming was the matter of porous borders and sugar cartels. This was reflected in mean scores (μ) of 3.78 and 3.58 for the challenge and threats respectively as in Table 7.1. All scores are above the sample mean or baseline (μ) of 3.00 which indicates that the issue had big level of influence. Further to this, the scores revealed that the constraining influence of the cartels is likely to be less in future since the issue was a stronger as a challenge than as a threat (3.78 >3.58). The finding revealed that the border surveillance team of the SD was becoming more effective in service delivery.

The issue of porous borders and sugar cartels was a challenge to revival of sugarcane farming because sugar cartels often take advantage of the porous nature of the borders to lock the locally produced sugar out of the domestic market by over flooding the market with cheap sugar from other countries. This is in line with COMESA (2012) according to whom the comparative cheapness of the imported sugar locks the expensive locally produced sugar out of the domestic market. This makes local millers unable to pay farmers an issue that was eventually constraining the revival of sugarcane farming. The issue of porous borders and sugar cartels was a threat to revival of sugarcane farming because the sugar cartels were increasing in number as they increasingly manipulate government officers with discretionary powers and some regulatory officers to interfere with the operations of SD for personal gains.

The study established that about 10.5% of the regulatory officers felt that the issue of porous borders and sugar cartels was a very big challenge to revival of sugarcane farming. However, a bigger proportion 47.37% held the view that this issue was a very big threat. The findings indicated that regulatory officers were increasingly being disturbed by the cartels. This could be because the cartels are dynamic and secretive in their criminal activities. These findings were attributed to regulators who were members of the border and market surveillance teams because such regulators were informed about the trends and activities of the cartels.

According to the study to the majority 57.9% of the regulatory officers the issue of porous borders and sugar cartels was a moderately big challenge to revival of sugarcane farming. However, to a smaller proportion 10.5% the issue was a moderately big threat.

These findings were attributed to regulatory officers whose line of duty involved market and border surveillance AFAirs. This is because such officers are aware of the sugar cartels and their operations.

However, about 10.5 % of the regulatory officers were not sure if the issue of porous borders and sugar cartels was a challenge and an equal proportion is also not sure if it is threat to revival of sugarcane farming. This view was attributed to officers whose line of duty did not include provision of core regulatory services. Further assessment revealed that to about 15.79% of the regulatory officers felt that the issue of porous borders and sugar cartels was a moderately small challenge to revival of sugarcane farming. A higher proportion 21.05% felt that the issue was a moderately small threat. This finding was attributed to officers who were not informed since cartelization process is highly secretive. Further to this, about 5.26% of the regulatory officers felt that this issue was a very small challenge as 10.5% felt that they were very small threat to revival of sugarcane farming. These findings were attributed to newly employed officers who were yet to experience the influence of cartels. Alternatively, the finding was attributed to regulatory officers who knew that the government had the capacity to flush out the cartels from the subsector in a flush of an eye so long as due orders are given.

7.4.4 Challenge and Threat of State Interference

As in Table 7.1, another issue identified as a challenge and threat to revival of sugarcane farming is state interference .This issue is informed by the fact that in Kenya public mills are state corporations as per CAP 446 of the State Corporations Act (SCA) which also provides for the government to have controlling equity interests (gok,2019). The strength of this issue as a challenge and threat was reflected in mean scores of 3.73 and 3.61 respectively as in Table 7.1. These scores are far above the sample mean or baseline of $\mu = 3.00$ which indicates that it had big level of influence. The criticality of state interference as a challenge to revival of sugarcane farming lies in the fact that in Kenya most of the critical decisions about sugarcane farming are made within political instead of professional frameworks. Furthermore, in public mills expert services are limited by the issue of political influence because in Kenya decision making and seniority were political attributes. Additionally, political interference often delayed

decision making and service delivery in the subsector as evident in the ongoing struggle to revive MSC.

The issue of state interference was a threat to revival of sugarcane farming because in spite of the SD being a technical team, political interference limits it and unless controlled will continue limiting the process of actualization of its technical capacity to revive of sugarcane farming. Furthermore, most appointments in the subsector are politically done. The political class were often pressurizing the presidency to give arbitrary directives to the regulators under the SDwithout considering the demands for revival of sugarcane farming. During the study one of the regulators commented that ‘’in Kenya’s sugar subsector appointments were maliciously directed by political elites ’’ (interview, April 21, 2022; Sugar Directorate–Nairobi).

According to the study about 10.5 % of the regulatory officers felt that this issue was a very big challenge to revival of sugarcane farming. However, a large majority 63.15% held the view that state interference was a very big threat. This indicates that the influence of political interference is likely to increase in the future. This situation was attributed to weaknesses and in particular to gaps in the policy framework of the sugar subsector and more critically to the failure of the presidency to fill the gaps by signing the Sugar Bill of 2019 into an Act of parliament.

Further to this, a majority of the regulators 57.9% felt that the issue of state interference was a moderately big challenge while 21.5% felt that it was a moderately big threat to revival of sugarcane farming. These findings were attributed to the top management team of the SD who were receiving directives and pressure from the political class that often forced them to deviate from predesigned strategic plans and programs. However, about 15.79% of the regulatory officers were not sure if the issue of state interference was a challenge and a smaller proportion 10.5% were not sure if it was a threat to revival of sugarcane farming. These findings were attributed to politically appointed regulators who were in doubt if politics could be interference and not blessings. On the contrary, about 15.79% of the officers held the view that the issue of state interference was a moderately small challenge and an equal proportion felt that it was a threat to revival of sugarcane farming. This finding was attributed to newly recruited regulators and especially those with the imagination that the SD was totally independent and

autonomous. Further to this, about 10.5% of the regulatory officers felt that state interference was a very small threat to revival of sugarcane farming and this finding was attributed to regulatory officers who were political appointees.

7.4.5 Challenge of AFA-SD lacking prosecutorial powers

The study also identified the issue of the regulator lacking prosecutorial powers as another challenge to revival of sugarcane farming. The strength of this challenge was reflected in a mean score of (μ) 3.83 which is far above the sample mean or baseline of μ =3.00 implying that it was a big challenge. This is because the issue of the regulatory officers lacking prosecutorial powers limits the capacity of the SD to enforce prescribed regulatory standards.

According to the study, a majority of the regulatory officers (68.2%) felt that the issue of the regulator lacking prosecutorial power was a very big challenge to revival of sugarcane farming. This view was attributed to regulatory officers who had severally failed to counter illegalities in the industry because of being let down by Kenya police service which has the prosecutorial powers. Further to this, about 10.5% of the regulatory officers felt that the issue of the regulator lacking prosecutorial power was a moderately big challenge. This was attributed to regulatory officers with limited experience with Kenya police service over enforcement of regulatory standards.

However, about 10.5% of the regulatory officers were not sure if the issue of the regulator lacking prosecutorial power was a challenge to revival of sugarcane farming. This finding was attributed to officers who were not serving the SD in core regulatory service sections but in support departments like the one for finance services. Furthermore to about 5.26% of the regulatory officers the issue of the regulator lacking prosecutorial powers was a moderately small challenge while another 5.26% felt that it was a moderately small challenge to revival of sugarcane farming. These findings were attributed to regulatory officers who were not members of the top management team and not associated with crime sensitive departments particularly surveillance services.

7.4.6 Challenge of conflicts over Proposed Privatization of Public Mills

The study further established that the issue of public versus government conflict over the proposed privatization of public mills was a challenge to revival of sugarcane farming. As in Table 7.1, the strength of this challenge was reflected in a mean score (μ) of 3.71

which is far above the sample mean or baseline of μ =3.00 implying it was a very big challenge. The conflict is due to the fact that while the government through the Privatization Commission of Kenya had a plan to privatize public mills as a strategy of reviving sugarcane farming the farmers and the political class were suspicious.

The study established that about 15.7% (N=3) of the regulatory officers held the view that the issue of the conflict was a very big challenge to revival of sugarcane farming. These findings were attributed to the regulatory officers who directly experienced the public resistance because they are members of the privatization team. A simple majority of the regulators (52.63%; N=10) held the view that this issue was a moderately big challenge to revival of sugarcane farming. This is attributed to the regulatory officers who were prepared or destined to play key roles in privatization process within specific timeliness but have since been kept waiting due to the conflict. Further to this, about 10.5 % of the regulatory officers were not sure if the issue of conflict over privatization of public mills was a challenge to revival of sugarcane farming. This finding was attributed to regulatory officers who lack information because they were not part of the privatization team. On the contrary about 21.5 % of the regulatory officers felt that the issue of conflict was a very small challenge to revival of sugarcane farming. These findings were attributed to sycophancy to government.

7.4.7 Challenge of Limited Provision of Surveillance Services

The study further identified the issue of limited surveillance services as a challenge to revival of sugarcane farming. This is due to failure to control illegal influx of cheap sugar by cartels to avoid flooding the domestic market. The strength of this challenge was reflected in a mean score of 3.6 which is far above the sample mean or baseline of μ =3.00 implying a big challenge. The issue of limited surveillance service was a challenge in the dimensions of the national borders and the domestic market. Limited surveillance service provides opportunity for acts of corruption within the domestic market inclusive of malicious repackaging of contraband sugar. The challenge of limited surveillance service is further reflected in the ongoing illegal influx of sugarcane as a raw material from Uganda at the expense of the locally produced sugarcane thus further constraining revival of sugarcane farming locally.

The study established that about 47.37% of the regulatory officers felt that the issue of limited surveillance services was a very big challenge to revival of sugarcane farming. These findings were attributed to long serving regulators who were members of the sugar surveillance and marketing teams hence dully knowledgeable. Approximately 10.5% of the regulatory officers felt that the issue of limited surveillance services was a moderately big challenge to revival of sugarcane farming. This view was attributed to regulatory officers with moderate experience in sugar and sugarcane marketing.

However, a further 10.5% (N=2) of the regulatory officers were not sure if the issue of limited surveillance service was a challenge to revival of sugarcane farming. This finding was attributed to regulatory officers who were neither in boarder surveillance service nor in marketing departments hence without relevant experiences and knowledge. Furthermore, about 21.05% of the regulatory officers felt that the issue of limited surveillance services was a moderately small challenge to revival of sugarcane farming while 10.5% felt that it was a very small challenge. These views were attributed to officers of the directorate who were not playing core regulatory roles.

7.4.8 Challenge of Illegal Transmission and Malicious Repackaging of Sugar

The next high-ranking challenge to revival of sugarcane farming as in Table 7.1 was the matter of malicious repackaging of illegally transmitted sugar. The magnitude of this challenge was reflected in a mean score of 3.6 which is far above the sample mean or baseline of $\mu = 3.00$ thus an indicator of a big challenge. Malicious repackaging is a strategy that is applied by sugar cartels to hide or obscure the true origin of the sugar by insinuating that the sugar in question was originating from local millers. In the domestic market arena, a number of supermarkets and wholesalers with linkages to illegal influx of sugar were associated with the vice (COMESA, 2015). The critical regulatory concern was that this specific vice had grown to a level of over flooding the domestic market with cheap sugar from foreign markets at the expense of local producers.

According to the study about 42.1% of the regulatory officers held the view that the issue of malicious repackaging of illegally transmitted sugar was a very big challenge to revival of sugarcane farming. These findings were attributed to regulatory officers with experience of monitoring the movement of illegally transmitted sugar into the domestic market. Furthermore, about 21.05% of the regulatory officers held the view that this

issue was moderately a big challenge to revival of sugarcane farming. This view was attributed to regulators limited experience in surveillance and marketing affairs.

