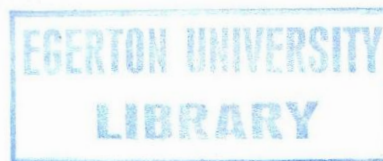


EFFECTS OF AGRIpreneurial ORIENTATION ON GROWTH OF CASSAVA-BASED SMALL AND MEDIUM ENTERPRISES IN MIGORI COUNTY, KENYA



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A Thesis Submitted to the Graduate School in Partial Fulfilment of the Requirements for the Master of Science Degree in Agri-enterprise Development of Egerton University

2023/120312



EGERTON UNIVERSITY

JUNE, 2022

X

DECLARATION AND RECOMMENDATION

Declaration

I declare that this thesis is my original work and has not been presented in this university or any other for the award of a degree.

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DEDICATION

This thesis is firstly dedicated to God. Secondly, it is dedicated to my mother Miss Roselyne Akwini, wife Nelly Abita Sambrumo and my children, lecturers, my guardian Mrs. Elizabeth Kibabu Mwangi for her motherly love, encouragement and prayers.

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ABSTRACT

Agripreneurial orientation and behaviour are the constructs that can potentially enhance entrepreneurs' optimal outcomes. This is because it is a way of enabling them to be proactive, innovative, risk takers, autonomous as well as aggressive. Despite the Kenyan government promoting and creating opportunities for entrepreneurial development in agricultural sector, cassava producers in Migori County are yet to be entrepreneurially oriented towards income generation and growth of cassava-based enterprises. It is unclear about innovation, value addition and diversification of cassava products by agripreneurs in Migori County. This study generally aimed at contributing to the development of cassava-based agri-enterprises through agripreneurial orientation in Migori County. Specifically, it sought to characterise cassava-based enterprises in Migori County, determine internal and external environmental factors influencing agripreneurial orientation constructs among cassava based agro-processors in Migori County and ultimately assessing the influence of agripreneurial orientation constructs on growth of cassava-based Small and Medium Enterprises in Migori County. A cross sectional survey comprising of 171 cassava entrepreneurs from Migori County within Suna East and Uriri Sub-Counties in Kenya was conducted during months of July-August 2019. Data were collected using a semi-structured questionnaire and subjected to analysis using descriptive statistics and ordered Logit and Probit models. The study revealed that the respondents were middle aged (43 years), majority were female (78.4 %), had reached formal education (52%), average age of enterprises was 10years and average quantity of cassava traded per week of 29 Kg, average number of workers employed of 2 persons while the average distance to the market being 3Km. Agripreneurial orientation is mainly influenced by years of experience of the owner of enterprise, number of employees operating an enterprise, land size under cassava, quantity of cassava sold on daily basis. Gender, number of trained employees and age of the enterprise are the least determinants influencing agripreneurial orientation. Agripreneurial orientation was statistically significant at ($P < 0.05$) on growth of CBSMES. This study concludes that years of experience of the owner of enterprise, number of employees operating an enterprise, land size under cassava, quantity of cassava sold on daily basis among the respondents influence growth of cassava based small and medium enterprises in Migori county. This study recommends that the government should empower cassava based agripreneurs through training, trade fairs and capacity building to change the mind set of the agripreneurs while providing incentives in venturing into cassava for the growth of the agrienterprises as well as individual growth.

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LIST OF ABBREVIATIONS AND ACRONYMS

AO	:	Agripreneurial Orientation
ASALs	:	Arid and Semi-Arid Lands
ASDS	:	Agricultural Sector Development Strategy
CAADP	:	Comprehensive Africa Agricultural Development Program
CBSMES	:	Cassava Based Small and Medium Enterprises
CFA	:	Confirmatory factor analysis
FAO	:	Food and Agriculture Organization of the United Nations
FAOSTAT	:	Food and Agriculture Organization Statistics of the United Nations
GOK	:	Government of Kenya
HQCF	:	High quality cassava flour
KES	:	Kenya Shillings
KNBS	:	Kenya National Bureau of Statistics.
MCIDP	:	Migori County Integrated Development Plan
MoALFI	:	Ministry of Agriculture Livestock, Fisheries and Irrigation
OLM	:	Ordered Logit model
PCAC	:	Principal Component with Clustering
RUFORUM	:	Regional Universities Forum for Capacity Building in Agriculture
SMEs	:	Small and Medium Enterprises
SSA	:	Sub Saharan Africa
TAGDev	:	Transforming African Agricultural Universities to meaningfully contribute to Africa's Growth and Development

CHAPTER ONE

INTRODUCTION

1.1 Background information

Small and Medium Enterprises (SMEs) are taken as very important within political, social as well as economic growth globally. It is a daily increasing contributor to the economic development. It represents a significant proportion of the global economies (Karpak & Topcu, 2010; Paul *et al.*, 2007; Soininen *et al.*, 2012). Moreover, SMESs offer income and employment to a country's population. According to the literature, large business entities have led to creating jobs but this has been opposite in the last two decades because of the notable increase in both the number of SMESs and jobs they created (Soininen *et al.*, 2012).

According to the World Bank, SMESs are referred to the enterprise with yearly turnover between KES 0.08 to 0.1 trillion, between 5 and 150 employed people, legally registered as a business as well as asset base of more than KES 4 million. Further, SMEs make a substantial contribution to economic activity, job creation and economic growth in all countries globally. In developed economies, they account for 50–60% of gross domestic product (GDP) and 60% of jobs. SMEs' contributions in some developing economies can approximate these numbers, while elsewhere their contribution is more minor (World Bank, 2013).

The role associated with Small and medium enterprises across the world is recognized as they lead to economic development. Both the less developed as well as the developed nations find that SMES and entrepreneurs perform a key role for development of the country's industries leading to industrial development (Hirmissa *et al.*, 2018). According to Arianoff (2010), it is approximated that small and medium enterprises account for 56 % of jobs to private sector and 36 % of Gross Domestic Product (GDP) globally. Therefore, SMES has been the great driver in terms of employment growth as well as generating output for many years. It is also perceived as a self-help tool to eradicate poverty among the developing countries.

Ongori and Migiro (2011) posit that in Kenya, small enterprises are businesses comprising of at most 50 employees while medium enterprises employ from 51 to 99 workers. Therefore, Kenya Policy articles has legalized by registering functions of Small and Medium enterprises (GoK, 2012).

In Kenya, there are a number of platforms to promote SMES within the agricultural sector. These include Comprehensive Africa Agricultural Development Program (CAADP). CAADP's second pillar aims at accelerating growth in the agricultural sector through

upgrading capabilities of the private entrepreneurs (Kenya CAADP Compact Report, 2010). This platform has been implemented through Agricultural Sector Development Strategy of Kenya (ASDS). However, according to Ahmad and Seet (2009) and Kee *et al.* (2017), many businesses enterprises encounter failure mainly due to financial bottle necks. Therefore, financial support enhances success and survival of these business enterprises including cassava based ventures.

Agripreneurial orientation (AO) and behaviour are the constructs that can potentially enhance entrepreneurs' optimal outcomes. This is because it is a way of enabling them to be proactive, innovative, risk takers, independent / autonomous as well as aggressive. Using AO moreover, helps agripreneurs to act not only on the demand and supply but also enables them generate opportunities while creating demand in the existing market (Kee *et al.*, 2017).

Agripreneurial orientation, by considering characteristics such as risk-taking, innovativeness and proactivity has been a very familiar concept that has received substantial conceptual and empirical attention in modern entrepreneurship research (Soininen, *et al.*, 2012).

In entrepreneurship, the main point is that, it is a progression which relies on not only opportunities but also on the individual agripreneur (Shane, 2012). This is because, it involves other procedures such as discovering, evaluating as well as exploiting opportunities, which requires individual characteristics. These features include; personality qualities and psychological attributes of entrepreneurs that account for their capability of realizing opportunities and use them fruitfully (Baum & Bird, 2010; Nga & Shamuganathan, 2010; Sahut & Peris, 2014).

Currently, the world production of cassava stands at about 291,992,346 tonnes and Sub Saharan Africa (SSA) is the highest global producer with 177,947,697 tonnes accounting 58.7% of the world production by the year 2017 (FAOSTAT, 2019). This indicates that the production trend of the crop has been high as the area under cassava and the total production increased.

In Sub-Saharan Africa (SSA), cassava is grown majorly by low-income cassava producers; with minimal or absence of external inputs. It is intercropped with other crops such as cereals, legumes, bananas as well as oil palm crops. It is a food crop in which approximately 90% of its roots are eventually made or human use while 10 % is partially processed into animal feed (FAO, 2013; Sanni *et al.*, 2009). Since the last two decades, the production of cassava has accelerated more than the population in the region, which lead to the boosted supply of cassava food to about 60 kilograms *per capita* in a year.

Cassava consumption in Africa is on top of other staple food such as maize. West Africa has been the leading cassava producer for the last two decades, accounting for 60% computed from a 29million tonnes increase from 47 million tonnes (FAO, 2013). Sanni *et al.* (2009) further found that, cassava productivity went up since SSA realized that cassava has a potential to be industrial crop which could lead to income diversification, foreign exchange earner and source of jobs. In some other countries, cassava is consumed on daily basis (Koyama *et al.*, 2015). Abass *et al.* (2013) contend that cassava products contribute to the improvement of livelihoods of many producers and sellers. It also helps in alleviating poverty among small and medium agripreneurs as well as resource poor urban dwellers (Nweke *et al.*, 2004). Therefore, this implies that the quantities produced are sufficient to establish cassava-based enterprises in order to enhance its agri-enterprise growth. However, according to Ahmad and Seet (2009) and Mui *et al.* (2017), many enterprises encounter failure mainly due to financial bottle necks. Therefore, through offering the financial support enhances success and survival of these business enterprises including cassava.

In Kenya, cassava (*Manihot esculenta* Crantz), is ranked second in importance after Irish potatoes and produced in large volumes within western, eastern and coastal regions. Its consumption only remains confined within the human consumers (Githungiri *et al.*, 2019). According to Larsson *et al.* (2015), Tonukari *et al.* (2015) and Masinde *et al.* (2016), cassava was adopted as a famous crop meant to curb famine. However, cassava was taken as an enterprising cash crop mostly used for industrial purposes worldwide as well as an economic enterprise. The crop is majorly grown in arid and semi-arid lands (ASALs) of western, coastal and eastern regions of the country with a production in 2017 amounting to 1,112,000 tonnes from 90,394 hectares (FAOSTAT, 2019). Western region, where Migori lies accounts for 60% of the total cassava produced.

According to Onya *et al.* (2016), value addition is one of the innovative entrepreneurial activities that can be done to cassava. This activity may be performed using several methods leading to development of distinct products which are eventually crucial in promoting market involvement by small and medium agripreneurs. Since cassava is a highly perishable tuber, agripreneurs have to utilize an agripreneurial orientation mind-set to promptly and properly make innovatively new products. This can be through value addition to increase its shelf life. Among many instances, few of the countries that embrace cassava include Uganda which consumes 80% of unprocessed cassava while Nigeria converts cassava into other finished products such as *fufu*-fermented flour as a product from cassava agri-enterprise (Steven *et al.*, 2010).

In Migori County, cassava plays a key role as a needed food crop. The yield of cassava is approximately 158400 tonnes from 1800 hectares amounting to 88 tonnes per hectare (GoK, 2013). The crop is resilient to drought and requires minimal external inputs and it is therefore, taken to mitigate risks in Agripreneurship as insurance crop. Cassava is, however, termed as a crop for a poor man and produced by many agripreneurs in Migori County but there is little understood about value addition activities. Though there is ready market for cassava value added products, farmers are unable to realize their entrepreneurial skills that can impact on the growth of the enterprise (Lagat & Maina, 2017). Since cassava based enterprise can generate greater benefits, the possibilities for commercialization exist.

As cassava based enterprise is regarded as a risky complemented with greater benefits, it requires to be considered more having enterprising aim rather than be a subsistence crop. To consider growing of this crop as an agri-enterprise, agripreneurs are required to have a given agripreneurial attributes which will lead them in directing agripreneurial activities towards achieving better and sustainable income. Githunguri *et al.*(2019) demystify that cassava is the potential reliable crop since it is an affordable, inexpensive staple food within urban areas. Cassava produce is capable of providing steady income to agripreneurs provided safe products can be produced and other ways it can be sold to urban dwellers in appealing form, having competitive prices relative to cereals.

Agripreneurship is taken as an enterprising business when the cassava based entrepreneur can use basic business principles in organizing and managing the farm through the use of available resources in the most advantageous and innovative ways. On the other hand, farmers with good entrepreneurial orientation attributes may have the ability to take up different production and marketing constructs of cassava farming leading to a better growth of an agri-enterprise (Fayaz, 2015). Further cassava in Migori County is facing challenges in developing innovative products. The reasons behind these limitations are related to majorly selling cassava in raw form indicating that there is need of coming up with innovative ways of developing

1.2 The statement of the problem

Despite the Kenyan government promoting and creating opportunities for entrepreneurship in small and medium enterprises, agripreneurs in Migori County face low growth despite huge production of cassava. These agripreneurs of cassava remain poorly oriented to take cassava-based small and medium enterprises to the growth level. This is associated with low innovation, low risk taking, low pro-activeness, low-competitive

aggressiveness and non-autonomous in value addition and diversification of cassava products however, the reasons are not clearly addressed. This study contributed in filling the knowledge gap in agripreneurial orientation in Migori County.

1.3 Objectives of the study

1.3.1 General objective

The general objective is to contribute to the performance of cassava-based small and medium agrienterprises through enhanced agripreneurial orientation constructs in Migori County.

1.3.2. Specific objectives

- i) To characterise cassava-based small and medium enterprises in Migori County.
- ii) To determine factors influencing agripreneurial orientation levels among cassava agripreneurs in Migori County.
- iii) To assess the influence of agripreneurial orientation constructs on growth of cassava-based Small and Medium Enterprises (CBSMES) in Migori County.

1.3.3 Research Questions

- i) What are the socio-economic characteristics of cassava-based enterprises in Migori County?
- ii) What are the factors that influence agripreneurial orientation levels among cassava agripreneurs in Migori County?
- iii) What is the influence of agripreneurial orientation constructs on growth of CBSMESs in Migori County?

1.4 Justification of the Study

The study focused on cassava-based enterprises in Migori County because, cassava is one of the traditional crops cultivated, consumed and traded by many small and medium agripreneurs in the county. Determination of effect of agripreneurial orientation on growth assists in achieving the Sustainable Development Goal on ending hunger achieves food security and improved nutrition and promotes sustainable agriculture.