However, up to 10.5% of the regulatory officers were not sure if the issue of malicious repackaging of illegally transmitted sugar was a challenge to revival of sugarcane farming. This finding was attributed the regulators whose line of duty did not include boarder and market surveillance or marketing AFAirs. They could also be attributed to regulatory officers who were covering up the illegalities of sugar cartels due to corruption. However, up to 15.79 % of the regulatory officers felt that the issue of malicious repackaging of illegally transmitted sugar was a moderately small challenge to revival of sugarcane farming while 10.5 % held the view that it was a very small challenge. These findings were attributed to regulatory officers who were newly employed and yet to get due experience and information.

7.4.9 Challenge of De-Zoning of Sugarcane Farming Areas

The study further established that the issue of de-zoning of sugarcane farming areas is also a challenge to revival of sugarcane farming. Its magnitude was reflected in mean score of 3.3 which was moderately above the sample mean or baseline of $\mu = 3.00$ thus indicative of a moderately big challenge. The influence as a challenge was attributed to the fact that de-zoning discourages individual sugar millers from provision of agricultural extension services since no particular region is linked or restricted as a responsibility of a particular miller. Pursuant to this, farmers were not adequately exposed to emerging technologies which would enhance the revival process. The finding was also attributed to the fact that de-zoning discourages contractual farming yet this was the best farming model for Kenyan farmers since poverty is rampant in the sugar zones and the model provides for material and financial support.

Further assessment revealed that about 10.5% of the regulatory officers felt that the issue of de-zoning of sugarcane farming areas was a very big challenge and another 10.5% felt that it was a moderately big challenge to revival of sugarcane farming. These findings were attributed to long serving regulatory officers who had witnessed de-zoning interfere with agricultural extension programs that could otherwise add value to the revival process. They are further attributed to the declining performance of NSC because due to de-zoning it had lost a significant proportion of production ground to WKSC.

However, about 47.37% of the regulatory officers were not sure if the issue of de-zoning production areas was a challenge to revival of sugarcane farming. This was attributed to the regulatory officers who were employed when de-zoning was already operational and therefore have no alternative baseline for comparison. On the contrary, about 15.79 % of the regulatory officers felt that de-zoning was a moderately small challenge as another 15.79 % felt that it was a very small challenge to revival of sugarcane farming. These findings were attributed to regulatory officers who support WKSC campaigns against zoning just because it does not have a Nucleus Estate.

7.4.10 Challenge of Change in Government Regime

The study established that the issue of imminent change in government regime is another threat to revival of sugarcane farming. The potentiality of this threat was reflected in a mean score (μ) of 3.75 which is far above the sample mean (μ) or baseline of 3.00 which indicates that it was a big threat. This finding was attributed to the fact that SDis a government institution that is expected to serve and satisfy government interests. However, change in government regime means shift in interest an issue that may disrupt the focus and operations of the Sugar Directorate. This is supported by the fact that Kenya was preparing for a national election later in year (2022). The threat was that the incoming regime may come up with reforms that may either ruin or totally eliminate SDas a regulatory institution. This view was well-articulated in the history of regulatory services whereby significant changes in provision of regulatory services were notably associated with changes in government regimes.

According to the study about 10.5% of the regulatory officers held the view that the issue of imminent change in government regime was a very big threat to revival of sugarcane farming while 47.37% felt that it was a moderately big threat. These findings were attributed to regulatory officers who were in the top management team or serving on critical committees of the SD but have fears for their positions in a new governance dispensation. They could also be attributed to regulatory officers who were potentially replaceable because they are political and not professionals.

However, about 26.31% of the regulatory officers were not sure if the issue was a threat to revival of sugarcane farming. This was attributed to regulatory officers who were professional and not political appointees. On the contrary, about 10.5% of the regulatory

officers held the view that the issue of imminent change in governance regime was a moderately small threat while 5.26% felt that it was a very small threat to revival of sugarcane farming. These findings were also attributed to regulatory officers who were professionally competent. In the alternative, they could be attributed to regulatory officers who were connected across the political divide and therefore not threatened by the imminent changes.

7.4.11 Challenge of Gaps in the Policy Framework

The study also established that gaps in the policy framework for the sugar subsector are also a threat to revival of sugarcane farming. This view is line with KNA (2014) according to which Kenya's sugar subsector suffers from policy gaps The strength of this challenge was reflected in a mean score (μ) of 3.521 which was moderately above the sample mean or baseline of μ =3.00 indicating a moderately big threat. This was attributed to the fact that regulatory officers often came across mistakes like engagement of millers in sourcing of raw sugarcane from Uganda for milling locally. However, due to lack of legislative direction they were unable to take action. This issue is further articulated in the absence of a clear anti-dumping policy and also lack of policy provision for inspection of the domestic sugar market especially with respect to the sources of sugar. This opens a window for dumping and freelance marketing of illegally transmitted sugar.

According to the study up to 15.79% of the regulatory officers held the view that the issue of gaps in the policy framework was a very big threat while 21.05% felt that it was a moderately big threat to revival of sugarcane farming .These findings were attributed to regulatory officers who were serving within the legal sections of the SD and further to those who were members of the surveillance teams. This is because such officers often came across issues that demanded for corrective action but took no action due to lack of necessary legal directions.

However, about 47.37 % of the regulatory officers were not sure if the issue of gaps in the policy framework is a threat to revival of sugarcane farming. This finding was attributed to officers whose line of duty did not involve legal and surveillance matters which were the epicenters of policy matters in the directorate. Further to this, about 5.26%(N=1) of the regulatory officers felt that the issue of gaps in the policy framework

was a moderately small threat to revival of sugarcane farming while 10.56% felt it was a very small threat. These findings were attributed to regulators who felt that the policy framework had the legal capacity to enable revival of sugarcane farming.

7.5 Capacity of KALRO-SRI to Enable Revival of Sugarcane Farming in the Western Kenya Sugarbelt

KALRO-SRI was established by the KALRO Act No 17 of 2013 as a government agency with mandate over sugar research in Kenya. It replaced the former KESREF. However, it has not yet succeded to revive sugarcane farming in the country. The study established that KALRO-SRI draws significant strength and unexploited opportunities which are from a range of mandates as provided by the Kenya constitution 2010 and other enabling legislations like the COMESA protocol. An assessment of its strengths and opportunities to revive sugarcane farming in the Western Kenya Sugarbelt gave the findings in Table 7.2.

Table 7.2: Strengths and Opportunities for KALRO-SRI to Enable Revival of Farming in the Western Kenya Sugarbelt

Attribute of Strength	Contribution to revival of farming					Mean (μ)	Std Dev(α)	Std Error
	VW (1)	W (2)	N (3)	S (4)	VS (5)			
Provision for adoption of COMESA standards	11.11% 1	11.11% 1	22.2% 2	55.56% 5	0% 0	3.55	1.326	0.253
Technology generation strategy	0% 0	22.2% 2	66.7%6	11.1% 1	0% 0	3.18	1.353	0.364
Strategic distribution of Research stations	22% 2	33% 3	33% 3	11% 1	0% 0	3.11	1.2	0.612
Aggregate Mean						3.15	1.28	0.274
			Opportunity					
Partnerships and linkages	0% 0	22.2% 2	11.1 % 1	22.2% 2	44.4 % 5	3.619	0.333	0.111
Public goodwill	11.1 % 1	11.1 % 1	44.4% 4	33.3% 3	0% 0	3.482	1.302	0.434
Enhancement of Strategic planning	0. % 0	11.1% 1	55.5% 5	22.2 % 1	11.1 % 1	3.32	1.23	0.312
Aggregate mean						3.46	0.933	0.319
Overall mean						**3.3**	**1.106**	**0.296**

Key; VW= Very Weak, L=Weak, NS=Not Sure, S =Strong, VS=Very Strong, STD=Standard Deviation, M=Mean, SE =Standard Error.

7.5.1 Strength of KALRO-SRI to Enable Revival of Sugarcane Farming

An assessment of the strength attributes for KALRO-SRI in terms of enabling revival of sugarcane farming yielded a range of findings as indicated between 7.5.2 and 7.5.3.

7.5.2 Provision for Adoption of COMESA Standards

According to the findings in Table 7.2, the biggest strength attribute of KALRO-SRI with respect to revival of sugarcane farming was adoption of the COMESA Standards. This was reflected in a mean score (μ) of 3.55 which was moderately above the baseline score (μ = 3.00) and thus indicative of moderately high level of strength.The finding was attributed to the fact that the COMESA standards were expert recommendations designed to protect and revive sugarcane farming in the agricultural context of Kenya. In fact they are focused on very critical aspects of sugarcane farming inclusive of adoption of better varieties in terms of maturity period and sucrose yields. The finding was further attributed to the fact that the adoption process confirmed that as a researcher KALRO-SRI has the prerequisite technical skills and therefore technical capacity to revive sugarcane farming.

However, the assessment revealed that none of the researchers (0%) held the view that adoption of the COMESA standards was a very big strength for KALRO-SRI to revive sugarcane farming. This finding was attributed to the financial challenges that are associated with the adoption process. However, about 55.56% of the researchers held the view that adoption of the standards represented moderately big strength for KALRO-SRI to revive sugarcane farming. These findings were attributed to researchers who been have involved in relevant scientific trials and very active in the process of enabling adoption of the standards. Further to this, about 22.2% of the researchers were not sure if adoption of the standards represents strength for KALRO-SRI to revive sugarcane farming or not. This could be attributed to recently recruited researchers specifically those who were recruited after the onset of the COMESA safeguard measures. This is because such researchers did not have experience of sugarcane farming issues before and after the onset of the safeguard measures. On the contrary, a further 22.2% of the researchers held the view that the process of adoption of the COMESA standards by KALRO-SRI represented weak enabling influence, among these researchers 11.11% held the view that the process of adoption represented moderately small strength and another 11.1% felt that it represented very small strength. These findings were attributed to

researchers who were focused on the standards that had been lowly complied with particularly the standard on adoption of high sucrose yielding varieties and the one that sought to shift from paying farmers by tonnage to sucrose indexing.

Further to this, the study revealed that the researchers were moderately divergent in views regarding the strength of adoption of the COMESA Standards. This was reflected in and justified by the high scores of STD deviation (ð=1.326) moderately above the baseline (ð=1.00). However, the study revealed that the researchers were not divisible into distinct clusters. This was well reflected and justified by the low level of standard deviation (0.253).

7.5.2 Technology Generation

According to the study, the next strength attribute of KALRO-SRI as in Table 7.2 is technology generation. This finding was reflected in a mean score (μ) of 3.26 which is fairly above the sample mean or baseline of (μ) 3.00 and thus indicative of moderately high strength to enable the revival of sugarcane farming. The strength of this activity lies in the fact that it reflects the capacity of the institute to generate essential technologies for users for uptake and adoption. Therefore the finding was attributed to effectiveness of the extension component of KALRO-SRI since it was in charge of technology dissemination. Further assessment indicated that none of the researchers (0%) held the view that the technology generation strategy of KALRO-SRI had very big level of enabling influence on revival of sugarcane farming.This finding was attributed to the fact that technology dissemination is majorly an assignment of the public extension system and the sugar millers who however get the technologies from KALRO-SRI. However, about 22.2% of the researchers held the view that the technology generation strategy of KALRO-SRI had moderately big strength for revival of sugarcane farming. This finding was attributed to researchers who form a link between KALRO-SRI and public extension service and or sugar millers. This is because in the context of KALRO-SRI they are the technology disseminators.

However, about 22.2% of the researchers were not sure if the technology generation strategy of KALRO-SRI represented its strength to revive sugarcane farming or not. This finding was attributable to researchers whose responsibilities and duties did not involve technology dissemination or to officers who were serving in support departments

like finance AFAirs or human resource management. On the contrary, a majority (55.5 %) of the researchers held the view that technology generation strategy of KALRO-SRI had weak enabling influence and was therefore representative of small strength for revival of sugarcane farming. Among this category of researchers about 22.5% felt that it represented moderately small strength while 33.3% felt that it represented very small strength. These findings were attributed to the fact that in Kenya, technology was not the critical barrier to revival of sugarcane farming. Further to this, the study revealed that researchers were moderately divergent in views regarding technology generation strategy as a strength of KALRO-SRI.This was reflected and justified by the high scores of STD deviation (ð=1.353) moderately above the baseline (ð=1.00). However, the study revealed that the researchers were not divisible into distinct clusters. This was well reflected and justified by the low level of standard deviation (0.364).

7.5.3 Strategic Location of Research Stations

Another strength attribute of KALRO-SRI to revive sugarcane farming was the aspect of strategic location of research stations in the country as in Table 7.2. The enabling capacity of this factor was reflected in a mean score of (μ) 3.14 which is slightly above the sample mean (μ) or baseline of 3.00 and thus an indicator of moderate strength. The strength of this attribute was attributed to the strategic location of sugar Research stations specifically the headquarters at Kibos in Kisumu County and branches in Mumias in kakamega county, Opapo in Rongo Sub-County of the Migori County and the Sugar Breeding Centre in Mwatupa in Kilifi County.This provides opportunities for research interventions that are specific to agro-climatological variations across the sugarcane farming areas. It further helps to cater for variations in socio-economic environments in the different sugar farming areas hence providing a broadened approach to addressing the challenge of sugarcane farming.

Further to this, about 11.1% of the researchers held the view that the issue of strategic distribution of research stations represented moderately big strength for KALRO-SRI to enable revival of sugarcane farming. This finding was attributed to researchers who have an experience of working in different Research stations and are therefore, aware of the differences in agro-ecological conditions across the sugarcane producing zones and know that each of the areas needs locality-specific interventions. However, about 44.4% of the researchers were not sure if the issue of strategic distribution of Research stations

was a strength attribute for KALRO-SRI to enable revival of sugarcane farming. This specific finding was attributed to researchers who were newly recruited and therefore did not know and have due experience about variations in agro-ecological conditions and their influence on revival of sugarcane farming. Further to this, another 44.4% of the researchers held the view that the aspect of strategic distribution of Research stations across the sugarcane zones represented small strength for KALRO-SRI to enable revival of sugarcane farming. This finding was attributed to the fact that a number of these strategically located Research stations were dormant due to resource limitations.

7.6 Opportunity for KALRO-SRI to Enable Revival of Sugarcane Farming in the Western Kenya Sugarbelt

One of the reasons why revival of sugarcane was not yet perfected was the fact that KALRO-SRI had not exploited all possible chances or potential. Pursuant to this, this study investigated opportunities that KALRO-SRI could exploit to revive sugarcane farming. The findings were as presented between 7.6.1 and 7.6.3.

7.6.1 Opportunity for Linkages and Partnerships with other Stakeholders

According to the findings the biggest opportunity lies in linkages and partnerships with other stakeholders or researchers. This was reflected in a mean score of (μ) 3.619 which is significantly above the sample mean (μ) or baseline of 3.00 and thus an indicator of significant opportunity. The potential benefit of this opportunity was attributed to the fact that linkages and partnerships with other researchers can provide avenues for sharing or accessing additional technologies and experiences from alternative researchers in and outside Kenya. This can be highly beneficial especially in terms of partnership with countries that have successfully revived sugarcane farming after experiencing some challenges.

A majority of the researchers (66.6%) held the view that the attribute of linkages and partnerships provides a big opportunity for KALRO-SRI to enable revival of sugarcane farming. Among these researchers 44.4% held the view that the attribute provides very big opportunity while 22.2% felt that it provides a moderately big opportunity. These findings were attributable to experienced researchers who have often interacted with other researchers from alternative organizations. Alternatively, they could be attributed to highly educated and published researchers who have understood the value and logic of

partnership through scholarly discourse and therefore see a lot of unexploited potential or opportunity with respect to sharing of research funds, knowledge and skills.

However, about 11.1% of the researchers were not sure if the attribute of linkages and partnerships can enable revival of sugarcane farming. This finding was attributable to inexperienced researchers especially the ones who were newly recruited since they are yet to participate in linkages and or partnerships. According to the findings, 22.2% of the researchers held the view that the attribute of linkages and partnerships has low potential with respect to revival of sugarcane farming. Among these researchers 22.2% held the view that the attribute provided moderately low potential or opportunity while (0%) held the view that it had very low potential. According to FGDs, This finding was attributed to the fact that in Kenya linkages and partnerships cannot yield positive outcomes without the goodwill of the presidency because the Public Finance Management Act of 2012 stoped inflow of funds from foreign states unless sanctioned by the presidency.

7.6.2 Opportunity for Researchers to Exploit Goodwill of the Public

According to the study, another opportunity for KALRO-SRI to revive sugarcane farming lies in the goodwill of the public. This was attributed to the fact that the general public and specifically the current farmers are willing and ready to take up new technologies generated by KALRO-SRI. This meant that KALRO-SRI can influence farmer's practices or engagement in sugarcane farming in a way or style that can promote or revive sugarcane farming. The potentiality of this opportunity was reflected in a mean score of μ=3.482 which is significantly above the baseline level of μ=3.00 implying that it is significantly big opportunity for revival of sugarcane farming.

Although none (0%) of the researchers felt that the issue of public goodwill presents a very big opportunity for KALRO-SRI to enable revival of sugarcane farming, about 33.3% of the researchers felt that it presents a moderately big opportunity. This finding was attributed to the fact that in Kenya, the public attitude towards sugarcane farming has always been and is positive. Further to this, the finding was attributed to the fact that as a researcher and disseminator of technologies, KALRO-SRI had not experienced any resistance from the general public.

Further assessment revealed that up to 44.4% of the researchers were not sure if the issue of public goodwill was an opportunity for KALRO-SRI to enable revival of sugarcane

farming. This view was attributed to the financial demands and challenges that were limiting sugar research services in the country public goodwill not withstanding. Further to this, about 22.2% of the researchers held the view that the issue of public goodwill had low potential in terms of enabling KALRO-SRI to enable revival of sugarcane farming. This was attributed to the fact that in Kenya, the critical limiting factor to the performance of sugar researchers is financial limitation. Among these researchers about 11.1% felt that the issue of public goodwill had moderately low potential and therefore small opportunity as another 11.1% felt that it had very low potential or was a very small opportunity for KALRO-SRI to enable revival of sugarcane farming. Further to this, the findings show that the views of the researchers were moderately scattered from the mean level. This was reflected in a STD deviation that is slightly above the baseline (ð=1.302>ð=1.00) and a low score of SE (0.434).

7.6.3 Opportunity for Researchers to Enhance Existing Strategic Plan

The study further established that another opportunity for KALRO-SRI to revive sugarcane farming lies in enhancement of its strategic plan. The potentiality of strategic planning was reflected in a means score of (μ) 3.22 which was moderately above μ=3.00 signifying a moderate level of potential. The strength of this opportunity lies in the fact that it provides opportunity for KALRO-SRI to re-plan its engagements according to emerging concerns. This may enable it to control emerging challenges and create an enabling environment for revival of sugarcane farming.

Further assessment, revealed that up to 33.3% of the researchers held the view that the issue of enhancement of the strategic plan provides a big opportunity for KALRO-SRI to enable revival of sugarcane farming. Among these researchers 11.1% felt that it provides a very big opportunity while 22.2% (N=2) felt that it provided moderately big opportunity. These findings were attributed to the researchers who were within the top management team of KALRO-SRI. This is because it is the top management team that plans and supervises the execution of strategic plans and hence its members know the potential of an enhanced strategic plan.

However, a majority of the researchers (55.5%) were not sure if enhancement of the strategic plan provides for KALRO-SRI to enable revival of sugarcane farming or not. This finding was attributed to researchers who were not part of the top management team

and therefore non-participants in the process of strategic planning and also non-participants in monitoring and evaluation of the process of implementation of the strategic plan. On the contrary, about 11.1% of the researchers held the view that enhancement of the strategic planning has a low potential or capacity toenable revival of sugarcane farming. Although none of the researchers (0%) held the view that enhanced strategic planning had very low or limited potential to revive sugarcane farming about 11.1% held the view that it provided moderately small opportunity for KALRO-SRI to enable revival of sugarcane farming.

Further to this, the findings revealed that the researchers were moderately congruent in their views. This was reflected in moderately low score of the STD deviation above the baseline (ð=1.230>ð=1.00) which indicates that the researchers' views were moderately scattered around the mean level. This view is further supported by a low of SE (0.312) which indicates that they are no distinct differences or clusters among the researchers with respect to enhanced strategic planning as an opportunity.

7.6.4 Challenges Limiting KALRO-SRI from enabling Revival of Sugarcane Farming

KALRO-SRI has not yet succeeded to revive sugarcane farming and may not succeed in the near future due to constraining issues. Pursuant to this, this study investigated the challenges limiting its activities now and threats that may limit it in future. The study established that the challenges and threats range from issues of outdated policies, inappropriate policy reforms, gaps in policy and emerging issues. The findings were as in Table 7.3.

Table 7.3: Challenges and Threats Limiting KALRO-SRI from Enabling Revival of Cane Farming in the Western Kenya Sugarbelt

Attributes of Challenge	Influence on revival of sugarcane farming							
	VL (1)	L (2)	N (3)	H (4)	VH (5)	Mean (μ)	Std Dev (α)	Std Error
Limited autonomy	0% 0	11.1% 11%	11.1% 1	77.7% 7	0% 0	3.59	0.333	0.111
Financial limitations	11.1% 1	0% 0	55.5% 5	33.3% 3	0% 0	3.38	1.302	0.434
Gaps in policy framework	11.1% 1	22.2% 2	11.1% 1	55.6% 5	0% 0	3.28	1.358	0.553
limited focus on policy studies	22.2% 2	22.2% 2	44.4% 4	0% 0	11.1% 1	3.23	1.213	0.312
Limited cooperation from private millers	22.2% 2	22.2% 2	44.4% 4	11.1% 1	0% 0	3.19	1.09	0.2853
Aggregate mean						3.32	1.059	0.339
Attributes of Threat								
Inadequacy of Funding	0% 0	11.1% 1	11.1% 1	22.2% 2	55.5 % 5	4.075	0.333	0.111
Gaps in policy framework	11% 1	0% 0	33.3% 3	55.5 % 5	0% 0	3.722	1.302	0.434
Imminent change in Government Regime	11.1% 1	22.2% 2	0% 0	11.1% 1	55.5% 5	3.67	1.46	0.501
Limited Human capital	22.2% 2	22.2% 2	33.3% 3	11.1 % 1	11.1 % 1	3 .21	1.116	0.223
Aggregate Mean						3.67	1.302	0.316
Overall mean						3.49	1.108	0.327

Key; VL= Very Low, L=Low, NS =Not Sure, H = High, VH=Very High, STD=Standard Deviation, M=Mean, SE =Standard Error.