Lead to attainment of 2nd SDGs, which is food security and the Kenya envisioned blue print vision 2030 under agriculture (economic pillar). It also formed a basis for interventions to help farmers develop their cassava based enterprises. It guides the

government, academic institutions, policy makers and farmers in formulating effective policies and strategies add to the existing body of knowledge agripreneurial entrepreneurial orientation. The findings forms the basis for making policy recommendations that enhance cassava enterprises development. It contributes to improved collaboration and harmonization of efforts by governmental and non-governmental organization in promoting growth and development of cassava-based agri-enterprises through agripreneurial orientation in Migori County. The findings would be useful to cassava-based agripreneurs, researchers, cassava value chain investors, policy makers and government.

1.5 Scope and Limitations of the Study

The study specifically targeted cassava as the selected agricultural product. Thus only cassava based small and medium agripreneurs with less than 10 workers, who dealt with cassava off farm activities such as value addition to cassava and marketed the products in Sana East and Uriri, Migori County. There was also a limitation of time and financial resources thus, the study was conducted from July 2019 through August 2019.

The reliability of the data depended on the respondent's willingness to respond and ability to remember. Language barrier also was a problem. These challenges were overcome by using local extension staff in order to enhance the trust of respondents hence their willingness to respond. This also solved the problem of language barrier as the extension staff understood the local language.

1.6 Operational Definition of Terms.

Agri-enterprise Growth: it refers to the progress of an agri- enterprise. It was measured in terms of change in sales for the previous three years from the year of data collection.

Agripreneur: is an individual that points out opportunities and goes ahead to exploit them with an aim of earning a profit in agriculture sector. This individual deals with off farm activities such as value addition.

Agripreneurial orientation (AO): this refers to the entrepreneur's style of aligning the thinking in farming enterprises which influences development of an agri-enterprise. AO comprises of dimensions such as innovativeness, risk taking, pro-activeness, competitiveness aggressiveness and autonomy/ independence.

Autonomy: is the propensity to work alone without a guide/ a mentor or being independent. It was measured using the factor loadings generated from the principal component analysis.

Cassava based enterprise: is a business activity which employs between 1 to 20 workers and single person owning and operating it.

Small and medium enterprise: Small enterprise refers to the one that do not employ workers while medium employed at least two employees.

Competitive aggressiveness: refers to the ability to grab opportunities where there is stiff competition in the market environment.

Enterprise growth: it refers to an enterprise succeeding from inception to expansion level, increased profit margins and more workers to attain objective of an enterprise

Innovativeness: an individual is said to be innovative if he/she thinks and comes up with a new product out of existing resources.

Proactiveness: Is the ability to be intelligent in seeing and scanning opportunities of the competitors in the market.

Risk taking: this refers to establishing or running an enterprise that can consume much **finances and the future is not known.**

Value addition: refers to the innovation that is employed to cassava products so as to change its form that can fetch better market prices than selling in raw form. It was measured in terms of the products derived from cassava.

CHAPTER TWO

LITERATURE REVIEW

This chapter contains an overview of cassava in Kenya, the concept of agripreneurship, agripreneurial orientation and agrienterprise growth, factors influencing agripreneurial orientation, measurement of growth of cassava based small and medium enterprises in Migori County, theoretical framework and conceptual framework.

2.1 Overview of Cassava Production and entrepreneurship in Kenya

Cassava production in Kenya is still done at the subsistence level. Farming agripreneurs supply sliced and dried cassava to the local markets at wholesale and or retail shops (Mumbi *et al.*, 2008). Participation of these agripreneurs along the distribution channels is always active within farm gate level, local market centres and retail systems. Lagat and Maina (2017) found that both farming and marketing cassava-based agripreneurs participate innovatively in adding value to cassava.

Self Help Africa (2018) revealed that 76 per cent of the agripreneurs have improved their outputs by 30 per cent. These agripreneurs process their cassava into dried chips which translate into 40% increase on their income. Through the cooperatives, cassava agripreneurs in Nyanza region were trained and empowered to process dried chips and trade in local markets.

Cassava is majorly produced by smallholder farmers who are poor and use it for subsistence purposes. The crop is used as staple food security, however its usage is confined only at roasting and boiling in fresh form in most areas in the country. Nevertheless, regions such as Nyanza and Western, cassava roots are mainly peeled, chopped to make cassava chips or pieces then dried and grounded to flour to make *ugali*. Cassava flour is usually combined with maize/sorghum/millet in the western region, but in coastal regions, its leaves are consumed as vegetables. In Eastern regions such as Kitui and Machakos, the roots are consumed as a snack in raw form (Githunguri *et al.*, 2019).

2.2 Concept of Agripreneurship and dimensions of agripreneurial orientation (AO)

Agripreneurship is a multidisciplinary concept comprising of economic, psychological and sociological viewpoints (Bula, 2012). Moreover, the entrepreneur depends entirely on the profits that are not certain contrary to the daily paid people and the landlords who earn a definite income or salary. Agripreneurial orientation entails the tendency of an entrepreneur to discover new opportunities, indicated by tendency of an individual to embrace risk taking,

proactive and be innovative. Frese and Rauch (2009) contend that AO is not an individual variable but rather relates to the firm processes, which is contrary to recent theories of entrepreneurship. Agripreneurial orientation is a modification of entrepreneurial orientation. It was concerned with agricultural related enterprises in this context. AO comprises of dimensions which are innovativeness, proactiveness, risk taking, competitive aggressiveness and autonomy.

Any firm's innovativeness echoes its propensity to be involved in and offer support to new ideas, compel practicality and promote creative procedures that lead to new products and services as well as technological methods. Agripreneurs initiate entrepreneurial methods and processes through moving resources from the current activities to newly established projects and firms (Lumpkin & Dess (2001); Mirzaei *et al.*, 2016). Firm managers in the agricultural commodity markets may decide to incorporate innovations that contribute to improved efficiency due to presence of minimal or no control over prices received (as price takers). For instance, embracing new technologies leads to efficiencies, better outputs, and improved income for commercial-scale farmers (Nossal & Sheng, 2010). For managers of smaller farms, where financial bottlenecks may inhibit the adoption of latest technologies, organizational innovations like belonging to learning networks and coordinated value chains can lead to improved performance (King *et al.*, 2010; Maertens & Barrett, 2012; Oreszczyn *et al.*, 2010). Small farm managers may have an extra advantage of gaining success with marketing innovations while having extra time in identifying and reacting to opportunities compared to larger farms.

Proactiveness entails behaviours which expects the future downturns, desires as well as the anticipated adjustments. The dimension involves taking the responsibility, expecting and executing latest opportunities as well as creating or taking part in newly established markets (Rigtering *et al.*, 2014). Therefore, any firm is capable of creating a competitive advantage by projecting changes in the future demands. Proactiveness is not limited to propensity to be the priority in the market place with newly developed goods and services. In this regard, an enterprise that is proactive always initiates things which will attract the reaction from competition (Lumpkin & Dess, 1996).

Risk-taking is another construct of agripreneurial orientation. It provides a reflection of the uncertainty emanating from entrepreneurial behaviours (EB) (Lumpkin & Dess, 1996; Rigtering *et al.*, 2014). EB encompasses investing an important amount of resources to a project possessing high chances to fail. Therefore, agripreneurs should have to express a vibrant capability in defining the proper path for their enterprises in front of uncertainty. The

focus here lies in the standardized and calculated risk taking in place of extreme and non-controlled risk-prone activities (Morris *et al.*, 2008).

Another dimension of agripreneurial orientation is competitive aggressiveness. It is viewed to be equated with firm or company efforts to be a leader regarding performance while making others weak among the competitors (Hughes & Morgan, 2007; Khalili *et al.*, 2013; Lumpkin & Dess, 2001). Further, Competitive aggressiveness can be a way of response to counter the intentional action of the agripreneur. Firms with high competitive aggressiveness view their competitors as the enemy and strive to defeat them.

Competitive aggressiveness presents the extent at which a firm decides on the competition and attempts to seize the achievement from its rivals in the market (Hughes & Morgan, 2007). There is a higher chance of occurrence of aggression by aligning resources to face the competitors according to the ways they destroy the market or generate the results by lasting aggression in the tactics used. In competitive aggressiveness, the key important factors considered is social responsibility, values as well as ethics. This is due to the fact that some firms should champion healthy competition and respect the norms of a certain community, values.

Enterprises that are determined in acquiring some market share, is able to achieve it through use of various marketing strategies. These strategies include; price competition, quick dispatching and duplication of products or creative strategies of the competitors (Aktan & Bulut, 2008). Moreover, competitive aggressiveness indicates a more direct and strong willingness of a firm or business entity to encounter its business rivals for strengthening the sustainability in the market.

Autonomy/independence is viewed as the contribution of the action performed by individual or group in order to come up with an idea or vision and execute it to its end (Lee & Lim, 2009). Walter *et al.* (2006) posit autonomy as the degree in which actors such as individuals and teams in an organization do operation autonomously, incorporating important decisions, and are at liberty to chase those opportunities. The control in agripreneurs is nearly intrinsic. The individual with internal control possess self-confidence and probably looking for autonomy and independence. Moreover, an individual persons is more likely to be an entrepreneur if they have willingness to be independent and autonomous (Callaghan, 2009).

2.3. Value Addition as Cassava-Based Enterprises

Cassava value addition is practiced in Kenya to improve livelihoods of cassava-based agripreneurs. Githunguri *et al.* (2019) revealed that cassava is freshly marketed in Machakos

community of Kenya since customers consume in raw form to boost virility. Koyama *et al.* (2015) contend that other than just growing cassava as a subsistence crop within Africa, there is a bigger potentiality in its utilization within industries for transforming it into other value added products. Several products which can be derived from it include High Quality cassava flour (HQCF), starch, cassava chips, as well as ethanol. Asogwa *et al.* (2013) employed descriptive statistics to analyse the socio-economics of cassava marketing in the Benue State in Nigeria. The findings showed that cassava was characterized by stiff competition and marketing margins for an average marketer was estimated at 31%, indicating that cassava marketing was a profitable agri-enterprise.

Odongo and Etany (2018) used a value-chain approach to estimate the margins for different cassava derivatives. It emerged that cassava was marketed in three product forms namely; tubers, flour and chips with fresh tubers dominating the market. However, there was a challenge of lack of market information for the processed cassava products, making agripreneurs not motivated to add value to cassava. A study done in Western and coastal regions of Kenya, indicated that cassava flour (33%) and dried chips (43%) were majorly produced. Moreover, composite flour and crisps were also produced in both of the regions and the processing were small scale characterised by owner operating as a worker and operations were done in the open air, with the Busia, Migori and Coast region having 85%, 67% and 57% respectively (Gacheru *et al.*, 2016). The study further showed that processing was faced by challenges ranging from irregular and insufficient supply of cassava accompanied by seasonality in demand and products, absence of value addition perishability of raw cassava, absence of capacity building within processing.

2.4. Determinants of Agripreneurial Orientation in Farm Based Enterprises

There are different factors employed by various researchers in determining entrepreneurial orientation. Konté *et al.* (2019) study used principal component analysis to determine on farm performance of small scale rice farmers in Niono, Mali. The study revealed that Entrepreneurial behaviour is taken as initiation and innovativeness years of schooling and credit amount improved performance through post-harvest losses reduction. Moreover, land size, values of the farm assets and accessing model farms boosted performance of the farm through sales and profitability.

Wanyonyi and Bwisa (2015) study used both demographic and social factors to identify factors influencing entrepreneurial style among the farmers in Kiminini, Kenya. Age, marital status and social factor influence entrepreneurial style of innovativeness and risk

making constructs of the agripreneurs. However, educational level, farm size and psychological factors did not influence on AO. However, the number of employees, growth in terms of size of the farm was not considered. Baranenko *et al.* (2014) found factors that must exist for formation of innovative-oriented entrepreneurship. Firstly; presence of positive attitude towards entrepreneurship and presence of innovative capabilities within the society to explore available opportunities.

Secondly is presence of high entrepreneurial activities to make individuals to form innovative section of business enterprise and thirdly is the presence of entrepreneurs' desire for justifiable development which enable them pinpoint signals arising from within an external business environment. Fourth is the external environment such as sufficient financial support, accessibility to basic, applied as well as technological access influences innovation which is one of the constructs of AO. Lastly, the national economy and capability to perform innovation influences positively the AO for the individual entrepreneurs. Kamau (2016) state that creativity, training programs and model of delivery have influence on the growth of business.

2.5 Relationship between AO and SMES' growth

Cassava based Enterprise growth may entail change in assets, sales, profits and employment (Allison *et al.*, 2006). In SMES, there are two types of growth which may be horizontal or vertical. Horizontal growth involves formation of more enterprises within one level while employing a certain number of workers within one business venture. Conversely, vertical growth refers to the transition to SMES (Kamau, 2016). Agripreneurs are hypothesized to be more risk takers compared to entire population. The motivation to initiate and run an enterprise is directly related to risk perception of the agripreneurs. Block *et al.* (2015) in the study on risk attitude differences among entrepreneurs found that individual creativity-motivated entrepreneurs are more tolerant to risks. Further, it was found that entrepreneurs with previous successes experiences in risk taking were ready to take more risks.

Alembummah (2015) borrowed Lumpkin and Dess (1996) multidimensional approach of EO construct to examine influence of the concept in Small and medium Enterprises growth in food processing industry in Ghana. A multiple regression and single tail test were used and found that AO constructs affected the environment surrounding the business enterprise, leading to its growth. Moreover, aggressiveness and reactivity were the greatest AO constructs influencing enterprise growth. Adu-Darko (2017) however, argues that for any

leader to be a transformational entrepreneur there should be attributes manifested for instance, innovativeness, risk taking tendency and visionary resulting to the great growth among the Small medium Enterprises. Therefore, proposed study seeks to determine the presence of risk taking, innovativeness and autonomy when there is a stable and enabling surrounding.

Agripreneurial orientation (AO) enhances growth of a small agrienterprise as vibrant AO enables enterprises discover and reveal extra market opportunities by gaining higher prices and bypass competitors in the market environment (Delmar & Wiklund, 2008; Fairoz *et.al.*, 2010; Ylitalo , 2010). Moreover, any business entity possessing high AO targets at gaining premium market advantages, raising prices of goods as well as exploiting those opportunities existing to overtake their competitors.