7.6.5 Challenge of Limited Autonomy; KALRO-SRI

According to the findings as in Table 7.3, the biggest challenge to KALRO-SRI is limitation in autonomy. The magnitude of this challenge is manifested in a mean score of (μ) 3.59 which was moderately above the sample or baseline mean score of (μ) 3.00. This finding was attributed to the weaknesses of the AFA Act of 2013 specifically the section that recommended amalgamation of agricultural services (Kenya Constitution 2010). This is because through this policy provision, SRI was amalgamated or converted into a branch of KALRO reducing its autonomy and thereby significantly affected its capacity and performance as a research institute.

The challenge is specifically attributed to the fact that the amalgamation process interfered with the strategic planning, and implementation of sugar research services. It caused a shift in attention of the government which was previously directed to sugar research to a pool composed of all crops in Kenya. Ultimately, the transition interfered with government focus on sugar research as a result of the shift from specific to more generalized research governance interventions contrary to the principles and practices of devolution.

Ultimately, the process of amalgamation denied KALRO-SRI an opportunity to have its own Board of management. This has adverse effects especially with respect to staff recruitment contrary to the existing labour demand and yet some critical sections of KALRO-SRI like the Soil Science Department had been rendered dormant due to staffing challenges. Most importantly, the process of amalgamation introduced more bureaucracy in the operations of the research institute. This is because from the onset of amalgamation, more undue process steps were introduced into the research framework just to cover the increased number of stakeholders.

Further assessment of the findings revealed that a larger majority of the researchers (77.7%) felt that the issue of limited autonomy was a big challenge to KALRO-SRI with regard to enabling revival of sugarcane farming. However, about 11.1% of the researchers were not sure if the issue of limited autonomy was a challenge to the ability of KALRO-SRI to enable revival of sugarcane farming. Additionally, a further 11.1% of the researchers held the view that the issue of limited autonomy was a small challenge to the ability of KALRO-SRI to revive sugarcane farming and this was attributed to inexperienced researchers particularly the recruits.

The study further revealed that researchers are highly congruent in their views concerning the issue of limited autonomy as a challenge to KALRO-SRI. This was reflected in low divergence in their views as reflected in low level score for standard deviation (0.333) and confirmed through low score of the Standard Error (0.111).

7.6.6 Challenge of Financial Limitation; KALRO-SRI

The study further established that the next high ranking challenge to the ability of KALRO-SRI to enable revival of sugarcane farming was the issue of financial limitation.

The strength of this challenge is articulated in a mean score of 3.38 (μ=3.38<μ=3.59) which was moderately above the baseline score of μ=3.00 indicating and justifying moderate level of influence. This challenge was attributed to lack of a self-funding mechanism especially after SDL was unilaterally scrapped. Further to this, degazetting of SDL shifted the finance burden of sugar research to the National treasury yet the treasury is more constrained by budgetary demands.

Further assessment revealed that about 33.3% of the researchers held the view that the issue of financial limitation was a moderately big challenge to the ability of KALRO-SRI to enable revival of sugarcane farming. However, the majority (55.5%) of the researchers were not sure if financial challenges of KALRO-SRI were challenges to its ability to enable revival of sugarcane farming. This was attributed to the fact that in Kenya the big issue limiting revival of sugarcane farming is not technology since KALRO-SRI has already generated and availed most of the required technologies. In line with this, none of the researchers the researchers held the view that financial limitation was moderately small challenge to the ability of KALRO-SRI to revive sugarcane farming. However, about 11.1% of the researchers held the view that the issue of financial limitation was a small challenge to the ability of KALRO-SRI to enable revival of sugarcane farming. This was attributed to its position in the sugarcane value chain because KALRO-SRI was not directly involved in commercial production of sugar cane.

Further assessment of the findings revealed that the researcers were moderately congruent in their views concerning the issue of financial limitation as challenge. This is articulated in a moderately low level of STD deviation above the baseline (ð=1.302 > ð=1.00). Further to this, the findings confirm that there is little variability and or existence of distinct groupings or clusters among the respondents as expressed in a low score for standard error (SE = 0.434).

7.6.7 Challenge of Gaps in Policy Framework; KALRO-SRI

According to the study, the next big challenge to KALRO-SRI was the issue of gaps in the policy framework of the sugar subsector. This view is line with KNA (2014) according to which Kenya's sugar subsector suffers from policy gaps.The magnitude of this challenge was reflected in a mean score of 3.28 as in Table 7.3. This mean score was

moderately above the baseline score of μ=3.00 which indicates that this was moderately big challenge. The finding was majorly attributed to lack of policy for seed cane multiplication, supply and uptake by farmers. This is because although the former sugar researcher (KESREF) and now SRI have so far generated up to 21 new varieties of sugarcane, the uptake was very low because farmers could not access the necessary seed cane.

Although none of the researchers (0%) held the view that the issue of gaps in policy framework was a very big challenge to the ability of KALRO-SRI to enable revival of sugarcane farming, a majority (55.56%) felt that it was a moderately big challenge. On the contrary, about 11.1% were not sure of either the existence of policy gaps or the extent to which the gaps impact on the ability of KALRO-SRI to enable revival of sugarcane farming in the Western Kenya Sugarbelt. This was attributed to researchers with limited knowledge and exposure in policy matters.

Further assessment revealed that up to 33.3% of the researchers held the view that the issue of policy gaps was a small challenge to the ability of KALRO-SRI to enable revive sugarcane farming. Among these set of researchers about 22.2% felt that it was a moderately small challenge while 11.1% felt that it was a very small challenge. These findings were attributed to the fact that apart from a few policy concerns like the issue of seed cane policy most policies required for KALRO-SRI operations are in existence. Further assessment of the findings revealed a moderately low level of congruence among the researchers over this aspect of the study. This is manifested in a moderately low score for standard deviation slightly above the baseline (ð=1.358>ð=1.00) and confirmed by a low score of SE indicating uniformity in the views of researchers (SE = 0.553).

7.6.8 Challenge of Limited Focus on Policy Studies; KALRO-SRI

According to the study, another challenge to KALRO-SRI was the issue of limited focus on policy studies. The magnitude of this challenge was reflected in a mean score of 3.23. This mean score was moderately above the baseline score of μ=3.00 which indicates that it was moderately big challenge. This finding was attributed to the fact that in Kenya sugar research is majorly focused on technological requirements for sugarcane farming as manifested in several past and even ongoing research interventions. In fact in Kenya, sugar research has mainly focused on agronomic concerns at the expense of other critical

concerns in particular the emerging issues in micro and macroeconomic environments. This is unfortunate as it fails to capture and make due recommendations towards quality policy reforms that can enable revival of sugarcane farming in the changing farming environment as reflected in leadership dynamics, regionalization and globalization of agribusiness. Furthermore, limitation in focus on policy studies is evident in the absence of informative literature on policy matters pertaining sugarcane farming and further to the high turnover of research agencies inclusive of the transition from KESREF to SRI and then to KALRO-SRI .

Further assessment revealed that about 11.1% of the researchers held the view that the issue of limited focus on policy studies was a very big challenge to the ability of KALRO-SRI to enable revival of sugarcane farming while none (0%; N=0) held the view that it iwas a moderately big challenge. Further to this, about 44.4% were not sure of it was a challenge to revival of sugarcane farming. This finding was attributed to the fact that most of the researchers serving KALRO-SRI were not socio-economists. Further assessment revealed that about 44.4% of the researchers held the view that the issue of limited focus on policy studies was a small challenge to the ability of KALRO-SRI to enable revival of sugarcane farming. Among these, about 22.2% held the view that it was a moderately small challenge while another 22.2% held the view that it was a very small challenge. These findings were attributed to limited number of socio-economists among the KALRO-SRI staff.

The study also established that there was low level of congruence among the researchers as concerns limited focus on policy studies as challenge to KALRO-SRI. This is manifested in a moderately low score of standard deviation slightly above the baseline (δ=1.213>δ=1.00) and confirmed by a low score of SE indicating high level of agreement among the researchers (SE = 0.312).

7.6.9 Challenge of Limited Cooperation from the Private Millers; KALRO-SRI

Further to this, the study established that KALRO-SRI was also challenged by the issue of limited cooperation from the private millers. The magnitude of this challenge was reflected in a mean score of 3.19 as in Table 7.3. This mean score is only slightly above the baseline score of μ=3.00 which indicates that it was a small challenge. This was attributed to the fact that sugar research involves due experimentation and specifically

setting up of trial stations and even survey studies that demand for due stakeholder involvement. However, the private millers like WKSC were biased and skewed to profit making and resistant to any engagements that do not bring immediate financial benefits. This limited the performance of KALRO-SRI in terms of engagement in field trials and even to survey studies that are focused on the socio-economic dimensions of sugarcane farming.in fact, the policy for sugar research was not forceful in terms of engagement of millers and yet the millers are the direct beneficiaries of the research findings. This is the reason as to why private mills tended to be uncooperative.

Although none of the researchers felt that this was a very big challenge to the ability of KALRO-SRI to enable revival of sugarcane farming, about 11.1% of the researchers held the view that it was a moderately big challenge. This was attributed to the top management team of KALRO-SRI since it was the one that was in direct contact with the private millers. Further to this, about 44.4% of the researchers were not sure if this issue was a challenge to the ability of KALRO-SRI to enable revival of sugarcane farming. This was attributed to researchers who had not yet had issues or resistance from some of the private millers. Additionally, a further 44.4% of the researchers held the view that the issue of limited cooperation from the private millers was a small challenge to the ability of KALRO-SRI to enable revival process. Among these, about 22.2% held the view that it was a moderate small challenge while another 22.2% felt that it was a very small challenge. These findings were attributed to researchers who held the view that KALRO-SRI could effectively fulfill its mandate without the input of private millers.

7.7 Threats likely to Limit KALRO –SRI from Enabling Revival of Sugarcane in the Western Kenya Sugarbelt

The study established KALRO-SRI faces threats that are likely to hinder it from enabling revival of sugarcane farming in the study in future. The threats were as in 7.7.1, 7.7.2 and 7.7.3.

7.7.1 Threat of Inadequate Funding

Apart from the current challenges, KALRO-SRI is also facing a number of threats with respect to revival of sugarcane farming. According to the study, the biggest threat was inadequacy of funding. This is due to policy reform that repealed the SDL (GOK, 2019). The magnitude of this threat was reflected in a mean score of (μ) 4.075 which is far

above the baseline level of μ=3.00 as in Table 7.3 which indicates that it was a big threat. This threat was attributed to the fact that KALRO-SRI requires heavy funding to revive sugarcane farming but its only source of funding is the national treasury which is already over-stretched. The threat was further attributed to poorly informed policy reforms and especially and specifically the nullification of SDL which had made the sugar subsector financially self-reliant in the perspectives of research and regulatory services. Additionally, the threat was attributed to excessive misuse of discretionary powers in a discriminatory manner during allocation of funds from the national treasury to the disadvantage of the sugar subsector.

Further assessment of the findings revealed that about 77.7% of the researchers held the view that inadequacy of funding was a big threat to the ability of KALRO-SRI to enable revival of sugarcane farming. Among these set of researchers 22.2% felt that it was a very big threat while the majority (55.5%) held the view that it was a moderately big threat to the ability of KALRO-SRI to enable revival of sugarcane farming. These findings were attributed to lack of self-funding strategy for KALRO-SRI and to long serving researchers who had witnessed variations in performance and service delivery by KALRO-SRI due to financial challenges.

Additionally, about 11.1% of the researchers were not sure of financial inadequacy was a threat to the performance of KALRO-SRI as a researcher. This was attributed to inexperienced researchers who were recruited recently and have not witnessed what happens to KALRO-SRI during financial crisis. On the contrary, about 11.1% of the researchers held the view that the issue of financial inadequacy was a small threat to the capacity of KALRO-SRI.This finding was attributed to researchers who held the view that so far KALRO-SRI has generated the technologies that are necessary for revival of sugarcane farming and, therefore, had no significant financial demands.

According to the findings, the researchers were highly in agreement over this issue. This was reflected in a low score of the standard deviation far below the baseline (ð=0.333<ð=1.00) as in Table 7.3. This indicates that most of the researchers' views fluctuate or deviate narrowly around the mean value or level of the findings. This is further supported by a low score of SE (0.111) which indicates that the researchers were not divisible into any distinct clusters.

7.7.2 Threat of Gaps in the Policy Framework

The study also established that the next high ranking threat was the issue of gaps in the policy framework. This view is line with KNA (2014) according to which Kenya's sugar subsector suffers from policy gaps. The strength of this challenge was reflected in a mean score of (μ) 3.722 as in Table 7.3 which is less than μ=4.075 for the first threat but far above the sample mean(μ) or baseline of 3.00 which indicates that it was also a big threat. The threat was attributed to existence of service vacuums due to policy vacuums or lack of relevant policies that could trigger or initiate service provision. This was well exemplified by lack of a service for bulking and supply of seed cane supply. Further assessment revealed that a majority of the researchers (55.5%) held the view that the gaps in policy framework represented moderately big threat. However, none (0%) of the researchers held the view that the gaps were a very big threat. On the contrary, about 33.3% of the researchers were either not sure of the existence of gaps in the policy framework or were not sure of the gaps as threats to the capacity of KALRO-SRI to enable revival of sugarcane farming.

Further, on the contrary about 11.1% of the researchers felt that the gaps in the policy framework was a very small threat to KALRO-SRI in terms of revival of sugarcane farming although none of them (0%) held the view that the gaps represented moderately small threat . These findings were attributed to officers who were not well informed about the weight and significance of the policy gaps with respect to performance of KALRO-SRI because they were not participants in the core mandate and services of research and technology dissemination although they may be providing essential support services like financial management. The study further established that sugar researchers were moderately congruent over this threat. This was expressed and justified by moderately low score of standard deviation above the sample mean (μ) or baseline of 1.302 which was moderately above the sample mean (ð) or baseline of 1.00.

7.7.3. Threat of Limited Human Capital

According to the study, another threat to KALRO-SRI was limited human capital or in brief staff shortage. As presented in Table 7.3 this was reflected in a mean score of μ=3.21 which was moderately above the sample mean (μ) or baseline of 3.00 which indicates that it was a moderately small challenge. This was attributed to the fact that for the last five years, KALRO-SRI had not received any new employees from AFA which

was the employing authority and yet the serving researchers were aging towards retirement and a significant number have left through natural attrition. This was a threat because over time, the number of research staff was tending to zero. The situation was further accounted for by transfer of services whereby some researchers had relocated to alternative employers and the two issues had significant implications in terms of loss of essential experience.

Further assessment revealed that up to 22.2% (N=2) of the researchers held the view that limited human capital was a big threat to the capacity of KALRO-SRI to enable revival of sugarcane farming. Among these, about 11.1% held the view that it was a very big threat while another 11.1% believed that it was a moderately big threat. These findings were attributed to researchers who were working in departments that are stretched in terms of human resources and further to the top management team who were responsible for staffing.

On the contrary, about 33.3% of the researchers were not sure of limited human capital as a threat to KALRO-SRI as pertains to revival of sugarcane farming. This was attributed to newly recruited researchers who were yet to witness dynamics of human resource. Alternatively, the findings could be attributed to officers of KALRO-SRI who were outside the human resource service and hence may not be informed of the limited human capital given that KALRO-SRI Has several although strategically located stations across sugar zones in Kenya.

Further on the contrary, about 44.4% (N=4) of the researchers held the view that the issue of limited human capital was a small threat to KALRO-SRI to enable revival of sugarcane farming. Among these, 22.2% (N=2) felt that it was a moderately small threat as another 22.2% (N=2) held the view that it was a very small threat. These findings were attributed to researchers who believed that the challenge of reviving sugarcane farming in Kenya is not a significant concern to KALRO-SRI since it was more of a policy and therefore governance than technological concern.

7.8 Hypothesis Testing

For the specific objective which sought to evaluate the capacity sugar agencies to revive sugarcane farming in the Western Kenya Sugarbelt. The null hypothesis was **$H0_1$:**

sugar agencies have no statistically significant capacity to revive sugarcane farming in the Western Kenya Sugarbelt while the Alternative Hypothesis was **Ha_1:** sugar agencies have statistically significant capacity to revive sugarcane farming in the Western Kenya Sugarbelt. When subjected to X2-Test at 95% confidence limit the findings of the study yielded the results in Tables 7.4 and 7.5.

Table 7.4.: X2-Test; capacity of sugar agencies to enable revival of sugarcane farming in the Western Kenya Sugarbelt

Degree of Freedom	p-value/sign (p<0.05)	X2 calculated/observed	X2 tabulated/expected
12	Significant	650.968	9.488

The findings yielded an X2 calculated/observed value that is greater than the X2 tabulated/expected value (650.968>9.488) as shown. Given that the decision rule is to reject the null hypothesis when X2 calculated/observed is more than the X2 tabulated/expected at 5% the null hypothesis is rejected.On the basis of this decision, the researcher avoided committing Type 11 Error or beta error which occurs when one accepts a null hypothesis that should have been rejected . However, he risked committing Type 1 Error or alpha error (α) which occurs when one rejects a null hypothesis that should have been accepted. Ultimately the study accepts the Alternate Hypothesis which means that sugar agencies (AFA-SD and KALRO-SRI) have statistically significant capacity to revive sugarcane farming in the Western Kenya Sugarbelt.

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

This chapter presents the summary of the findings of the study, conclusions and recommendations per specific objective and suggestions for further research. The section also presents recommmendations that can inform further research, policy interventions and policy reforms to enable revival of sugarcane farming in the Western Kenya Sugarbelt.

8.2 Summary of the Findings

The study established that revival of sugarcane farming in the Western Kenya Sugarbelt was being constrained by policy issues related to agricultural lands, marketing services, policy gaps and policy design and further that policy design issues had the biggest constraining influence. The key limiting issues of policy design were the policy provisions drawn from Articles 113 and 115 for discretionary and veto powers to the presidency, excessive powers for cabinet secretaries as prescribed in Article 131 for powers to the presidency, provisions for adoption of scattered sources of policy, for administrative choice of policy reforms and for dispersed governance all from this specific act. This was followed by the issue of gaps in the existing policy framework like the gaps that were providing opportunity for the operation of sugar cartels and then the policy provision for amalgamation of sugarcane farming into the national pool of agricultural services. The key farm related policy issues ranged from the policy provisions for individual land tenure and for land subdivision occasioned by policy provisions from the Swynnerton Plan of 1955 and Land Act No 6 of 2012 , lack of regulatory control over agricultural lands due to lack of enabling policy provisions from the Land Act No 6 of 2012 . Lack of regulatory policy also limits millers' access to land due to uncontrolled transfer from sugarcane farming to alternative enterprises and further to difficulty in retaintion of land under sugarcane farming . This is in additional to inappropriate reforms and policy gaps. The key constraining market related policy issues were excessive taxation occasioned by policy provisions drawn from Tax amendment Act of 2012, frequent delay of farmers' payments due to lack of regulatory policy provisions drawn from PFMA of 2012, illegal importation of cheap sugar against the provisions of the Import Licensing Act of 2012 and manipulation of weighbridge services against the provisions of the Standardization Act of 2012,

inappropriate policy reforms and transport challenges that are occasioned by lack of regulatory policy. The study identified lack of policy provisions for bulking and supply of seedcane, subsidization of farm inputs, soil testing services and for inspection of sugarcane and sugar markets and lack of policy for standardization of the the Nucleus land within public mills as critical policy gaps that were limiting the revival of sugarcane farming in the study area.

On the contratry, the study also established that provision of services for revival of sugar cane farming in the belt was to an extent being enabled by some policy provisions. The study identified Article 2 of the constitution which has policy provisions for economic intergration of Kenya and other states and from Articles 10, 28 and 61 of the COMESA protocol that provide for policy provisions for COMESA standards for revival of sugar cane farming . These policies were supported by the provisions for licensing of private millers drawn from the Trade Licencing Act of 2012, Competition Act of 2012 for competitive pricing of sugarcane, AFA Act No 13 of 2012 for liberalization of sugarcane market and Crops Act No 16 of 2013 which provides policy provisions for farmers and millers to engage in either contractual or non-contractual production.

The study also established that sugar agencies were being limited from full compliance with the COMESA standards by policy related challenges. For KALRO-SRI the key challenges ranged from financial limitation and limited human capital occassioned by policylimitations related to PFMA of 2012 and issues of policy design. This was followed by limited autonomy and poor linkage with farmers due to weakness of Crops Act No 16 of 2016. Other challenges were lack of policy for seed bulking and supply, the issue logistics of strategic planning due to the provision for amalgamation of KALRO and SRI as per the KALRO Act No 17 of 2013 and Article 2 of the Kenya Constitution 2010 with respect to economic intergration of Kenya's sugarsubsector into the COMESA protocol. The challenges for AFA-SD ranged from failure of strategic plans and weak policy implementation strategy occasioned bypolicy limitations as relates to Article 2 of the constitution in terms of untimely demands of the COMESA protocol and the AFA Act No 13 of 2013 as reflected in the provision for amalgamation of all agricultural services in the country under AFA. This is in additional to the challenge of failure to provide essential services due to gaps and in policy framework. For sugar millers the limiting challenges ranged from failure of strategic plans reflected in weak policy implementation

strategy occasioned to the emerging demands of the COMESA protocol, challenge of emerging quarrels over distribution of income from co-production and cogeneration due to lack of enabling provisions plus the challenge of difficulty in resolution of conflicts in the matter of the proposed privatization of public mills due to policy limitations relating to the Privatization Act No 5 of 2015 .

According to the study none of the sugar agencies had full capacity to enable revival of sugarcane farming in the study area. However, each of them had some attributes of strengths, opportunities, challenges and threats. The attributes of strength for AFA-SD ranged from mandate to license private millers drawn from Trade Licencing Act of 2012, mandate to review sugarcane prices drawn from the AFA Act of 2013, provision for adoption of COMESA standards as per Article 2 of the constitution and the mandate to control sugar importation drawn from the AFA Act of 2013. Its opportunities ranged from chance to seek for intervention of the presidency, intensification of both border and market surveillance services as per the AFA Act of 2012, enhancement of stakeholder engagement and chance to enhance its strategic plan in line with PFMA of 2012. The challenges of AFA-SD ranged from the issue of individual land tenure occasioned by policy provisions from the swynnerton plan of 1954 and Land Act No 6 of 2012, failure to regulate the use of agricultural lands due to lack of enabling provisions , the issues of discretionary and veto powers due to Articles 113 and 115 of Kenya Constitution 2010, lack of prosecutorial powers due to scattered sources occasioned by the existing policy design issues , porous borders due to weak policy provisions from Article 1 of the constitution , sugar cartels and state interference due to corruption , conflicts over privatization of public mills due to weak policy provisions drawn from the Privatization Act No 5 of 2015 and malicious repacking of illegally transmitted sugar due to lack of regulatory policy provisions from the Standardization Act of 2012. AFA-SD was also facing threats ranging from the issue of imminent change in governance régime in line with the Electoral Act of 2012, issues of state interference and sugar cartels due to corruption and difficulty in provision of essential services due to gaps in policy framework.