There are other empirical evidences showing that there was absence of consensus on the impact performance of an enterprise. Studies by Lumpkin and Dess (2001) and Slevin and Schultz (1984) reported that there was lower association existing between enterprise orientation and its growth. Further, according to Frank *et al.* (2010), there was statistical significance relationship that existed between entrepreneurial orientation and business performance.

2.6 Measurement of growth of an agrienterprise

There are several studies on the measurement of growth of a small and medium enterprise. Other researches have not been able to generate objective nature of measuring growth of an enterprise. Since firm growth is non-one-dimensional in nature, different measure, growth has been measured using different aspects which made it yielded different outputs, making it difficult to compare various research outputs (Tirfe, 2015). In common cases, growth has been measured using sales or revenue from an enterprise, number of employees, performance of an enterprise, market share, asset of the enterprise as well as the profit (Fairoz *et al.*, 2010; Lumpkin & Dess, 1996; McPherson, 1996; Robson & Obeng, 2008).

Tirfe (2015) measured growth of an enterprise using employment. The study went ahead to use the difference in employment since the inception of the enterprise and the time of survey. This was so since data was readily available and could be accessed and remembered with ease by the owners of the enterprise. The employment is not bound to be affected by the volatility in the economy like price inflation. The aspect of resource based view theory was appropriate for the application of employment to measure growth of an enterprise. The two point of the employment is normally used viz., number of employees during the time of

beginning of an enterprise and the number of employees during the time of data collection/survey.

A study by Nkwabi and Mboya (2019) on reviewing the factors affecting growth of small and medium enterprises (SMES) in Tanzania, revealed that most of the SMES in that country were mostly affected by a number of constraints. These challenges were but not limited to constraints of financial, capital, poor technologies as well as rigid regulations. The study further recommended provision of financial help by reducing the cost of borrowing loan (interest rate) and easing the procedures to borrow loans to be channelled to small and medium enterprises. This will enable CBSMEs avail the required capital finances to run their respective businesses.

There are personality characteristics of entrepreneurs that have effects on performance of an enterprise and they have distinctive effects in various stages of ventures growth (Kotey & Meredith, 1997). Wijewardena *et al.* (2008), used a sample of 500 small- to medium-sized enterprises in 2004, empirically showed that entrepreneurial mind-set is effective for high performance during the introductory and decline phases. However, during growth and maturity phases, an administrative mentality or a combination of both (administrative and entrepreneurial) lead to high performance.

2.7 Theoretical Framework

This section highlights different theories underpinning (grounding) the intended study. Some of the theories that were employed in this study include; Subjectivist theory of entrepreneurship, resource based view theory (RBV) theory and growth theory of the firm as discussed below.

2.7.1 Subjectivist Theory of Entrepreneurship

Subjectivist theory was used to underpin this study. The theory was developed by Mahoney and Michael (2005) and it posits that there should be entrepreneurial realization of already established opportunities and creativity that enable entrepreneurial individuals act amongst themselves to generate economic profits. The theory puts emphasis on the subjective nature of agripreneurial discovery and the way some things like entrepreneurs experience and the initial knowledge is able to influence the views of opportunity. Kor *et al.* (2007) explored recent theories that can potentially be applied in elaborating the entrepreneurial orientation scenario and the way it is related to the surest antecedents. They further related presence of

resources to enable innovation such as technological knowhow, skilled and experienced labour, resulting in greater levels of AO among the firms.

The theory was applicable to the individual agripreneurs in the context of this study and AO is assumed to be influenced by the following factors; Supportive external environmental factors and internal environment/Agripreneurs' characteristics which translated to the realization of cassava-based enterprise growth among CBSMES in Migori County.

2.7.2 Resource Based View Theory (RBV) of Growth of an Enterprise

Another theory that underpinned this study was the resource based view theory (RBVT). The RBVT strives to give answer as to why do firms within same industry differ systematically regarding their competitiveness or performance. It further asks other questions as to why do various small enterprises grow when others stagnate and be inactive while others eventually die. Barney (1991), Peteraf (1993) and Wernerfelt (1984) tried to give explanation regarding RBVT that the differences within the industry in competitiveness is grounded on every firm's unique bundle of resources and its competences. This theory uses internal perspective to elaborate and explain the way a firm's exceptional resources and abilities to give service as a platform to gain returns above the average.

According to Barney (1991), this theory further puts into consideration the internal resources and capabilities of the firm to indicate the variance within the growth of small enterprises to the level which those resources become treasured, rare, non-perfectly matchless and cannot be substituted anymore. When provided with external/environmental environment which have opportunities and threats, enterprises having pertinent internal resources and abilities can both utilise the surrounding opportunities and as well prosper in challenging external threats and bottlenecks (Tirfe, 2015).

2.8 Theory of the Growth of the Firm

According to the book of Penrose (1959), as a theory of growth of the firm, there are vibrant principles controlling growth of business entities and the rate that will enable them (firms) thrive progressively. In this theory, Penrose claimed that firms (business entities) comprise of a package of both internal and external resources which aid a business entity in growing as well as gaining competitive-edge. Moreover, size of the firm accompanies process of growth while growth of the business entity is determined by its effective and innovative managerial resources. Moreover, she recommended that overlooking factors influencing growth lead to failure and loss of the competitive edge of the business entity.

2.9 Research gaps from the literature review

There are several gaps identified from the literature regarding this study. The former researchers used several models entrepreneurial orientation and its growth in. Multivariate Tobit is one of the alternatives but its weakness is that it will not consider implicit ordering in any direct manner. Also treating ordering as a linear regression assumes the move from one position to another (Gujarati, 2005). Furthermore, OLS has weaknesses of causing biasedness and non-efficient estimates of coefficients of independent variable for binary/ordinal regressed variables. Ordered Logit and trivariate ordered Probit models was useful here thus they were built by considering latent regression format of the binomial function. Anderson and Eshima (2013) employed Hierarchical Linear Regression model to determine influence of firm age and intangible resources on the relationship between EO and firm growth among the Japanese Small and Medium Enterprises. The study used a sample size of 207 CBSMES and found that younger firms were capable of capturing value of entrepreneurial strategies in terms of the growth rate of the organization than the older counterparts.

A study by Khalili *et al.* (2013) used both Confirmatory factory Analysis and Structural Equation Model and Path analysis to establish influence of EO on innovative performance. The study was conducted based on the Petrochemical Company in Iran. The study further aimed at discussing the relationship that existed between EO and innovative performance of the respondents. The study supported that the dimensions of entrepreneurship orientation have impact on innovative performance with the exception of proactiveness and competitive aggressiveness. Goswami *et al.* (2014) and Jain (2010) posit that cluster analysis is the approach that are used in grouping objects depending on intrinsic, observed and measured features or commonalities. Clustering aims at finding the structure in data making appropriate for exploration. Therefore cluster analysis was conducted since it is a multivariate technique just like PCA for clustering Agripreneurial orientation. Goswani *et al.* (2014) further contended that Cluster analysis (CA) can be used to reduce dimensions or constructs. AO was measured using categorical (Nominal) scales since components of AO were categorically clustered into five categories or groups because their attributes are mutually exclusive (Bhattacharjee, 2012).

Both multinomial Logit (MNL) and Mutinomial Probit (MNP) models were could be used for analysing this objective. However, ordered logit model was more appropriate due to its computational simplicity in calculating the choice probabilities that are expressible in analytical form than MNP model (Kropko, 2007). Moreover, the computational burden of Ologit specification is made easier by using odds ratio. Multinomial Probit model was not

used because of its weaknesses of the requirement that multivariate normal integrals must be evaluated to estimate the unknown parameters. This makes MNP model not to be consistent for the MNL model. MNL model further, presents analysis of decision across at least two categories, allowing the determinants of choice of probabilities for various categories unlike the binary Logit models (Wooldridge, 2002).

The principal component was chosen first for the largest variance with huge percentage of dependent variance. This was an index of goodness of fit. The remaining Components with low percentages of the explained variance were dropped. The reduced cluster of groups were used as dependent variable, AO. This was finally analysed using Multinomial Logit regression model. The merits of MNL are that it considers mutual exclusiveness among the variables, it does not assume normality, Homoscedasticity and linearity (Starkweather & Moske, 2011).

According to Anastasopoulos *et al.* (2008), multivariate model does comparatively well as a result of the general approach while dealing with the relationships between the regressed and the latent variables. The assumption of this model is that, there is latent variable or a parameter which determines the relationships existing between the last and independent variable vis-à-vis the disturbance error term. The key drawback of Multinomial Logit Model is the independent of irrelevant alternative (IIA) property/ assumption. This feature states that the ratio of the probabilities of choosing any two alternatives is independent of the attributes of any of the attributes in the choices set. Therefore, this study focused on using ordered Logit and Probit models. Further, Opondo (2018) focused on the commercialization aspects of cassava within Siaya and Kilifi and left out agripreneurial orientation in Migori. There are limited and few studies on cassava agripreneurship and that is why this study narrowed down to Migori County specifically in Uriri and Suna East SubCounties.

2.9. Conceptual Framework

Conceptual framework explains interactions existing between variables within the study and indicating these relationship diagrammatically (Mugenda and Mugenda, 2003). Figure 2.1 depicts the links between different AO constructs among CBSMEs and factors influencing AO. This may be influenced by internal characteristics/ factors including age of the agripreneur, size of the enterprise, level of education, and years of experience in cassava value addition, Enterprise ownership. External environmental factors such as market access, access to finance/ credit, access to extension trainings as well as social networking were used as independent variables. Also CBSMEs characteristics influence AO.

The enterprise growth may be realized by emphasizing on the market, gaining more gross margins as well as reducing losses within process of value addition which additionally lead to the growth of an enterprise AO of the cassava based entrepreneurs or processors are assumed to be influenced by individual characteristics and institutional attributes like enterprise size, level of education and If the agripreneurs properly use their entrepreneurial orientation, this study anticipated them to improve their cassava sales lead to increased income leading to improved growth of the enterprise.

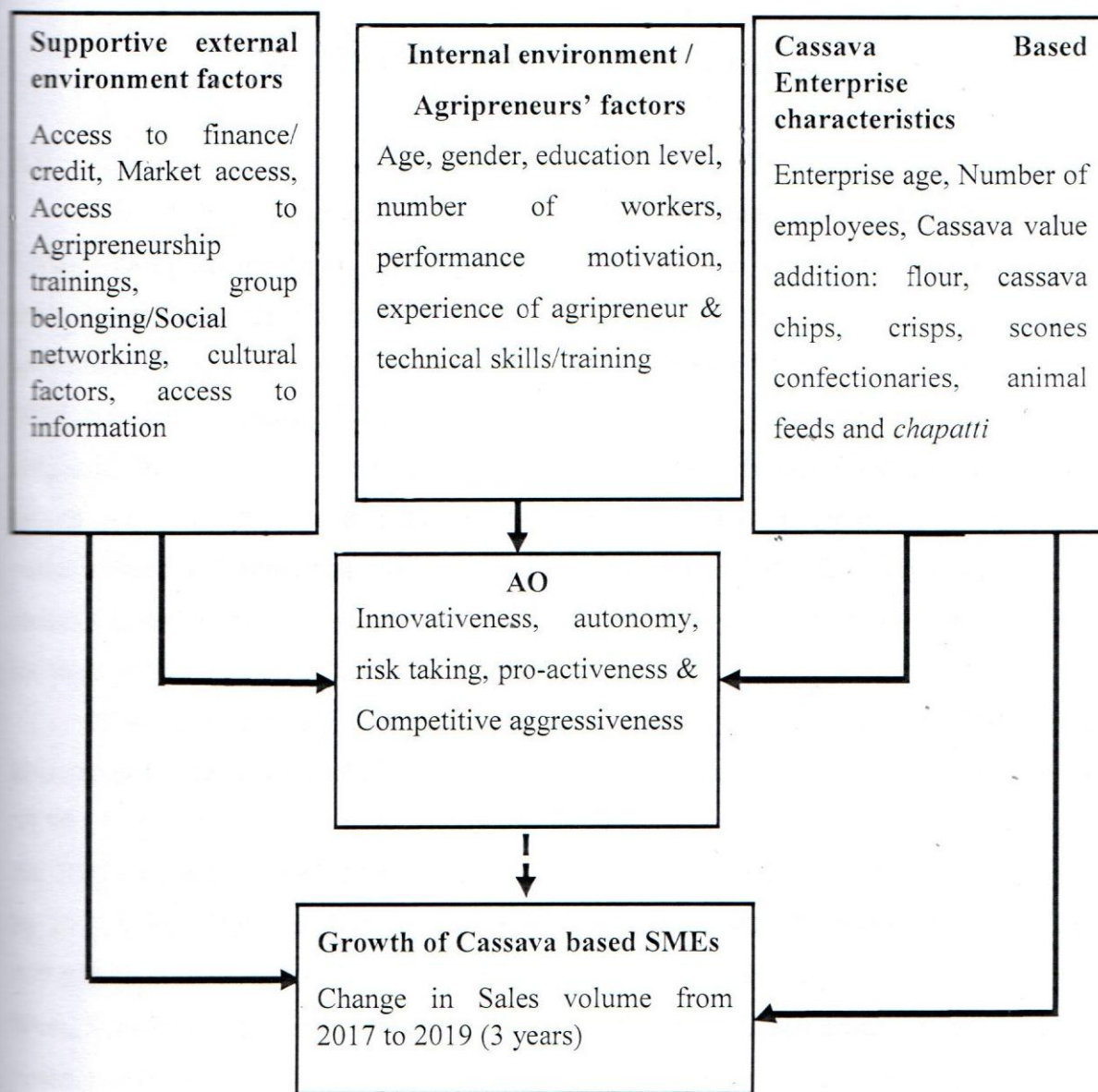


Figure 2.1: Conceptual framework on the effects of agripreneurial orientation on growth of cassava-based small and medium enterprises.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. The study area

This study was specifically conducted in Suna East and Uriri Sub-Counties in Migori County during the month of July-August, year 2019 using cross-sectional research design as data was collected at a specific point in time. Migori is geographically located between coordinates of $1^{\circ} 4' 0''$ S and $34^{\circ} 28' 0''$ E with a population of 1,116,436 people as per the 2019 population census (KNBS, 2019). Crops grown in Migori include beans, maize, sorghum, finger millet, Sweet potatoes and cassava. Cassava is the second tuber crop majorly grown and sold after sweet potatoes (MCIDP, 2016). The agripreneurial orientation of cassava based agripreneurs is still unknown the region was suitable for study since it is where cassava is predominantly grown and cassava agri-enterprises can grow leading to improved incomes of the smallholder cassava farmers.