For KALRO-SRI the attributes of strengths ranged from the policy provision for adoption of COMESA standards as provided for under Article 2 of Kenya constitution 2010 , its capacity to generate new technologies as provided for by policy provisions

drawn from the Science, Technology and Innovation Act No 28 of 2013, strategic distribution of research stations in the Western Kenya Sugarbelt as per the policy provisions under the Science, Technology and Innovation Act No 28 of 2013 , partnerships and linkages as provided for by policy provisions from the cooperative act of 2012 and PFMA of 2012 and then the advantage of the prevailing public goodwill. Its opportunities ranged from the policy provision for partnership and linkages frawn from PFMA, public goodwill and the chance to improve its strategic plan as provided for by the PFMA of 2012. KALRO-SRI was also facing challenges ranging from inability to provide seedcane services due to gaps in policy framework, issues of limited focus on policy studies due to weakness in the Science, Technology, and Innovation Act No 28 of 2013 and limited cooperation from the private millers originating from lack of enabling provisions in the existing Law of Provite Property .It was also facing threats ranging from inadequacy of funding occassined by weaknesses in AFA Act No 13 of 2013, Crops Act No 16 of 2013 and PFMA, gaps in its policy framework, the issue of imminent change in government in line with the policy provisions of Electoral Act of 2012 and staff shortage occassined by lack of enabling provisions from PFMA of 2012 .

8.3 Conclusions

The overall conclusion of the study is that policy issues are an impediment to revival of sugarcane farming in the Western Kenya Sugarbelt.

The conclusions of the study per specific objective were that:

i) The study identified the Swynnerton Plan of 1954 , Land Act No 6 of 2012 , Tax amendment Act of 2012, PFMA Act of 2012, Import Licencing Act of 2012 , AFA Act No 13 of 2013 ,Crops Act No 16 of 2013, KALRO Act No 17 of 2013 , policy design, inappropriate reforms and and policy gaps as the sources of the policy issues that t have constraining influence on provision of services for revival of sugarcane farming

ii) The study identified Articles 2, 10, 28 , AFA Act No 13 of 2013 ,Crops Act No 16 of 2013, KALRO Act No 17 of 2013 of the Kenya constitution 2010 and 61 of the COMESA protocol as the sources of policy provisions that have enabling influence on provision of services for revival of sugarcane farming,

iii) The study established that the AFA Act No 13 of 2013 ,Crops Act No 16 of 2013, KALRO Act No 17 of 2013 , Article 61 of the COMESA protocol and

policy gaps are the sources of policy related challenges that have significant limiting influence on compliance of sugar agencies with COMESA standards

iv) That due to limitations in the policy provisions of Articles 113, 115 and 131, PFMA of 2012, AFA Act No 13 of 2013, KALRO Act No 17 of 2013 and Crops Act No 16 of 2013 of the Kenya Constitution 2010 Sugar agencies has no full capacity to enable provision of services for revival of sugarcane farming.

8.4 Recommendations

The overall recommendation of the study is that there is need for demand driven policy reviews with emphasis on public- private partnerships and intervention of the presidency. The recommendations of the study per specific objective were that to revive sugarcane farming in the Western Kenya Sugarbelt:

i) The national assembly, senate and the cabinet secretary of agriculture should counter policy related issues constraing the provision of services for revival of sugarcane farming through policy review and filling of policy gaps.

ii) Government and other stakeholders in sugar cane farming should enhance adherence to policy provisions that have enabling influence on provision of services for revival of sugarcane farming.

iii) The national assembly and senate should review existing policies, fill up gaps in policy and develo an enforcement mechanism to enable full compliance of sugar agencies with COMESA standards.

iv) The government should review the mandate, autonomy and finance empowerment of AFA-SD and KALRO-SRI to empower them to enable provision of key services for revival of sugarcane farming.

8.5 Suggestions for Further Research

i) Duplication of this study in alternative sugar belts across the country.

ii) Influence of legal laws on revival of sugarcane farming in the Western Kenya Sugarbelt.

iii) Challenges of economic integration on revival of sugarcane farming in the Western Kenya Sugarbelt.

iv) Influence of regulatory services on revival of sugarcane farming in the Western Kenya Sugarbelt.

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Appendix 1

Farmers' Questionnaire on Policy Issues and Revival of Sugarcane in the Western Kenya Sugarbelt

Background information

Farmer's name (optional) ----------

Sub-location----------

Location----------

Sub county----------

County ----------

1). Miller (1). West Kenya [ ] (2). Nzoia [ ]

2). Gender (1) Male [ ] (2) Female [ ]

3). Acreage under Cane (1). Below 1 [ ] (2). 1-2 [ ] (3). 2-3 [ ] (4). 3-4 [ ] (5) 4-5 [ ] (6). Above 6 [ ]

4). Farming Experience in years (1). Below 5 [ ] (2). 6-10 [ ] (3). 11-15 [ ] (4). 16-20 [ ] (5). Over 20 [ ]

5). Contractual Status; (1). Full Contract [ ] (2). Marketing contract [ ]

(3). Input supply contract [ ]

6). Education Level; (1). None [ ] (2) .Primary [ ] (3). Secondary [ ] (4) .Certificate [ ] (5). Diploma [ ] (6). B Sc [ ] (4) .Masters [ ] (7). PhD [ ]

7). Agriculture Education Level (1) None [ ] (2) Certificate [ ] (3) Diploma [ ] (4) B Sc [ ] (5) Masters [ ] (6) Ph D [ ]

SECTION A: Policy constraints vs. revival of sugarcane farming

1). On a likert scale of 1 to 5 tick (√) in the appropriate space to specify your level of agreement with each of the following statements concerning the extent to which

services for revival of sugarcane farming in your community are constraint by policy. 5= Strongly Agree 4= Agree 3=Neutral 2=Disagree 1= Very Disagree

Service Statement	**5**	**4**	**3**	**2**	**1**	**Reason(s)**
Access to government services/machinery/tractors						
Access to agricultural extension services						
Access to market / harvesting permits						
Fertilizers Access Services						
Land sub-division practices /services						
Input subsidization services						
seed cane supply services						
credit services						
Any other (specify)						
Market Level						
Acquisition of harvesting permits						
Adherence to cane payment schedules						
Sugarcane pricing strategy/service						
Weighbridge Services						
Sugarcane Transport Services						
Any other (specify)						

2). In the recent past, there has been a downward trend in sugarcane farming in Kenya partially due to policy constraints. By way of a tick, rank the extent to which each of the following Policy factors has constrained the revival of sugarcane farming in your community. 5=Very Strong 4= Strong 3=Neutral 2=Weak 1= Very Weak

Policy Factor	**5**	**4**	**3**	**2**	**1**	**Reason(s)**
Government's tax policy						
Miller/ farmer contracts						
Land sub-division policy						
Sugarcane pricing policy						
Millers' Credit policies/interest rates						
Cane weighing policy						
Millers Cane payment policies/schedules						
Any other (specify)						

SECTION B: Policy enablers' vs Revival of Sugarcane Farming

In the recent past, there has been a downward trend in sugarcane farming in Kenya that has led to emergence of different policy options. By way of a tick, rank the capacity of each option with reference to enabling the revival of sugarcane farming in your community.

5=Very Strong 4= Strong 3=Neutral 2=Weak 1= Very Weak

Policy Option /strategy	5	4	3	2	1	Reason(s)
Devolution of sugarcane farming to County Governments						
Inclusion of Farmers' Organizations in management of mills.						
Devolution of public mills to County Governments						
Privatization of public mills						
Zoning of Sugarcane farming						
Zoning of sugarcane markets						
Liberalization of sugarcane farming interventions.						
Farm on fully contractual terms.						
Limit contracts to sugarcane marketing only.						
Limit contracts to input supply only.						
Engagement of Non-contractual sugarcane farming.						
Establishment of weighing centers on the farms						
Pay farmers by sucrose index instead of cane tonnage.						
Mandate each miller to set sugarcane price.						
Unification of sugarcane prices						
Inputs subsidization strategy.						
Any other(specify)						

Thanks for your contribution

Appendix 2

Millers Questionnaire on Policy Issues and Revival of Cane Farming in the Western Kenya Sugarbelt

Background Information

Employee's name (optional) ----------

1). Miller (1). WKSC [ ] (2). NSC [ ]

2). Gender (1) Male [ ] (2) Female [ ]

3). Age in years (1).Below 30. [ ] (2) 31-40. [ ] (3) 41-50 [ ] (4) 51-60 [ ] (5) above 60. [ ]

4). Work Experience in years (1) below 5. [ ] (2)6-10. [ ] (3). 11-15. [ ] (4). 16-20. [ ] (5). Over 20. [ ]

5). Position (1). CEO [ ] (2) Deputy CEO [ ] (3).Senior Manager [ ] 4) middle Manager [ ]

6).Highest Education Level; (1). None [ ] (2) .Primary [ ] (3) Secondary (4) [ ] .Certificate (5) [ ] Diploma [ ] (6) BSc [ ] (4) Masters [ ] (7). PhD [ ]

Section A

1).In the recent past, there has been a decline in sugarcane farming in Kenya. As service providers in this company use a tick (√) to rank the extent to which provision of the following services to revive sugarcane farming is constraint by policies.

5=Very High 4= High 3=Neutral 2= Low 1= Very Low

Sugarcane production services	5	4	3	2	1
Contractual production services.					
Non –contractual production services					
Increase/sustain production surface(area)					
Sugarcane development loan services					
Agriculture extension service					
Agriculture research service					
Soil management service					
Agricultural mechanization service					
Optimization of transport costs.					
Input subsidization services.					
Sugarcane procurement services					
Streamlining harvesting services					
Streamlining anti poaching measures					
Standardization of weighbridge services					
Streamlining cane pricing service					
Adherence to cane payment schedules					
Improvement of infrastructure					
Streamlining factory maintenance services					
Any other(specify)					

2. Indicate if each of the following policies is existing in Kenya's sugar industry or Not and then rank the capacity of the ones existing with reference to the existent to which each was constraining revival of sugarcane farming .

5=Very high 4= High 3=Neutral 2=Low 1= Very low

	Existence		Extent of Constrain				
Policy Option /strategy	Yes	No	5	4	3	2	1
Policy for full contractual farming							
Policy for scheduling sugarcane payment							
Policy for de- zoning of sugarcane farming areas							
Soil management policy							
Policy for agricultural mechanization							
Agriculture extension policy							
Seed cane policy							
Agriculture research policy							
Taxation policy							
Land sub-division policy							
Border control policy							
Sugarcane weighing policy							
Policy for de- zoning of sugarcane markets							
Policy for liberalization of sugar market							
Policy shift to sucrose indexing							
policy for inspection of domestic sugar market							
Policy for contracts limited to sugarcane marketing							
Policy for Non-contractual production.							
Policy for each miller to set its sugarcane price.							
Policy for Unification of sugarcane prices							
Policy for inputs subsidization.							
Any other(specify)							

3. Rank the extent to which you agree with each of the following statements about the weakness of Kenya's sugar policies with regard to revival of sugarcane farming.