It is approximately 368 kilometres from Nairobi with an area of 2596.5 Square kilometres and 18% is covered by water surface. Migori is located between Longitude $34^{\circ} 49' 59.99''$ E with the Latitude of $0^{\circ} 39' 59.99''$ N. It has a population of 917,170 people as per the 2009 population census (Anika, 2016). The population Suna East and Uriri was projected by 2017 to be 131,652 and 156,906 people, respectively (MCIDP, 2016). The county holds 409,836 farm households (KNBS, 2013). Its sub counties include; Uriri, Kuria East, Kuria West, Suna East, Suna West, Nyatike, Rongo and Awendo. Crops grown in the County are; beans, maize, sorghum, finger millet, Sweet potatoes and cassava. Cassava is the second tuber crop majorly grown after sweet potatoes. The map of the study area is illustrated as shown in Figure 3.1.

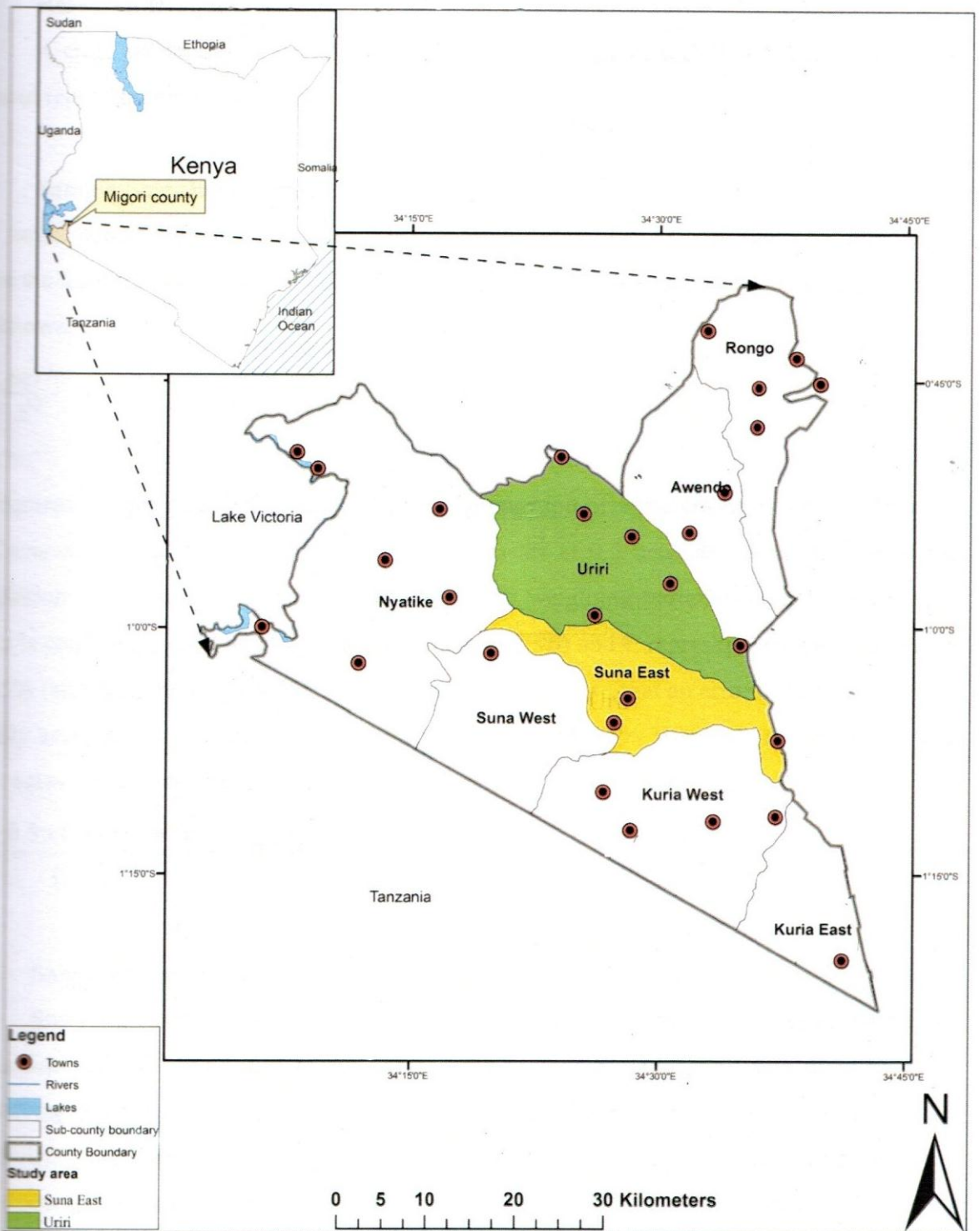
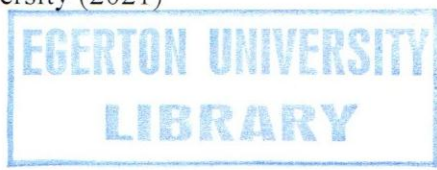


Figure 3.1: Map of Migori County showing Suna East and Uriri

Source: Geography Department, Egerton University (2021)



3.2 Research Design

A cross sectional research design was used. Data were collected at one point at a time without repetition within the period of July-August 2019.

3.3 Sample Size Determination

The target population was agripreneurs in Migori County. The sample size was determined using the formula established by Anderson *et al.* (2007). It was used because the population is not known.

$$n = \frac{pqz^2}{E^2} \quad (3.1)$$

Where;

n =required sample size of the study, P denote proportion of variables of interest (proportion of Cassava small and medium entrepreneurs. P is set at 0.5 because the proportion of the population is unknown with certainty, q is $1-p$ (the weighting variable) thus $1-0.5$ which is 0.5, z is confidence level at 95% (Standard value of 1.96) and E represent margin of error set at 7.5% (standard value of 0.075). Anderson *et al.* (2007) posit that an error of less than 10% is usually acceptable, thus this study used margin of error of 7.5%. This leads to the sample size 171 cassava Small and medium entrepreneurs computed in equation 3.2 below;

$$n = \frac{\{0.5 \times 0.5 \times (1.96^2)\}}{(0.075^2)} = 170.738 \cong 171 \quad (3.2)$$

3.4 Sampling Procedure

Snowball sampling was used to identify cassava-based small and medium enterprise respondents of 171 small and medium cassava agripreneurs. Sampling was done by; first identifying Cassava based agripreneurs with number of employees ranging from 1 to 20 (CBSMES), secondly, identified respondents were asked to recommend other agripreneurs they knew to meet the criteria within all markets in the wards of the Uriri and Suna East Sub-Counties with 80 and 91 respondents respectively. Snowballing was used because sampling frame and sub-population size was not known (Bhattacharjee, 2012). Using the projected population for Suna East and Uriri sub-county in 2017 was used to arrive at proportionately 78 and 93 respondents in Suna East and Uriri respectively.

3.5 Methods of Data Collection

The target for 171 cassava small and medium entrepreneurs (respondents) were met in Suna East and Suna West sub counties of Migori County. These were group of agripreneurs that were running small businesses by marketing at least one cassava products within the county and provided the information that was required during data collection/research.

Prior to data collection, pretesting was done in Rongo which was a non-sample area. Questionnaires (30) were used during the exercises to interview the respondent though, 10 % of the sample size is supported by Conelly (2008). Data were collected using semi-structured questionnaires and copies were administered to 171 respondents.

3.5.1 Reliability

Reliability of the data collection tool can be measured using consistency and dependability. Piloting was used to test inter-rater reliability. Internal consistency reliability was tested using Cronbach's alpha developed by Lee Cronbach in 1951 (Bhattacharjee, 2012). The alpha- α for agripreneurial orientation was 0.9401 while growth was 0.8648 when $\alpha > 0.7$. This indicated the reliability and consistency of the survey questionnaire (Aziz *et al.*, 2014).

3.5.2 Validity

Validity of the survey was deemed of good quality when there was internal validity, construct, and external and statistical conclusion validities (Bhattacharjee, 2012). This was achieved by conducting a pre-test and by considering comments from my advisors and experts, and remove irrelevant items from the instrument. Reviewing the clarity of wording. Further, factor analysis (FA) was done to test for validity and eliminate redundancy of the data (Gichichi *et al.*, 2019).

3.5.3 Cronbach Alpha

The study employed Cronbach alpha to examine the reliability of the questionnaire. It was used under the assumption that multiple items are measuring the same underlying construct. It is a measure of internal consistency between zero and one (0 and 1) where a value more than 0.7 was considered acceptable in social science research. It is expressed as

$$\alpha = \frac{\bar{nr}}{1 + r(n-1)} \quad (3.3)$$

Where n represents the number of items and \bar{r} is the mean correlation between the items.

3.6 Methods of Data Management and Analyses

Before actual data collection, pre-test of the questionnaire was done in Rongo Sub-County and corrections were made to identify and correct ambiguous and unclear questions. Data were collected within months of July 2019 through August 2019 in Suna East and Uriri Sub-counties of Migori County, Kenya. Well trained enumerators filled the questionnaires using personal interviews from cassava-based agripreneurs selling cassava products. The questions were in two sections including; internal/ demographic and external environmental factors as well as agripreneurial orientation factors/constructs.

This section presents the empirical models that were used in the analysis of each objective. Both descriptive and inferential analysis were applied. First, the study presents a computation of agripreneurial orientation index which was later fitted in the ordered logistic regression model. To address the second objective concerning effects of internal and external factors on agripreneurial orientation. The third objective on growth of agripreneurial orientation was computed to characterise cassava based small and medium agrienterprises, descriptive statistics was computed. Principal component analysis (PCA) with clustering was employed to determine different agripreneurial constructs that are prevailing among the respondents. To understand factors influencing agripreneurial orientation, data were analysed using ordered Logit Model. To carry out the influence of agripreneurial orientation on growth of cassava based small and medium enterprises, data was analysed using probit logit model.

The data, measures employed here, as well as the descriptive statistics are moreover specified under every objective that was analysed. Further, the results are showcased in paper format of which every objective has been presented with section-specific introduction, brief reviewed literature, methodology, results, discussion and references specific to that objective. This has been indicated from chapter 4 to 5 of this work.

3.7. Diagnostic Tests

Diagnostic tests were carried out on data before analysis to check for the following problems; correlation, multicollinearity, heteroskedasticity and outliers. Multicollinearity was tested using two methods; correlation matrix, variance inflation factor (VIF). Breusch Pagan test was used to test data for heteroskedasticity (Wooldridge, 2010). The scatterplot was used to check for the outliers.

3.8 Test for Multicollinearity and Heteroskedasticity of Variables

Before running the ordered Logit model analysis, various preliminary diagnostic tests were performed of issues of multicollinearity and heteroskedasticity for internal and external/environmental factors used as shown in Table 3.1. Multicollinearity is a condition of the presence of high inter-correlations existing among continuous explanatory variables. To identify the problem of multicollinearity or association among the potential continuous variables; variable inflation factor (VIF) was used. (VIF) shows how the variance of an estimator is inflated by the presence of multicollinearity (Gujarati, 1995). It analyses the magnitude of multicollinearity problem. As a rule of Thumb, the values of VIF greater than 10 (that is, R² exceeding 0.90) are often taken as a signal that the data have multicollinearity problems (Gujarati, 1995). Stata version 13 was used in computing the VIF values. To evade issues of multicollinearity, it is quite necessary to eliminate the variable with value 10 and more from the regression analysis (Gujarati, 1995).

To detect heteroskedasticity all independent variables used in the model for analysis is, white tests was diagnosed and the results are shown in Table 3.2.

Table 3.1: Test for multicollinearity

Variable	VIF	1/VIF
Skilled employees	2.100	0.477
Number of Employees trained	1.800	0.555
Number of employees operating enterprise	1.790	0.559
Revenue from other cassava products	1.600	0.624
Age of agripreneur	1.410	0.707
Enterprise age	1.400	0.713
Quantity of cassava consumed daily	1.200	0.834
Land size under cassava	1.160	0.861
Mean VIF	1.560	

The results showed that there was heteroskedasticity because the chi-square of 78.3 is huge and significant at 5%. This was corrected by using robust standard errors for entire analyses. This further show that all the variables were robust enough to be included in the analysis therefore PCA was suitable for further analysis.

Table 3.2: Summary Result of White Tests for Heteroskedasticity

Source	Chi-Square value	D.F	P<0.05
Heteroskedasticity	78.3	57	0.0321
Skewness	8.98	10	0.5342
Kurtosis	3.76	1	0.0526
Total	91.03	68	0.0326

Note: DF-Degree of freedom

3.9 Objective 1: To Characterize Cassava-Based Small and Medium Enterprises in Migori County

This objective was analysed using descriptive statistics including: measures of central tendencies such means, variances, standard deviations, and percentages. This was used to describe the characteristics of cassava based small and medium enterprises.

3.10 Objective 2: to determine internal and External Factors Influencing Agripreneurial Orientation levels of cassava-based small and medium agripreneurs in Migori County.

This objective was analysed using ordered Logit model (OLM). Agripreneurial orientation was measured using principle component where a Simpson index was generated. AO was generated from the difference between mean and standard deviation. OLM was used to identify internal and external factors influencing agripreneurial orientation

Other models that could be considered include the following: ordinary least squares model but the bottlenecks of this model is that, the assumptions of OLS would be violated when using data that gives none-interval dependent variable. Further, OLS is not the preferred method of estimation for such models because of two limitations, namely, that the estimated Probabilities from LPM do not necessarily lie in the bounds of 0 and 1 and also because LPM assumes that the probability of a positive response increases linearly with the level of the explanatory variable, which is counterintuitive (Gujarati, 2012).

Multinomial logit model could also be appropriate model in analysing factors influencing agripreneurial orientation, which is ordered in nature but was not suitable used as it assumes that the data that is without any order of categories, but rather take categories that are nominal thus, losing information contained in the ordering. Another model that could be suitable was ordered probit regression, but the interpretation odd results will be different from

the OLM. Therefore the ordered logit model was applied in determining internal and external factors influencing agripreneurial orientation of cassava based small and medium agripreneurs in Migori County.

Before fitting this objective into a model, Principal component analysis (PCA) was used to cluster and categorise AO (innovativeness, risk taking, autonomy, proactiveness and competitive aggressiveness) among the respondents into groups which are uncorrelated principle components accounting for the total initial variance. Goswami *et al.* (2014) used Principle Component Analysis (PCA) with clustering to identify and grouping types of farm households by considering income levels and varied income source. They further used seventeen (17) variables to derive 5 principle components, while further incorporated 5-clusters from principle component analysis outputs into clusters to generate 4-clusters that signified farming households.