5=Very Strong 4= Strong 3=Neutral 2=Weak 1= Very Weak

Policy issue (constraints)	5	4	3	2	1
Policy framework Has gaps that hinder revival					
Several policies lack legal backing					
Policy enforcement framework is weak					
Policy provides for excess discretionary powers.					
Politicians interfere with policy implementation.					
Several parliamentary acts were not operationalized					
operationalization of some acts appeared skewed					
Policy implementation is undertaken selectively					
Millers lacks seed cane policy					
Policy implementation is cartelized.					
Several service agencies lack prosecutorial powers					
Any other (specify)					

Section B

Rank the extent to which provision of each of the following services towards revival of sugarcane farming under your company is enabled by existing policy stipulations.

5=Very High 4= High 3=Neutral 2= Low 1= Very Low

Sugarcane production services	5	4	3	2	1
Contracting farmers for production.					
Engagement of Non -contracted farmers.					
Increase/sustain production surface(area)					
Provision of sugarcane development loans					
Optimization of transport costs.					
farm Input subsidization services					
Sugarcane procurement services	5	4	3	2	1
Streamlining cane pricing strategy/service					
Adherence to cane payment schedules					
Improvement of infrastructure					
Streamlining factory maintenance services					
Streamlining harvesting services					
Streamlining anti poaching measures					
Standardization of weighbridge services					
Any other(specify)					

2). Rank the capacity of each of the following policy options with reference to capacity to enable your company to revive sugarcane farming.

5=Very high 4= High 3=Neutral 2=Low 1= Very low

	Extent of Constrain				
Policy Option /strategy	5	4	3	2	1
Policy for liberalization of sugar market					
Policy shift to sucrose indexing					
policy for inspection of domestic sugar market					
Policy for Non-contractual production.					
Policy for each miller to set its sugarcane price.					
Policy for Unification of sugarcane prices					
Policy for inputs subsidization.					
Policy for full contractual farming					
Policy for scheduling cane payment					
Policy for de- zoning of sugarcane farming areas					
Taxation policy					
Land sub-division policy					
policy for border control					
Seed cane policy					
cane weighing policy					
Policy for de- zoning of sugarcane markets					
Soil management policy					
Policy for agricultural mechanization					
Agriculture extension policy					
Agriculture research policy					
Any other(specify)					

Section C

1).The COMESA Council of Ministers prescribed standards for Kenya as baselines for competitiveness of its sugar industry. On a scale of 5-1 rank the extent to which your company has complied with each standard.

5= Very Strong 4= Strong 3=Neutral 2= Weak 1= V. Weak

Standard	5	4	3	2	1
Shift from basing on weight to basing on sucrose content					
Generation / identification of early maturing sugarcane varieties					
Adoption of early maturing sugarcane varieties					
Improvement of infrastructure in the sugar growing areas					
Generation / identification of varieties with high sucrose yields					
Adoption of high sucrose yielding sugarcane varieties					
Any other (specify)					

2). on a scale of 5-1 rank the extent to each of the following challenges has affected the compliance of your company to COMESA Standards. 5= Very big 4= big 3=Neutral 2= small 1= V. small

Challenges	5	4	3	2	1
Politicization of the intervention ; COMESA prescriptions					
Resistance /failure to review existing strategic plans					
Inadequate time allocation for generation of new varieties without regard to the lengthy production cycle of sugarcane in Kenya's context.					
Inadequate time allocation for multiplication of seed cane of the new varieties.					
Inappropriateness of timing ;A majority of farmers/ millers' fields already had existing cane that required time to complete the ratooning cycle.					
Inadequate time allocation; miller did not have any time to educate farmers about the target changes					
Co-production and co-generation.millers cannot readily adopt sucrose indexing due to low level of diversification.					
Millers are limited by policy from physically Engaging in infrastructure development					
Slow implementation mechanism at national level					
Lack of clear implementation strategy at company level					
The logistics of privatization / lease of public mills					
Any other (specify)					

Appendix 3

Regulators Questionnaire on Policy Issues Vs Revival of Sugarcane Farming in the Western Kenya Sugarbelt

Background Information

Employee's name (optional) ----------

1). Miller (1). WKSC [ ] (2). NSC [ ]

2). Gender (1) Male [ ] (2) Female [ ]

3). Age in years (1).Below 30.[ ] (2) 31-40. [ ] (3) 41-50 [ ] (4) 51-60 [ ] (5) above 60. [ ]

4). Work Experience in years (1) Below 5. [ ] (2)6-10. [ ] (3). 11-15. [ ] (4). 16-20. [ ] (5). Over 20. [ ]

5). Position (1). CEO [ ] (2) Deputy CEO [ ] (3).Senior Manager [ ] 4) middle Manager [ ]

6).Highest Education Level; (1). None [ ] (2) .Primary [ ] (3) Secondary [ ] (4) .Certificate [ ] (5) Diploma [ ] (6) B Sc [ ] (4) Masters [ ] (7). PhD [ ]

Section A

1).In the recent past, there has been a decline in sugarcane farming in Kenya. As a service provider in this directorate use a tick (√) to rank the extent to which provision of the following services towards revival of sugarcane farming is constraint by policies.

5=Very High 4= High 3=Neutral 2= Low 1= Very Low

Sugarcane production services	Ranking				
	5	4	3	2	1
Contractual production services.					
Non –contractual production services					
Increase/sustain production surface(area)					
Sugarcane development loan services					
Optimization of transport costs.					
Input subsidization services.					
Sugarcane procurement services					
Streamlining harvesting services					
Streamlining anti poaching measures					
Standardization of weighbridge services					
Streamlining cane pricing service					
Adherence to cane payment schedules					
Improvement of infrastructure					
Streamlining factory maintenance services					
Any other(specify)					

2. Indicate if each of the following policies is existing in Kenya's sugar industry or not and then rank the capacity of the ones existing with reference to the existent to which each was constraining revival of sugarcane farming . 5=Very high 4= High 3=Neutral 2=Low 1= Very low

	Existence		Extent of Constrain				
Policy Option /strategy	Yes	No	5	4	3	2	1
Policy for full contractual farming							
Policy for scheduling sugarcane payment							
Policy for de- zoning of sugarcane farming areas							
Seed cane policy							
Taxation policy							
Land sub-division policy							
Border control policy							
Policies governing millers and growers							
Seed cane policy							
Sugarcane weighing policy							
Policy for de- zoning of sugarcane markets							
Policy for liberalization of sugar market							
Policy shift to sucrose indexing							
policy for inspection of domestic sugar market							
Policy for contracts limited to sugarcane marketing							
Policy for Non-contractual production.							
Policy for each miller to set its sugarcane price.							
Policy for Unification of sugarcane prices							
Policy for inputs subsidization.							
Any other(specify)							

3. Rank the extent to which you agree with each of the following statements about the weakness of Kenya's sugar policies with regard to revival of sugarcane farming. 5=Very Strong 4= Strong 3=Neutral 2=Weak 1= Very Weak

Policy issue (constraints)	5	4	3	2	1
Policy framework Has gaps that hinder revival					
Several policies lack legal backing					
Policy enforcement framework is weak					
Policy provides for excess discretionary powers.					
Politicians interfere with policy implementation.					
Several parliamentary acts were not operationalized					
operationalization of some acts appeared skewed					
Policy implementation is undertaken selectively					
Excessive government beaurecracy					
Concentration of prosecutorial powers in police service					
Policy implementation is cartelized.					
Lack of clear seed cane policy					
Several service agencies lack prosecutorial powers					
Any other (specify)					

Section B

1).The COMESA Council of Ministers prescribed standards for Kenya as baselines for competitiveness of its sugar industry. On a scale of 5-1 rank the extent to which Kenya's sugar industry has complied with each standard. 5= Very Strong 4= Strong 3=Neutral 2= Weak 1= V. Weak

Standard	5	4	3	2	1
Shift from basing on weight to basing on sucrose content					
Decrease of quota tariff towards 0%,					
Identification of early maturing sugarcane varieties					
Generation of early maturing sugarcane varieties					
Adoption of early maturing sugarcane varieties					
Improvement of infrastructure in the sugar growing areas					
Identification of varieties with high sucrose yields					
Generation of varieties with high sucrose yields					
Adoption of high sucrose yielding sugarcane varieties					
Any other (specify)					

2). ON a scale of 5-1 rank the extent to each of the following challenges has affected the compliance of Kenya's sugar industry to COMESA Standards.

5= Very big 4= big 3=Neutral 2= small 1= V. small

Challenges	5	4	3	2	1
Politicization of the intervention ; COMESA prescriptions					
Government beauracracy					
Resistance of stakeholders to refocus their strategic plans					
Lack of subsidy for farmers					
Lack of seed cane policy					
Inadequate time allocation for generation of new varieties without regard to the lengthy production cycle of sugarcane in Kenya's context.					
Inadequate time allocation for multiplication of seed cane of the new varieties.					
Inappropriateness of timing ;A majority of farmers/ millers' fields already had existing cane that required time to complete the ratooning cycle.					
Inadequate time allocation; miller did not have any time to educate farmers about the target changes					
Co-production and co-generation. Millers cannot readily adopt sucrose indexing due to low level of diversification.					
Millers are limited by policy from physically engaging in infrastructure development					
Policies governing millers and out growers					
Slow implementation mechanism at national level					
Lack of clear implementation strategy at millers level					
Resource limitations					
The logistics of privatization / lease of public mills					
Any other (specify)					

Section C

1. Today, organizations are guided by strategic plans; use a tick to rank the extent to which each of the following services is included in the strategic plan for revival of sugarcane farming.

5=Very High 4= High 3=Neutral 2= Low 1= Very Low

Sugarcane production services					
Sugarcane development loan services					
Optimization of transport costs.					
Input subsidization services.					
Contractual production services.					
Non –contractual production services					
Increase/sustain production surface(area)					
Sugarcane procurement services					
Streamlining cane pricing service					
Adherence to cane payment schedules					
Improvement of infrastructure					
Streamlining factory maintenance services					
Streamlining harvesting services					
Streamlining anti poaching measures					
Standardization of weighbridge services					
Any other(specify)					

2.Use a tick to rank the extent to which each of the following issues are included in your strategic plan as a strategy for compliance to COMESA prescription for competitiveness of Kenya's sugar industry. 5=Very High 4= High 3=Neutral 2= Low 1= Very Low.

Standard	5	4	3	2	1
Shift from basing on weight to basing on sucrose content					
Decrease of quota tariff towards 0%,					
Identification of early maturing sugarcane varieties					
Generation of early maturing sugarcane varieties					
Adoption of early maturing sugarcane varieties					
Improvement of infrastructure in the sugar growing areas					
Identification of varieties with high sucrose yields					
Generation of varieties with high sucrose yields					
Adoption of high sucrose yielding sugarcane varieties					
Any other (specify)					

Appendix 4

Questionnaire for SRI on Policy Issues and Revival of Sugarcane Farming; in the Western Kenya Sugarbelt.

Section A

1). Use a tick to rank the extent to which your research interventions are focused on each of the following aspects of sugarcane farming.

5=Very High 4= High 3=Neutral 2= Low 1= Very Low

Aspects of sugarcane farming.	5	4	3	2	1
Soil management					
Sugarcane agronomy					
Sugarcane pathology					
Agriculture extension service					
Farm mechanization					
Sugar processing					
Sugar marketing					
Policy issues in sugarcane farming					
Any other (specify)					

2).The COMESA Council of Ministers prescribed standards for Kenya as baselines for competitiveness of its sugar industry. On a scale of 5-1 rank the extent to which you have s complied with each standard.

5= Very Strong 4= Strong 3=Neutral 2= Weak 1= V. Weak

Standard	5	4	3	2	1
Shift from basing on weight to basing on sucrose content					
Identification of early maturing sugarcane varieties					
Generation of early maturing sugarcane varieties					
Adoption of early maturing sugarcane varieties					
Improvement of infrastructure in the sugar growing areas					
Identification of varieties with high sucrose yields					
Generation of varieties with high sucrose yields					
Adoption of high sucrose yielding sugarcane varieties					
Any other (specify)					

Appendix 5

Introductory letter to Respondents for Research on Policy and Revival of Sugarcane Farming in Western Kenya Sugar Belt.

(Farmers, managers of WKSC and NSC and officers of AFA-SD and KALRO-SRI)

Josephat Barasa Kombo
School of Agriculture
And Veterinary Sciences
Masinde Muliro University
P.O. Box 190-50100, Kakamega.

To the Respondents;

Dear Sir, / Madam,

RE: Appointment as Respondent in Research

I am a student undertaking a Doctorate of Philosophy Degree in Agricultural Extension and Rural development in Masinde Muliro University. In pursuit of the same, I am undertaking a research on "Impact of policies on revival of sugarcane farming in the Western Kenya Sugarbelt ".

I wish to engage you as a respondent in the specific study. I hereby assure you that every information given will be treated with maximum confidentiality. The study is meant to improve the sugar subsector in Kenya.
Your cooperation is most appreciated.

Thanks in advance,

Josephat Barasa Kombo
Tel 0720044264.

Appendix 6

Legal Instruments engaged by the study on Revival of Sugarcane Farming in the Western Kenya Sugarbelt.

Articles and Acts

AFA Act No 13 of 2013
AFC CAP 323
Agriculture Act 318
Agriculture and Food Authority (AFA) Act, 2013

Biodiversity Act 2012
CAP 319; Export of Agricultural Goods,
CAP 320; Marketing of agricultural produce
CAP 324; KEPHIS
CAP 326; Plant Varieties
CAP 469; KRA and became operational in 1995
CAP 496 for Kebs; 1974
COMESA Treaty; Articles 10, 28 and 61 and Directive No.1 of 2007
Companies Act CAP 486
Companies Act of 1978 CAP 486
Competition Act of 2012
Cooperative Act of 1966.
County Government Act 2012
Crops Act No 16 Of 2013
Finance Act 2012
Finance Act 2021
Gazette Notice No 11711 of 2018.
Income Tax 2012
KALRO-RI Act 2013
Kenya Agriculture Research Organization- Act No 17 of 2013
Kenya Gazette Notice No.11711 of 2018
Law of Contracts
Legal Notice No. 32 of 1973
Partnership Act CAP29
Presidential Directives
Privatization Act No 2 of 2005
Public Finance Management Act Section 77
Science, Technology and innovation innovation Act No 28 of 2013
Sessional paper No 10 of 1965
Societies Act CAP 108 of 1968
Standardization Act of 2015
State corporations act CAP 446.
State Corporations Act No 1948 CAP of 1986
State corporations Act No 1986 CAP446.

Sugar Act 2013(repealed)

Sugar Act No 1 of 2001

Sugar Arbitration and Tribunal Rules; 2001

Sugar Bill 2019

Tax Laws Amendment Act of 2018; CAP 476: VAT

Tax Laws Amendment Act CAP 480: Stamp Duty

Tax Laws Amendment Act of 2018 CAP 470: Income Tax

Tea Act of 2018

The State Corporation Act 496: KEBS AND KEPHIS

The State Corporation Act CAP 250

The Constitution of Kenya 2010

The Customs and Exercise Act CAP 472

The Land Control Act CAP 302

The Trust Land Act CAP 288

VAT Act 2012

Commissions and Task Forces

Kakamega County Government Taskforce; Protection of Public Assets and Revenue of MSC in 2019.

National Sugar Task Force, 2019

Sugar Industry Stakeholders Taskforce" of 2018;

-Waruhiu Commission of 1990

List of Court Proceedings

High Court Petition No.187 of 2016 Bungoma

High Court Judicial Review No.3 of 2013.

Appendix 7

Mandates of Sugar Directorate in Kenya

1. Carry out Market Research and Product Development

Develop appropriate market research and product developments strategies, work plans and budgets.

Implement trade, marketing and promotion programmes in the local and international markets.

Identify and advise on market trends and growth opportunities for new existing markets.

Liaise with the sugar industry stakeholders, Agriculture trade organizations and associations on Agriculture and promotion matters.

2. Monitor Sugar Imports, Exports and Domestic Sales Activities.

Guide and advise AFA on product and market trends including diversification opportunities.

Conduct regular market research including gathering and disseminating market intelligence reports.

Advocate for the rationalization of barriers to sugar trade and reduction to high costs of sugar production.

Review and implement the market development strategy.

Enhance the export readiness of stakeholders with focus on SMEs.

Increase competitiveness of sugar and its by-products in medium and low end markets.

Enhance visibility of sugar products through branding.

Facilitate value addition and product development in the sugar industry.

3. Provide Technical and Advisory Services to Stakeholders

Strategic and operational oversight on the regulation of the sugar industry.

Compliance and development of cultivation, transport, processing and quality of sugar products.

Maintaining an effective and participatory regulatory environment that facilitates the sustainable growth and competitiveness of the sugar industry.

Ensuring the development of sugar products, development of the sugar industry and sound industry development of plans supported by a sound industry planning framework.

4. Develop and Implement Departmental Strategy in line with Mandate and Objectives.

Guide and advise growers on crops cultivation best practices and enforce compliance.

Prepare and maintain a register of growers, manufacturers, nurseries and management agents.

Monitor and evaluate production activities and enforce compliance with regulations.

Provide advisory services on all aspects of sugar production, cultivation, transport and processing.

Development of sugar products standards in collaboration with Kenya Bureau of Standards (KEBS).

Promoting sugar product manufacturing quality assurance and policy advocacy.

Research liaison and Technology transfer.

Stakeholder engagement in forums and field days.

Manage, develop, mentor and coach departmental staff and appraise their performance.

Oversee Regulation and Compliance in the Sector

Ensure compliance to the AFA Act, Crop Act and other relevant regulations and Codes of Practice.

Develop and implement Compliance procedures including regular inspection of sugar industry stakeholders' premises to ensure compliance.

Facilitate the development and implementation of a national sugar policy.

Facilitate sugar standards development to harmonize and improve compliance across the value chain.

Ensure execution of corrective actions; and advising AFA on appropriate trade compliance matters.

Sensitize internal and external stake holders, including Small and Medium Enterprises (SME) on the regulatory framework and facilitate its successful implementation.

Recommend to AFA for Board's consideration, applicants qualified for registration in the areas of buying, importing, exporting, packing and warehousing.

Monitor Sugar Imports, Exports and Domestic Sales Activities for Safety and Quality Standards.

Facilitate improvement of overall industry efficiency by developing and promoting service level standards for critical activities.

Facilitate improvement of industry skills and competencies including small, medium and large industry players.

Develop and monitor the sugar industry productivity enhancement programme.

Develop and monitor a framework for implementation of sugar industry infrastructure.

Manage, develop, mentor and coach departmental staff and appraise their performance.

Schedules. 8; Regulatory Impact Statements For (Sugar) (General) Regulations 2018 In Kenya

Purpose of the statutory instrument

The purpose of these Regulations is to provide for the regulation, promotion and development of the Sugar industry in Kenya and specifically to provide for:-

Regulation of the Sugar Industry players along the entire value chain,

The licensing and registration procedures, requirements, filing of returns and Forms,

The sharing of functions between the national and county government,

Promotion and development of Sugar trade locally and internationally,

Monitoring compliance along the value chain on aspects of Sugar production, processing, trade and promotion,

Imposition, administration and prescription of licensing and registration fees, vii. Compliance with national and international standards,

Promotion of Sugar Industry self-regulation and co-regulation,

Licensee obligations to ensure good business relations between growers and dealers, x. Provides effective dispute settlement mechanism and spells out penalties for Non-compliance

Appendix 8

COMESA Directive No.1 of 2017 for Revival of Sugarcane Farming in Kenya

Terms and conditions for the Safeguard measures

The safeguard should continue as a tariff rate quota (TRQ)

Sugar types (Domestic and industrial) should be amalgamated into a single Figure for the quota

The size of the quota should be increased while the tariff rate applied on above quota imports of COMESA sugar should be lowered in successive years

A framework for administering and monitoring the implementation of the safeguard and for liaison with the COMESA policy organs should be established

Government should scale up divestiture efforts away from public owned sugar mills.

Government should adopt Non energy policy aimed at promoting co generation and other forms of Bio-fuel energy production that will contribute to mailing the sugar subsector more competitive.

Kenya sugar research foundation (KESREF) and other stakeholders should continue with research and development on high sucrose and early maturing cane varieties and Kenya sugar board should assure adequate funds for research.

The sugar industry should adopt a cane pricing formula based on sucrose content of cane delivered rather one based on the weight of the cane delivered.

Government and other stakeholders should improve the road infrastructure network and related infrastructure in the cane producing areas.

Government should submit report to council through the secretary general on all measures activities and improvements on the sugar subsector competitiveness at least twice per year.

Appendix 9

Letter from the University and Research Permit for Research on Policy and Revival of Sugarcane Farming Westeern Kenya Sugarbelt

Appendix 10: MMUST Authorization Letter

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)
School of Agriculture, Veterinary Sciences and Technology

Tel: +254 702597360/1
+254 733120020/2
E-mail deansavet@mmust.ac.ke
Website www.mmust.ac.ke

P.O Box 190
Kakamega – 50100
Kenya

Date: 7th September, 2020 **Ref:** MoU/SAE/H/01-56593/2016/1

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

REF: MMUST PhD. RESEARCH STUDENT JOSEPHAT BARASA KOMBO REG. NO. SAE/H/01-56593/2016

The above subject refers.

The student is undertaking a PhD research entitled: ***"Evaluation Impact of Policy Interventions on Sugar Cane Farming".*** He has completed the requirements for course work and he is now undertaking field work data collection within a period of September 2020 to June, 2021.
On successful completion he will be awarded a Doctor of Philosophy Degree in Agricultural Extension and Rural Development of Masinde Muliro University of Science and Technology.

On behalf of the above named University we request that you accord him the necessary assistance to enable him collect data available in your institution business area. This will assist him to go through process of PhD thesis research to meet the requirement for the award of the degree.

Please consult us at the above address should you require more information

Thanking you in advance.

Yours sincerely,

07 SEP 2020

Prof. Jacob W. Wakhungu PhD, MAPSK, MEURTC (UK) MKNAS, FABI
Research supervisor, MMUST/SAVET

Appendix 11: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **409925**

Date of Issue: **23/November/2020**

RESEARCH LICENSE

This is to Certify that Mr.. JOSEPHAT BARASA KOMBO of Masinde Muliro University of Science and Technology, has been licensed to conduct research in Bungoma, Busia, Kakamega on the topic: IMPACT OF POLICIES ON REVIVAL OF SUGARCANE FARMING IN WESTERN KENYA for the period ending : 23/November/2021.

License No: **NACOSTI/P/20/7779**

409925

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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