Principal Component Analysis (PCA) is a multivariate statistical tool, was employed to reduce the big number of variables within the data sets into the reduced dimension to showcase a manageable and simplified component that best fits them. Further, factor analysis was employed to analyse the scores generated from every statement and produced one score for agripreneurial orientation of cassava-based small and medium agripreneurs. This means that PCA generated components/indices that are not correlated from the early set of x correlated components. According to Wu (2012), every index should be derived from the linear weighted combination of initial components.

Statistical Package of Social Analysis (SPSS) software was first used to measure sample adequacy which was later measured using Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sampling Adequacy. The KMO value should be greater than 0.5 for a satisfactory factor analysis to proceed, while a significant Bartlett's Test value indicates that there some relationships between the variables included in the analysis (Field, 2005; Yong & Pearce, 2013). Additionally, communalities after extraction should probably be above 0.5 (Field, 2005; Yong & Pearce, 2013). Field (2005) added that, the average communality should be above 0.6 for sample size greater than 250, in this case the sample size was 171 observations. To achieve this, the ordered Logit model was employed. This is because the dependent variable was ordered and discrete in nature (Wooldridge, 2010). Cassava agripreneurs who were low in agripreneurial orientation were given code of 0 while those in the middle cluster were coded 1 and finally, those in high were coded 2. This model was used since the levels of agripreneurial orientation were ordered/ranked.

Other models that could be considered include the following: ordinary least squares (OLS) model but the bottlenecks of this model is that the assumptions of OLS would be violated when using data that gives a none-interval dependent variable. Multinomial logit model could also be an appropriate model, which is ordered in nature but was not suitable to be used as it assumes that the data that is don't have any order of categories, but rather take categories that are nominal thus, losing the information contained in the ordering. Another model that could be suitable was ordered probit regression but the interpretation of results will be different from the ordered logit model.

Ordered logistic regression results captured the odd ratios estimates of the dependent variable which was represented by the different discrete levels of agripreneurial orientation. According to Greene (2002), the model explains the relative effects of the explanatory variables on the various outcomes specification by equation 3.4.

$$\begin{aligned}
 Y_i &= 0, \text{ if } Y_i^* \leq a_1 \\
 Y_i &= 1, \text{ if } a_1 \leq Y_i^* \leq a_2 \\
 Y_i &= 2, \text{ if } a_2 \leq Y_i^* \leq a_3 \\
 &\vdots \\
 &\vdots \\
 Y_i &= J, \text{ if } a_{j-1} \leq Y_i^*
 \end{aligned} \tag{3.4}$$

where $a_1 < a_2 < a_3 \dots < a_{j-1}$

That is, we observe an individual Y_i in one of the J ordered categories, these categories being separated by the threshold parameters or cut-offs, the a_s . In other words, the threshold parameters demarcate the boundaries of the various categories of agripreneurial orientation. The ordered logit model estimates not only the coefficients of the X repressors but also the threshold parameters. But note that the slope coefficients of the X repressors are the same in each category; it is only that their intercepts (cut-offs) differ (Gujarati, 2012).

That is why OLM are also known as proportional odds models (Gujarati, 2012).

$$\begin{aligned}
 pr(Y_i \leq j) &= pr(B_1 X_{1i} + B_2 X_{2i} + \dots + B_k X_{ki} + u_i \leq a_j) \\
 &= pr(u_j \leq a_{1i} - B_1 X_{1i} - B_2 X_{2i} - \dots - B_k X_{ki})
 \end{aligned} \tag{3.5}$$

$$Pr[W_i \in \{0, 1, 2, \dots, k\}] = 1 \tag{3.6}$$

That is, Eq. (1.0) gives the (cumulative) probability that Y_i falls in a category j and below (i.e. in category 1, 2... or j).

To compute the probability that a random variable takes a value equal to or less than a given number, we use the cumulative distribution function (CDF) of probability distribution, if the error term u_i is assumed to follow the logistic distribution, we obtain the ordered logit model (OLM) as indicated below.

Models for ordered responses use cumulative probabilities as shown in Eq. (3.5).

Now to compute such probabilities, we use

$$\frac{\exp(a_j - BX)}{1 + \exp(a_j - BX)} \quad (3.5)$$

Which is the CDF of the logistic probability distribution. Note that BX stands for

$$\sum_1^k B_k X_k \quad (3.6)$$

Now the effect of a repressor (internal and external factors) on the ordered dependent variable (agripreneurial orientation) is nonlinear, as it gets channelled through a nonlinear CD. This makes interpretation of the OLM somewhat complicated. To make the interpretation easier, odds ratio is therefore used (Gujarati, 2012). Since the outcomes on the left-hand side of Eq. (1.0) reflect the ordering of the response scale, it is standard to put into consideration the odds ratio defined by

$$\frac{\Pr[Y_i \leq j|X]}{\Pr[Y_i > j|X]} = \frac{\Pr[Y_i \leq j|X]}{\Pr[1 - \Pr(Y_i \leq j|X)]} \quad (3.7)$$

Where

$$\Pr(Y_i \leq j|X) \equiv \sum_{m=1}^j \Pr[Y_i \equiv m|X] \quad (3.8)$$

That denotes the cumulative probability that the outcome (agripreneurial orientation) is less than or equal to j .

The cross-sectional type of data was modelled using unobserved variable framework such that;

$$W_i^* = \alpha + \beta_i' X_i + \varepsilon \quad (3.9)$$

Where: W_i^* denotes unobserved measure/value of agripreneurial orientation level of the respondent, X_i represent a vector of independent variables which describe internal and external factors influencing agripreneurial orientation such as age, gender, training, age of

enterprise etc. further, α & β_i ' represent y-intercept and coefficient to be estimated and ε denotes error term which is assumed to be in line with standard normal distribution for logit model's logistic distribution.

The coded discrete agripreneurial orientation level variable W^* , is derived from the ordered model shown in equation below;

$$W_i = \begin{cases} 0 \rightarrow Low & \text{if } W^*_i \leq 0 \\ 1 \rightarrow Medium & \text{if } 0 < W^*_i \leq \mu_1 \\ 2 \rightarrow High & \text{if } W^*_i > 0 \end{cases} \quad (3.10)$$

Where μ_1 denotes a set of thresholds of agripreneurial orientation that need to be estimated having parameter vector α & β_i '. The probability related to coded responses of ordered logit model (OLM). $F(x)$ is specified to be logistic distribution equation/function.

$$F(x) = \exp(x) / [1 + \exp(x)] \quad (3.11)$$

Observed variables include: $W^*=0$ if it is low agripreneurial orientations
 $W^*=1$ if it is medium agripreneurial orientation
 $W^*=2$ if it is high agripreneurial orientation

The assumption made here was that error terms possessed logistic cumulative distribution function/equation which cut across various observations.

Empirical model

$$AO\ Levels = \alpha + \beta_1 age + \beta_2 gender + \beta_3 Num_EmployeeOperat + \beta_4 Educlevel + \beta_5 OwnerExper + \beta_6 EntprAge + \beta_7 RevOtherprod + \beta_8 Employtrain + \beta_9 MarktDist + \beta_{10} Grantrecvd + \beta_{11} CassRev + \beta_{12} ReciveTraining + \beta_{13} Num_trainedEmply + \varepsilon \quad (3.12)$$

Where W^* denotes the levels of agripreneurial orientation, α denotes constant value while β represented coefficient of effects and ε represented error term.

3.11 Agripreneurial orientation index of cassava-based agripreneurs

Agripreneurial orientation index (AOI) was developed using scale adapted from Chaudhari *et al.* (2007). AOI levels were determined by getting the differences, ranging between low and high levels and sum between mean and standard deviation (SD) respectively. Levels of agripreneurs were categorised into three clusters of low, medium and high agripreneurial orientation levels. The result indicates, that the majority of the respondents (70.76 %) were at a medium level of agripreneurial orientation. The rest, of

which 19.30 and 9.94% were low and high in agripreneurial orientation, respectively. The probable reason might be because of medium innovativeness, risk taking, proactiveness, competitive aggressiveness and autonomy of the respondents (Sable (2013); Shyam & Bargohain, 2012); Wanole *et al.*, 2018).

Agripreneurial orientation Index was generated using the following formula:

$$AOI = \frac{\sum_{n=1}^5 \frac{TC_x}{Max_x} \times SC_x}{\sum_{n=1}^5 SC_x} \times 100 \quad (3.13)$$

Where

AOI=Agripreneurial orientation Index

TC_x=Total attained score of construct/component (x)

MAX_x=Maximum attainable score of construct (x)

SC_x= Scale value of construct x

N=Number of constructs

X₁=innovativeness

X₂=Risk Taking

X₃=Competitive aggressiveness

X₄=Proactiveness

X₅=Autonomy/independent

The agripreneurial orientation index was used to measure the agripreneurial orientation of the respondents as specified by Rituraj *et al.* (2015).

The formula is specified as:

$$AOI = \frac{OSR}{ATS} \times 100 \quad (3.14)$$

Where

AOI=Agripreneurial Orientation Index

OSR=Obtained score by respondents

ATS = Actual Total Score

Table 3.3. Description of measurement of agripreneurial orientation

Category	Range
Low	$(\bar{X} - SD)$
Medium	$(\bar{X} - SD)$
High	$(\bar{X} - SD)$

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Table 3.3. Description of measurement of agripreneurial orientation

Category	Range
Low	$(\bar{X} - SD)$
Medium	$(\bar{X} - SD)$
High	$(\bar{X} - SD)$

The agripreneurial orientation is the overall measure constructed from five dimensions of innovativeness, proactiveness, risk-taking, competitive aggressiveness and autonomy/independence. It was measured using a twenty-item, a seven point scale generated by Covin and Slevin (1989). The questions derived here were modified from 7-point Likert scale to 5-point type of scale (Gelan & Wedajo, 2013). According to this scale, as you move towards the right of the scale, the level of agripreneurial orientation increases and your movement towards the left leads to decrease in the level of agripreneurial orientation. Further, agripreneurial orientation scale had to be modified to resort in 20 different dimensions of innovativeness, proactiveness, risk-taking, competitive aggressiveness and autonomy/independence.

Agripreneurial orientation (AO) is a modified terminology from entrepreneurial orientation, which has been taken as the overall/summative measure with regards to five dimensions/constructs namely; innovativeness, proactiveness, risk taking, competitive aggressiveness and autonomy. This was measured using twenty-item, five-point Likert scale that was adopted from (Sul, 2002). In this scale, as one tends towards right of the scale AO level increases and vice versa is true holding other factors constant. AO scale was further adjusted to indicate the different dimension of the five constructs (innovativeness, proactiveness, risk taking, competitive aggressiveness and autonomy). The analysis was done with the help of Microsoft excel and Stata version 13.0

3.12 Agripreneurial Orientation Components/Constructs

In order to generate scores and indices, each cassava based agripreneur was asked to give opinion regarding their innovativeness, proactiveness, risks taking ability, competitive aggressiveness and autonomy ability. The responses were captured using a pre-coded five-point likert scale which takes 1 for “strongly disagree”, 2 for “disagree”, 3 for “neutral” 4 for “agree” and 5 for “strongly agree”. The questions were summing up to 20 statements which were used to generate the score for agripreneurial orientation (AO) for each cassava based small and medium agripreneur in Migori County. The likert-scale questions were used to gauge the cassava agripreneurs were innovative, proactive, risk takers, competitive aggressive or autonomous in making business decisions.

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3.13 Measurement of Agripreneurial Orientation Constructs/Components as Dependent Variable

When computing agripreneurial orientation Index (AOI), total scores of agripreneurial orientation components were attained, maximum scores of agripreneurial orientation constructs were as well obtained and ultimately scale values of agripreneurial orientation constructs were established. The indices were multiplied by 100% to obtain agripreneurial orientation index. This index was continuous with arrangement from 0 to 1, which was further analysed and interpreted in the results.

Agripreneurial orientation Index (AOI) was categorized into levels of low, medium and high levels of agripreneurial orientation. To achieve the second objective which was to determine internal and external factors influencing agripreneurial orientation levels among cassava agripreneurs, ordered logit model was employed. Cassava agripreneurs who were low in agripreneurial orientation were given code of 0 while those in middle cluster were coded 1 and finally those in high were coded 2. This model was used since the levels on agripreneurial orientation were ordered/ranked. The other appropriate model that would be used in the multiple choice analysis included multinomial logit model, but it could only be used when levels are not ordered in nature and diverse. The ultimate choice of the model for this objective was ordered logit model. Moreover, the result of this objective is discrete in nature, multinomial logit and probit would not explain for the explained/dependent variable which was ordered. Ordinary regression model would assume that variables used in the model are differently ranked but should be related.

The variables used in the ordered logit model as shown in Table 3.3 helped in determining factors influencing agripreneurial orientation of cassava based small and medium enterprises. The variables range from independent to depended variables. The dependent variables were; age, gender, Number of members in the enterprise, marital status, educational level, Agrienterprise experience of owner, age of the enterprise, Ownership of agrienterprise share, market distance and sources of income. Dependent variables were agripreneurial orientation levels (low, medium and high).

Table 3.4: Description of factors influencing agripreneurial orientation initiative uptake

Variables	Description	Measurement	Priori sign
Dependent variable			
AO	Agripreneurial Orientation levels		
	Low	Categorical	None
	Medium	Categorical	None
	High	Categorical	None
Independent variables			
Age	Age of Owner of the enterprise	Years	+/-
Gender	Gender of owner of enterprise	1=Male, 0=Female	+/-
Num_EmployeOperat	Number of members in the enterprise	Continuous	+
Mariage	Marital status	Continuous	
Edulevel	Educational level of the owner	years of education	+
OwnerExper	Agrienterprise experience of owner	Years(cont)	+
Aown	Ownership of agrienterprise share	1=alone0=group	+
EntprAge	Age of the enterprise	Years(cont)	
Maktdist	Distance to the market	Kilometre (Km)	+
Ofi	Income from other source/ remittances	currency (KES)	+
Rec_train	Enterprise owner receiving trainings	Number	-/+
Rec_cred	If the owner received credit or loan	Dummy	+/-

3.14 Objective Three: Effect of Agripreneurial Orientation on Cassava Agri- enterprise Growth.

Growth of cassava based small and medium enterprises was measured mainly using the changes in sales for the past three years at the time of survey. Probit regression model was employed to assess the effects of AO on growth CBSMES. The respondents indicated if they realized growth or no growth of an agrienterprise. The level of growth is binary since it was either no growth or no growth. It was measured in terms of sales from the year 2017 to 2019(three consecutive years) as definite years. Cross-sectional data was used in achieving this objective.

The enterprise growth was categorically measured as:

Category 0=No growth

Category 1= growth

The growth depended on certain measurable (X_i) and certain unobserved latent factors (ε_i). Y^* is conditional on the dependent variables X_i and could be obtained from unobserved variable model shown in equation below:

$$Y^* = \beta' X_i + \varepsilon_i \text{ Where } i=1 \dots N, \text{ and} \quad (3.15)$$

Y^* denotes unobserved, but which are observed are threshold values of Y . in this case was:

$$Y = 0 \text{ if } Y^* \leq 0$$

$$Y = 1 \text{ if } 0 < Y^* \leq 1 \quad (3.16)$$

Where the vector of explained parameter estimates is embedded in the coefficient vector β . This consist of Supportive external environment and internal "environment / Agripreneurs' characteristics and factors. The model adjusted to a probability curve using normal distribution function in estimating the possibility of a given ranking (Greene & Hensher, 2008).

Empirical model

$$Y^* = \beta_1 + \beta_2(\text{PROACT}) + \beta_3(\text{INOV}) + \beta_4(\text{AUT}) + \beta_5(\text{RSK}) + \beta_6(\text{COAGR}) + \varepsilon \quad (3.17)$$

Where: Y^* = growth of CBSMES relating to market access-measured in terms of total cassava marketed over the marketable cassava and gross margin was measured using the total sales less cost of production of cassava products for the past three years.

B_1 =constant

B_1 = coefficient of proactiveness

B_2 = coefficient of Innovativeness

B_3 = coefficient of Autonomy

B_4 = coefficient of Risk Taking

B_5 = coefficient of Competitive gressiveness

ε = Stochastic error term

Table 3.4 shows the description of the variables used in the Probit model. To determine effects of agripreneurial orientation on growth of cassava based small and medium enterprises in Migori County.

The AO scale has a relatively high coefficient-alpha with item-to-total correlations (>0.45) showing the degree of AO in the agripreneurs (Hansen *et al.*, 2011; Wiklund & Shepherd, 2005).

Table 3.5: Description of variables that influence of AO on agri-enterprise growth

Variables	Description	Measurement	Priori sign
Dependent			
Growth	Agrienterprise sales growth	Categorical	Non
Independent			
Age			
INOV	Innovativeness of agripreneur	Score	+/-
PROACT	Proactiveness of agripreneur	Score	+/-
RSKTAK	Risk-taking behaviour of agripreneur	Score	+/-
COMPAG	Competitive aggressiveness of the	Score	+/-
R	agripreneur		
AUTO	Autonomy of agripreneur	Score	+/-

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter consists of results and discussions of the empirical findings of this study. The chapter is further subdivided into three sub-sections; first section contains descriptive statistics for demographic and internal and external environmental features of cassava based small and medium agripreneurs based on their agripreneurial orientation as well as growth of the enterprise. Second section presents result of ordered Logit (OLOGIT) model on the factors influencing agripreneurial orientation among cassava based agripreneurs and third section contains results of probit model on influence of agripreneurial orientation on growth of cassava based small and medium based agrienterprise

4.1 Characterization of cassava-based small and medium agripreneurs and their enterprises

Agripreneurs were characterised based on their internal characteristics, external environmental attributes and Enterprise characteristics. The results are depicted in Table 4.3. The mean level of education was 9.8. This means that on average, respondents had reached secondary school (form two). On average, the gender of respondent was made up of female with 78.4%. Meaning that female agripreneurs in Migori had enough experience in running their enterprises

On average the respondents was 43 years. This means that the middle aged individuals were involved in cassava based agripreneurship. Adetimehin *et al.* (2018) found the average age of the farmers was 51 years which was middle-aged which was involved in rice farming.

Table 4.1: Summary of descriptive statistics of Respondents in Migori County

Variable	Mean	S.D	Skewness	Max	Min
Education level (years)	9.860	4.109	-0.358	20	0
Owner business experience (Years)	9.778	8.223	1.103	43	1
Enterprise age (Years)	8.871	7.308	1.054	30	1
Age of agripreneur (Years)	43.474	13.483	0.452	78	18
Cassava harvested (Kilograms)	260.326	180.066	1.840	800	80
Market distance (Km)	3.018	2.503	3.095	20	1
Number of workers employed	1.538	1.424	0.874	5	0
Quantities sold per week (Kgs)	29.006	25.049	0.981	100	0

Adebayo (1999) also found that active and young men and women between average age of 31 and 41 that should take the mandate of working in agriculture, left rural areas and moved to urban areas to look for government jobs. This trend discourage rural productivity since it has rendered farming in the palms of the old, illiterate as well as few vibrant young men and women that live in the countryside who are probably only as a result of inevitable circumstances. However, the study by Ridha and Wahyu (2017) found the youths with average age of 23 years were involved in agricultural entrepreneurship.

The mean age of cassava-based small and medium enterprises was approximately 10 years. Meaning that agripreneurs in Migori had enough experience in running their enterprises. Having served for long time in the agrienterprise, enhances hands-on skills of the agripreneur thus enhance growth of the agrienterprise.

4.1.2 Education Level (years) of the Respondents in Migori County

Level of education was measured in years shown in Figure 4.1, and the results show that the average age year of education for those who were involved in cassava agripreneurship was 9.86 years which indicate that the respondents had reached secondary school (52.1%). Therefore, the knowledge gained by the agripreneurs was adequate to enable respondents do financial calculations for their enterprises.

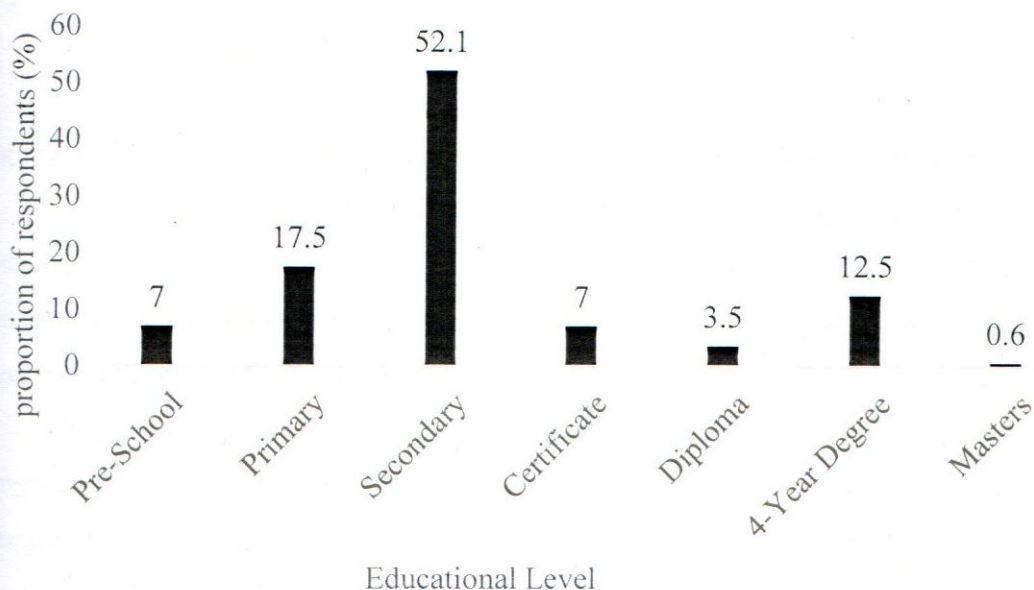


Figure 4.1: Educational level of cassava based agripreneurs and their enterprises

According to Muricho (2015) and Opondo (2018), education is believed to endow farm household heads with both production and managerial skills which are necessary especially in making rational decisions related to farming activities.

4.1.3 Age of cassava based small and medium agripreneur

In Figure 4.3, results of the percentage of cassava based entrepreneurs in Migori County. Majority (30%) of the respondents were within the age bracket of 30-39 years. Respondents within age category 40 to 49 years were 22% followed by 50 to 59 years. This means that, respondents who are young and energetic are the ones that are mostly involved in running cassava based enterprises.

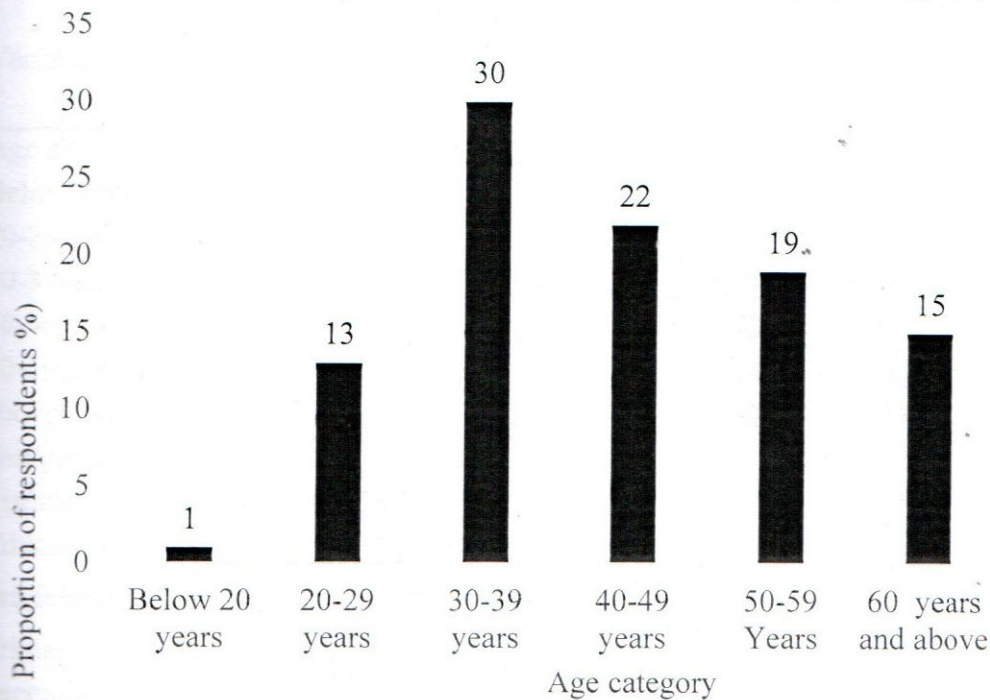


Figure 4.2: Summary percentage of age category of respondents in Migori County

The results in the Table 4.7 indicate the distribution and significant test for categorical variables for cassava based small and medium agripreneurs in Migori County. Nearly a similar number of respondents in the age category between 30 and 39 were both in low and medium agripreneurial orientation.

Nearly 40% of agripreneurs aged between 50 to 59 years were reported to be in high agripreneurial orientation levels. This could be due to the fact that respondents at this age category are retiring and have no other activities to get involved in agripreneurship.

There were only 31.25% of the elderly of age category from 50 to 59 years that were agripreneurial oriented, and 3.73% of the females whereby 82.11% of them were low and medium in agripreneurial orientation respectively.

Therefore, they channel most of their resources to run enterprises and become more agripreneurial orientated compared to young generations. However, it was found that 81.25%

of the respondents that were high in agripreneurial orientation were males. The reason could be that men are more risk takers in running their small and medium enterprises compared to women.

Table 4.2: Results of cross tabulation describing cassava-based small and medium enterprises in Migori County

Variables	Agripreneurial orientation categories/levels				χ^2 Value
	Overall (171)	Low (n=32)	Medium (n=123)	High (n=16)	
Age category (%)					
Below 20years	0.60	0.00	0.81	0.00	14.130
20-29years	13.50	15.60	13.82	6.25	
30-39years	29.80	34.40	31.71	6.25	
40-49years	21.60	28.10	18.70	31.25	
50-59years	19.30	3.10	21.14	37.50	
above60years,	15.20	18.80	13.82	18.75	
Sex/gender (%)					
Female	78.36	93.75	82.11	18.75	39.023**
Education level (%)					
pre-school	7.02	13.00	7.00	0	116.770***
Primary	52.05	56.00	55.00	18.75	
Secondary	17.54	25.00	16.0	12.5	
Certificate	7.02	0.00	1.00	68.75	
Diploma	3.51	3.00	4.00	0.00	
4-year degree	12.28	0.00	17.00	0.00	
Masters	0.58	3.00	0.00	0.00	
Marital Status (%)					
Single	20.47	6.25	26.83	0.00	32.973***
Married	61.99	93.75	48.78	100.00	
Divorced/ separated	0.58	0	0.81	0.00	
Widower/Widowed	16.96	0	23.58	0.00	
Received Training (%)					
Yes	28.07	3.10	28.46	75	27.324***
Received Grants (%)					
Yes	54.39	46.88	60.16	25	7.9517**
Employed workers (%)					
Yes	72.51	15.6	83.74	100	65.803***

Note: ***, ** & * represent 1%, 5% & 10% significant levels at 99%, 95% and respectively

N=171

Moreover, the reason why women lie in the medium cluster of agripreneurial orientation could be the fact that, cassava enterprise is regarded as a women oriented enterprising activity. This result is with conformity with earlier findings on the proportion of gender engaged in cassava farm business which discovered that women take part in multiple cassava activities such as production, processing as well as marketing of the processed end products. The results concur with the findings of Okoye *et al.* (2016) and Opondo (2018) which concluded that cassava related activities are majorly practiced by women. The results further showed that agripreneurial orientation is statistically significant ($p < .05$) at 95% confidence level.

4.1.3 Cassava Value Added Products

Figure 4.3 shows the different products derived from cassava value addition. Majority of respondents (71.93%) were involved in making and selling of cassava dried chips followed by cassava flour (20.47%), raw cassava (6.43) and only 1.17 % of the respondents were involved in dealing with cassava porridge.

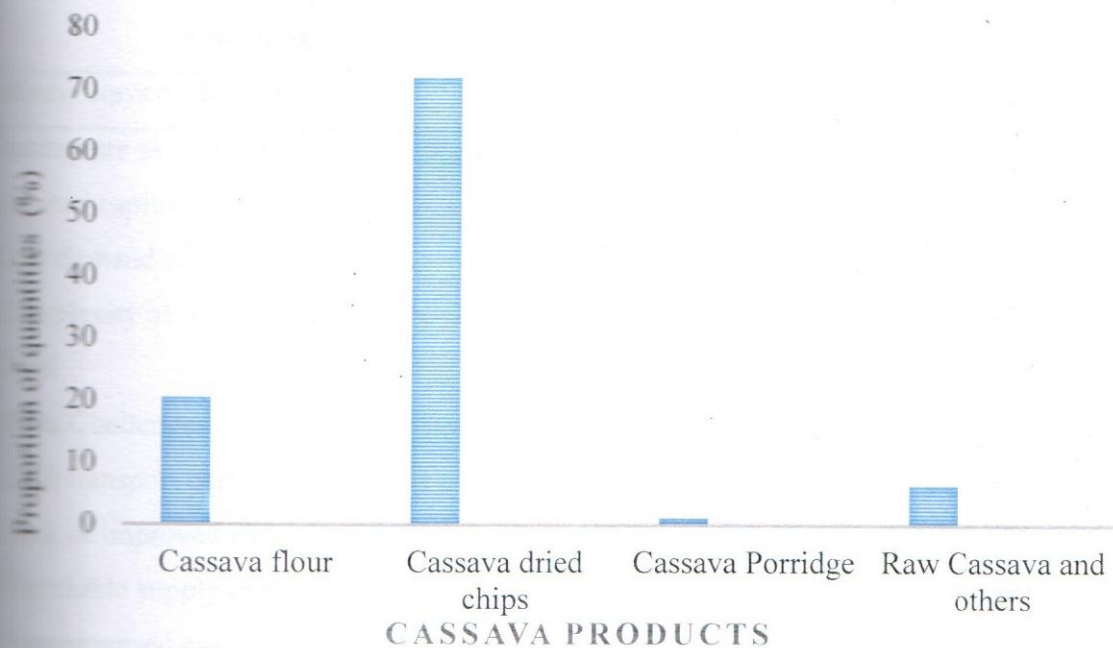


Figure 4.3: Percentage of Products made from cassava value addition and sold in Migori County

The reason why dried chips were majorly done could be the fact that it can be used with other cereals in making other products such as chapatti and maize meal (*ugali*).

4.1.4 Challenges Facing Cassava-Based Agripreneurs in Migori County

Cassava based agripreneurs in Migori have been facing some challenges. These drawbacks have been contributing no growth of their enterprises as shown in Table 4.3. Challenges experienced by agripreneurs from Migori County were were limited capital to run their enterprises (49.71%), low demand of cassava products (28.07%) and lack of skilled labour to run their enterprises (19.30%). Therefore, limited capital was the main challenge that agripreneurs experienced. The results also indicate that poor prices of cassava products was a marketing challenge that possibly contributed to no growth. The results support the findings of Emokaro *et al.* (2010) that low prices of cassava products contributes to low profitability and this has sometimes forced agripreneurs to substitute cassava business with other businesses.

Table 4.3: Challenges facing cassava based small and medium agripreneurs doing new things

of new ways of doing things	Percent
Inadequate skilled labour	19.300
Limited capital	49.710
Low demand of cassava products	28.070
Complexity of new technology	2.920
Total	100.00
Other Challenges	
High transport cost	7.690
Lack of improved cassava varieties	7.690
Unreliable supply during off peak	23.080
Compromised cassava quality	15.380
Low market prices and poor sales	15.380
Unpredictable market price and demand	30.770
Total	100.00

Note: n=171

Other major challenges faced by cassava agripreneurs in Migori include; unpredictable market demand and price change of cassava products (30.77%) and unreliable supplies of cassava products during off peak (23.07%).

4.1.5 Agripreneurial orientation levels of cassava based small and medium agripreneurs in Migori County

The results from Table 4.4 shows agripreneurial orientation levels of cassava-based small and medium agripreneurs.

Table 4.4: Agripreneurial orientation levels of cassava based small and medium agripreneurs in Migori County

Agripreneurial orientation Index (AOI) Level	Frequency	Percent (%)
Low (<2.899)	33	19.30
Medium(2.898-4.340)	121	70.76
High(>4.340)	17	9.94
Total	171	100.00
	Mean=3.6193	SD=0.7208

Note: n=171

The levels involved clustering agripreneurs into three levels of low, medium and high agripreneurial orientation levels. The first column shows agripreneurial orientation as a variable, clusters/ levels of AO are in second column, and percentage is presented in the third columns respectively. The last row presents the mean and standard deviation of the AO. The values between low and high cluster levels of agripreneurial orientation were regarded as medium level of AO as shown in the Table 4.4. The result indicates, that the majority of the respondents (70.76 %) were at a medium level of agripreneurial orientation. The rest of which 19.30% and 9.94% were low and high in agripreneurial orientation, respectively.

4.1.6 Agripreneurial orientation components analysis/results for cassava agripreneurs in Migori County

Table 4.5 presents the agripreneurial orientation constructs generated using principal component analysis (PCA). The PCA was performed on standardized variables to condense all the information from the original interrelated variables to a smaller set of factors known as principal components (Abdi, 2007).

Factors were rotated using orthogonal rotation (varimax method) so that smaller number of highly correlated variables might be put under each factor for easier interpretation (Field, 2005). According to Kaiser's criterion, all factors exceeding an eigenvalue of one were retained and interpreted. A total of seven components were generated with the clusters found after unrestricted grouping test was done.

According to Harris (2001), the interpretation of the Principal components of small values show variables which do not fit well with the factor solution and have to be dropped from the analysis while variables with high factor loadings and high communality of 0.6 and above were considered from the rotated factor matrix.

Table 4.5: Agripreneural orientation components analysis/results for cassava agripreneurs in Migori County

Variables	Categories /clusters	Frequency	Percentage (%)
Innovativeness	Low(<3.288)	25	14.62
	Medium (3.288-4.353)	125	73.1
	High (>4.353)	21	12.28
		Mean=3.821	S.D=0.533
Proactiveness	Low(<3.013)	37	21.64
	Medium (3.013 -4.421)	118	69.01
	High (>4.421)	16	9.36
		Mean=3.717	S.D=0.704
Risk taking	Low(<2.778)	32	18.71
	Medium (2.778 -4.364)	117	68.42
	High (>4.364)	22	12.87
		Mean=3.571	S.D=0.793
Competitive aggressiveness	Low(<2.657)	34	19.88
	Medium (2.657-4.517)	136	79.53
	High (>4.517)	1	0.58
		Mean=3.587	S.D=0.930
Autonomy	Low(<2.445)	32	18.71
	Medium (2.445-4.456)	117	68.42
	High (>4.456)	22	12.87
		Mean=3.450	S.D=1.005

Note: N =171

In total, 20 variables were included in PCA, of which 7 principal components with eigenvalues greater than 1 were retained for further analysis. According to Bruin (2006), Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) is a measure that varies between 0 and 1, and values closer to 1 are desirable. A value of 0.6 is a suggested minimum. These tests together give a minimum standard, which should be passed before conducting PCA. The KMO value of 0.68 and the Bartlett's test of sphericity with an associated p value of <0.000 indicates that I could proceed with PCA (Atsiaya, 2017).

Agripreneurial orientation (AO) consist of five components innovativeness, proactiveness, risk-taking, competitive aggressiveness and autonomy of agripreneurs. Majority of respondents were having medium innovativeness with 73.1%, followed by a low level of innovativeness with 14.62% and the ultimate high level of innovativeness with 12.28%. This finding could be attributed to unwillingness of the most educated respondents to venture into cassava based enterprises with the believe that it is asicociated with the less educated individuals. This is in contrary with the study by Basu and Goswami (1999) which found that educational level positively influenced growth of an enterprise in South Asia.

Number of Skilled employees was significant at 1% ($P < 0.01$) on growth of CBSMES. An increase in number of skilled employees running an enterprise, leads a positive increase of growth level of cassava based small and medium enterprises by the proportion of approximately 1.55. Further an agripreneur entrepreneur should hire skilled with experience managers that are able to steer the firm forth to its growth route (Shah *et al.*, 2013).

Owner experience (Prior-business/professional) had a significant effect at 10 % ($P < 0.10$) on growth of CMSMES and for an increase in prior business of professional owner experience reduces enterprise growth level by proportion of approximately 0.13. This manifests that growth of CBSMES is thus negatively influenced by owner experience based on the previous business activities. This could be due to sceptical nature of any other entrepreneur who ventures into different enterprises once they face several challenges in running former enterprises. Moreover, education as human capital contributed to the accelerated growth process of CBSMES thus, it doesn't matter if an agripreneur is not educated, and he/she is capable of employing an educated staff to run an enterprise and is capable of learning and providing directives in CBSMES. Other managerial skills can be learnt through trainings that an agripreneur may undertake. This case is different from study by Basu and Goswami (1999) which discovered that enterprise growth was positively influenced by owner prior business experience. In their studies, they further discovered that

those individuals who enter to business benefited from earlier work experience and concentrated on other customers that possibly led to the success of their business enterprises.

4.1.7 Ordered Logit Model (with odds ratio) Results for Effects of Internal and External Factors Influencing Agripreneurial Orientation of Cassava Agripreneurs

The results in Table 4.6 depicts the internal and external factors influencing agripreneurial orientation levels among the respondents. The likelihood ratio chi-square of 1111.210 with P -value of 0.000, ($p < .01$) meaning that the model is generally statistically significant, unlike the model without predictors. The odds ratio was used because all variables were computed with robustness. While the Pseudo- R -Squared is .241 and Log likelihood is -76.442.

According to gender, male owned agrienterprises were more likely to be agripreneurial oriented at 10 % significance level. Therefore, for gender of the agripreneur, holding other factors constant, increasing any individual based on gender by 1 increases the log odds of being agripreneurial oriented by a factor of 4.225 or 422.5%. Likewise, for any gender of the respondent, holding the other factors constant, decreasing the gender by 1 decreases the odds of being agripreneurial orientation by a factor of about 422.5%. Therefore, for any male respondent that ventures into cassava based enterprise tends to become highly agripreneurial oriented as opposed to the female-owned cassava based agrienterprise. However, a study by Opondo (2018) contend that female headed or owned enterprise had lower participation and thus less commercialize leading to lower agripreneurial orientation as compared to the male counterparts. Moreover, Forsythe *et al.* (2016) study of women's experience of cassava commercialization in Nigeria and Malawi noted that gender of the respondents is very important in commercialization of cassava as agripreneurial orientation, because commercialization is influenced within household structure, gender customs as well as the bargaining power of an agripreneur.

There is higher likelihood of perceiving agripreneurial orientation with increasing years of experience as an agripreneur in running an enterprise/business. Experience of the agripreneur in years was more likely to increase agripreneurial orientation at 1 % significance level. An increase in the years of running the enterprise by 1 year increases the ordered log-odds of being agripreneurial oriented by about 1.288, holding other variables constant. The

The number of employees trained was more likely to increase agripreneurial orientation at 10% significance level. Therefore, a unit increase in trained employee increases the log-odds of being agripreneurial oriented by 2.269 when holding other variables in the

model constant. For an agripreneur to be more agripreneurial orientated, more of the workers need to be trained on entrepreneurship aspects so that the enterprise is run with agripreneurial orientation in mind.

The Number of employee operating cassava based small and medium enterprise was likely to increase agripreneurial orientation from low to high at 1% significance level. The results depicts that a unit increase in number of employee running an enterprise leads to an increase in log-odd of agripreneurial orientation by 2.269, holding other variables in the model constant. This finding is consistent with Gelan and Wedajo (2013) which found that business size in terms of number of employees was found to be positively significant. This implies that bigger enterprises have higher possibility of being innovative and they have more resourced compared to smaller enterprises. The reason behind this could be related to the fact that for employees in cassava based enterprises are few in number and thus, increase in their number lead them to be more proactive, autonomous leading to job specialization. Moreover, an enterprise will be grow well and embrace high agripreneurial orientation levels of on not only the workers but also the enterprise itself in totality.

Land access for cassava production was likely to increase agripreneurial orientation from low to high at 1% significance level. It is evident from the results that a unit increase in accessing land increases the log-odds of agripreneurial orientation from low to high by 0.067 or 6.7 %, holding other factors in the model constant. This could be because, availability of land and accessing by the respondent provides an upper hand for an agripreneur to deeply venture into cassava enterprise from the farm gate to final enterprise. Another possible reason is that, for an agripreneur to minimise transaction costs that are caused by middle men which reduces their income levels, they have to easily access land that enable them produce add value to cassava. This finding is supported by Mugonola *et al.* (2013) who found out that land access in terms of size influence the adoption of new technologies which is an indication of agripreneurial orientation. More quantities of cassava consumed by customer were more likely to increase sales of cassava products by agripreneurs. This is because land is a form of saving for cassava agripreneurs, which may be used to enable them (cassava agripreneurs) acquire the necessary requirements for venturing into cassava agripreneurial activities.

Quantity of cassava consumed by customers on daily basis was likely to increase agripreneurial orientation from low to high at 1% significance level. The results indicated that an increase in quantity of cassava consumed by customers by 1 kilogram increases the log-odds of agripreneurial orientation from low to high by 1.032 (103.2%) when holding other repressor variables constant.

Sales of cassava by agripreneurs depended on the daily consumption of cassava and its products. This translated to the increased revenue and source of motivation to venture to such an enterprise in Migori County. Moreover, its consumption usually contributes majorly to *per capita* income globally (Saediman *et al.*, 2016).

The age of the enterprise is statistically significant ($p < .1$) at 10%. The findings showed that an increase of age of the enterprise by 1 year increases the odd of high agripreneurial orientation compared to the combined low and medium cluster of AO 0.850 greater, provided that other variables are held constant.

Table 4.6: Ordered Logit Model results for effects of internal and external factors influencing agripreneurial orientation of cassava agripreneurs

Variables	Odds Ratio	Std. Err.	P>Z
Internal factors			
Education level	1.028	0.085	0.736
Gender	4.225*	3.304	0.065
Age	1.002	0.019	0.909
Owner experience	1.288***	0.111	0.003
Number of Employees trained/skilled	2.269*	0.999	0.063
Number of employee operating	3.363***	0.924	0.000
Number of skilled Employee	1.017	0.330	0.958
External factors			
Revenue from cassava	1.100	0.139	0.452
Revenue from other products	1.112	0.139	0.396
land access for cassava	0.076***	0.051	0.000
Quantity sold per day in Kilos	1.032***	0.011	0.004
Age of the Enterprise	0.850*	0.076	0.070
Grant support received	0.559	0.254	0.200
/cut1	10.975	12.681	
/cut2	19.165	12.863	
Ordered logistic regression			
	Number of observations	171	
	LR chi2(13)	1111.210	
	Prob > chi2	0.000	
Log likelihood = -76.442	Pseudo R2	0.421	

Note: Dependent variable- Agripreneurial orientation level. *, **, *** represent significance levels at 10%, 5% and 1% respectively. Std. Err stands for Standard error.

The implication of this could be the fact that older enterprises had higher probability of introducing new and innovative ways of running their enterprises. Moreover, these enterprises could assume the proactive orientations, risk taking, competitive aggressive and autonomy in their enterprising activities. This finding is in line with Gelan and Wedajo (2013) and Mulu (2009), which found the positive relationship between ages of the business enterprise, which was significant. This implied that as enterprise gets older, the more likely it becomes more innovative, risk taking and proactive in its activities. However, the results are in contrary to results obtained by Salavous and Loiukas (2003) which found a negative relationship between ages of the business enterprise.

4.2 Influence Of Agripreneurial Orientation on Growth(sales growth) of Cassava-Based Small And Medium Agrienterprises in Migori County

4.2.1 Relationship Between Categorical Variables and Growth

Growth of cassava based small and medium enterprises was measured using the changes in sales made for the last three years to the time of survey. Table 4.7 shows summary results of the descriptive and inferential statistics on the relationship between categorical variables and growth of cassava-based small and medium enterprises. The first column represent variables, second column displays the overall percentage of the respondents while columns three and four show the growth level of the enterprises in the study area. The last column represents the chi square values of the relationships that exist between those categorical variables and growth.

The results on Table 4.7 further, showed that there was significant association between AO and growth of cassava based small and medium enterprises in Migori county at 5 % significance level. Majority (70.76 %) of the respondents were within the medium level. It was reported that 100 % of the respondents within the same category contribute to the growth of the enterprise while 68.15 per cent contributed to its survival or no growth. This could be due to medium level of innovation, risk taking, proactiveness, competitive aggressiveness and autonomy among the respondents.

Overall, the position of the respondent within the enterprise had a significant ($p < .01$) relationship with growth of cassava-based small and medium enterprises. There was a significant association between age of the agripreneur and growth of cassava based small and medium agrienterprise at 5 % significance level. The majority (29.82) of the respondents were

within age category (30-39 years). Moreover, 29.3 % of the respondents within the same age category contributed to the survival or no growth of the enterprise while 35.71 % contributed to its actual growth. However, it was recorded that at least respondents (7.17) were under age categories of below 20 years, 40 to 49 years as well as above 60 years.

The results further showed that there was a significant ($p < .05$) relationship between age category and the growth of the cassava based small and medium enterprises in Migori County. The reason could be because young agripreneurs are swift and young enough to contribute to the growth of an enterprise. This means that the young and vibrant respondents are responsible for the growth of an agrienterprise.

Table 4.7: Summary results of descriptive and *chi* square results between categorical variables and growth of cassava based small and medium enterprises

Variables	Growth levels			χ^2 value
	Overall	Survival/no growth	Growth	
Age category (%)				
below 20 years	0.58	0	7.14	14.282**
20-29 years	13.45	12.74	21.43	
30-39 years	29.82	29.30	35.71	
40-49 years	21.64	22.93	7.14	
50-59 years	19.30	19.11	21.43	
60 and above years	15.20	15.92	7.14	
Gender (%)				
Female	78.36	78.34	78.57	0.0004
Male	21.64	21.66	21.43	
Position in enterprise (%)				
Owner	60.23	61.15	50.00	23.182***
Manager	30.99	31.21	28.57	
Family member	5.26	5.10	7.14	
Group member	2.34	2.55	0	
Employee	1.17	0	14.29	
Access to loan (%)				
No	49.71	47.77	71.43	2.879*

Yes	50.29	52.23	28.57	
Overall AO Level (%)				
Low	19.30	21.20	0	6.301**
Medium	70.76	68.15	100	
High	9.94	10.83	0	

Note: *, **, *** represent significance levels at 10%, 5% and 1% respectively. NS means Not Significant.

In terms of the gender of the enterprise owner, 78.57 % of those that lead to growth were female as compared to 78.34 % of those who were not leading to the growth level of an enterprise. Having a female as the owner or the operator of an enterprise may increase chances of contributing to growth of an enterprise to pay because women may have access to agripreneurial information and other resources, which men may lack due to the roles they play in agripreneurial activities and some cultural barriers to the males.

In terms of the position of the agripreneur within the enterprise in Table 4.7, majority (60.23 %) of the respondents were the owners of the enterprise, while only 1.17 % of the respondents were the employees. Further, majority (50 %) of the respondents within the same position in the enterprise contribute the growth of cassava based small and medium enterprises, while 60 % of the owners led to survival or no growth within the enterprises. The reason could be the fact that once an individual initiates an enterprises, growth of such an enterprise relies in the hands of the owner compared to the one ran by non-owner. Moreover, such an entrepreneur (Owner) is the hub and centre of such an idea.

4.2.2 Influence of agripreneurial orientation on growth of cassava-based small and medium agrienterprises

The Table 4.8 depicts Probit model results of influence of agripreneurial orientation on the growth of an enterprise. Educational level had a significant effect at 5% on growth of Cassava-Based Small and Medium Enterprises (CBSMES). An increase in education level by one year reduces growth level by the proportion of about .17. This implies that growth of an enterprises is influenced by level of education because as the level of education increases, the most learned people divert to white collar jobs. The results further indicate that enterprise(firm) age had a stistically significant effect at 5% ($P < 0.05$) on growth if cassava based small and medium enterprises. For an increase in enterprise age reduces enterprise growth level by approximate proportion of .29.

This could be as the age of an enterprise advances, the growth becomes a less important aim of the agripreneur. This is because, an agripreneur may be focusing on the survival of an enterprise since most of start-ups fail with time, and thus agripreneur will be escaping from entering danger zone level of an enterprise. This finding is contrary to the findings of the study by Megaravalli and Sampagnaro (2019) which found a positive impact between a firm (enterprise) age and its growth. Age of an enterprise/firm more often helps forecast its growth.

Competitive aggressiveness was statistically significant at 1% ($P < .01$) on growth of CBSMES. An increase in number of skilled employees running an enterprise, leads to a positive increase of growth level of cassava based small and medium enterprises by the proportion of approximately 3.87. The reason explaining this is that, for an agripreneur who possesses competitive aggressiveness behaviour does enhances growth of his or her enterprise. In addition to that, safeguarding sustainable competitive edge is indeed a crucial aspect that enhances growth of a business entity (firm) (Shah, *et al.*, 2013).

Table 4.8: Probit model results for influence of agripreneurial orientation on growth of cassava-based small and medium agripreneurs in Migori County

Variables	Coefficient.	Robust Std. Err.	P>z
Education level	-0.166**	0.072	0.022
Number of Skilled employees	1.552***	0.508	0.002
Number of trained employees	-0.916***	0.340	0.007
Owner experience(Prior-business/professional)	-0.134*	0.070	0.055
Enterprise age	-0.288**	0.124	0.020
Innovativeness level	-0.256	0.615	0.678
Proactiveness level	-0.769	0.659	0.243
Risk-taking level	0.797	0.853	0.350
Competitive aggressiveness	3.867***	1.038	0.000
Autonomy level	-0.587	0.562	0.296
Agripreneurial orientation (AO)	-2.462**	1.081	0.023
Constant	1.970	1.076	0.067

Note: Dependent variable-Enterprise Growth, *, **, *** represent significance levels at 10%, 5% and 1% respectively. NS means Not Significant. Std. Err. Stand for standard error

Agripreneurial orientation was statistically significant at 5% ($P < 0.05$) on growth of CBSMES. An increase in agripreneurial orientation level leads to a negative/decreased growth level of cassava enterprise. For an increase in agripreneurial orientation reduces enterprise growth level by proportion of approximately 2.46. This could be due to the fact that cassava agripreneurs are reluctant to be oriented towards cassava but rather focus on the white colour jobs in Migori County. Further, Frank *et al.* (2010), using other analysis showed that entrepreneurial orientation had a negative effect on the performance which the ultimate result of growth in particular configurations. This result is contrary to the study by Soininen, *et al.* (2012) which found that Entrepreneurial orientation posed a strong positive effect on future growth desires and also a weaker positive, statistically significant effect on actual growth within a span of five years of the enterprise.

Entrepreneurial process of a firm contributes to the new entry opportunities resulting in improved performance, however adopting vibrant agripreneurial orientation is deemed necessary but not sufficient in creating wealth by the new entrants (Ireland *et al.*, 2003; Mwangi & Ngugi, 2014).

According Moreno and Casillas (2008), there is no direct significant influence between EO and growth of the firm. This result emphasizes the complexity of the relationships existing between the constructs examined in the model. The reason is that the literature on enterprising behaviour tends to assume that this behaviour pursues growth, either implicitly or explicitly, compared to other behaviours more oriented toward profitability of the firm. Nevertheless, relationship is not direct but indirect, through the mediating and moderating function of other variables like, the environment, strategy and firm's resources. Eshima and Anderson (2017) found that, growth of an enterprise is derived as a result of agripreneurial orientation as its predictor.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

This study highlights the effects of agripreneurial orientation in improving as well as contributing to growth of cassava based small and medium agripreneurs in Migori County. Agripreneurial orientation is one of the aspects towards improving growth and development of agripreneurs. In a marked of exit from previous research studies addressed agripreneurial orientation in a broader view by integrating both internal and external environmental aspects.

5.2. Conclusions

- i) Participants in cassava-based small and medium agrienterprises were middle aged, majority were female, averagely educated, operated enterprises for many years, owned small and medium sized agrienterprises based on number of cassava traded on weekly basis as well as small number of workers. The results indicate that based on agripreneurial orientation (AO), most agripreneurs were found to be at medium level of (AO) while a few were lying between high and low levels. This implies that most agripreneurs have not been highly agripreneurial oriented towards venturing into cassava based small and medium enterprises.
- ii) Level of training of employees, number of employees operating an enterprise and age of the enterprise mainly influence agripreneurial orientation of cassava-based small and medium agripreneurs in Migori County, Kenya.
- iii) Growth of cassava-based small and medium enterprises are influenced by; education level, number of skilled employees, owner experience, number of trained employees, enterprise age, competitive aggressiveness and agripreneurial orientation. The overall agripreneurial orientation had negative influence on growth of cassava based enterprises.

5.3 Recommendations

- i) The government should empower cassava based agripreneurs through training, trade fairs and capacity building to change the mind-set of the agripreneurs while providing incentives in venturing into cassava for the growth of the agrienterprises as well as individual growth. The government can achieve these through its agricultural organizations with collaborations with Non-Governmental organizations as well as private sectors .

- ii) According to the results, this study recommends that major internal and external factors influencing agripreneurial orientation ought to be promoted and enhanced among small and medium agripreneurs through training, information sharing and promoting agripreneur-to-agripreneur-approached.
- iii) There is need for Kenyan Government to impose policies to enable agripreneurs' venture into investment in cassava agrienterprise through agribusiness management skills, financial institutions and improved access to market information.

Future research

Future studies should be able to consider agripreneurial orientation of the group set up to measure growth and performance of the enterprises in agriculture. The aspect of agripreneur groups should be put into consideration to improve the growth of various enterprises dealing with orphan crops such as sesame, millet et cetera.

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APPENDICES

Appendix A: Agripreneur Questionnaire

My name is Sambrumo Gad, a student at Egerton University. This questionnaire has been developed to gather data for the purpose of determining the effects of agripreneurial orientation on growth of cassava-based small and medium Enterprises in your area. You are among the agripreneurs who have been selected for the study. The data collected will be used only for the purpose of this study and will be highly appreciated and treated with utmost confidentiality

PART ONE; General Information

1. Date of interview.....
2. Respondent's ID.....
3. Name _____ of _____ the Enumerator.....
4. Gender/sex of the respondent: [1] Male [2] Female
5. Sub County:
[1] Suna East [2] Uriri [3] Rongo
6. Ward:

PART TWO: Respondents Demographic (*please tick as appropriate*)

7. Age of Enterprise owner in (complete years)?
8. What is your marital status
(1).Married (2) Single (3) Divorced
9. Who is the decision maker on cassava business enterprise?
[1] Spouse [3] Daughter
[4] Son [5] Maid servant
[6] Other, Specify.....
10. What is the highest level of education the enterprise head?
[1] Pre-primary [2] Primary
[3] Secondary [4] College
[5] Middle level college years: [6] University years:.....
11. Occupation of the Enterprise owner:
[1] Unemployed [2] Self-employed
[3] Salaried and self-employed [4] Salaried employment
12. How many entrepreneurship trainings have you attended in the past three month?
[1] Non [2] two [3] Three [4] others, specify.....

PART THREE: CHARACTERISTICS OF CASSAVA BASED ENTERPRISES

13. For how long has the business been operating since it began?.....years.
14. What is the source of cassava as a raw material for your enterprise?
 [1] Own producer [2] Buying from farmers [3] Others (Specify).....
15. Which cassava products do you make and sell? (*Tick all that apply*)
 [1] cassava flour [2] chips [3] crisps [4] chapatti [5] scones [6] confectionaries [7] others,(specify).....
16. If yes in 15 above, do you grow it mainly for what purpose?
 [1] For sale [2] Home use
17. What is the type of your business ownership?
 [1] Sole proprietorship [2] Partnership [3] Company
18. Is labour always available? [1] Yes [0] No
19. What is your position in this enterprise? [1] owner [2] manager [3] Employee [4] Family member
20. How many employees are there in your business?
21. What is the types of employees? [1] Skilled [2] Unskilled
22. What is the source of your capital to start and run the business?
 [1] Own resources [2] credit [3] remittances [4] Others (specify).....

PART FOUR: Agripreneurial orientation among the cassava processors.

Please indicate/rate your level of agreement with the following statements: with 1= Strongly disagree (SD), 2=Disagree (D), 3=Neutral (N), 4=Agree (A) 5=Strongly agree (SA).

No.	Innovativeness of the respondent	1 SD	2 D	3 N	4 A	5 SA
1.	I quickly get fed up with old things and try new ways of doing things					
2.	I most often come up with new ideas and plans in life and business					
3.	I am much better in achieving goals on time and capturing opportunities					
4.	I often look around the environment and make some slight changes in my products to better meet my customer needs					

No.	Proactiveness aspects of the respondent	1	2	3	4	5
		SD	D	N	A	SA
1.	I initiate actions to which other businesses respond					
2.	I often try to take the initiative in every situation like against my competitors.					
3.	I well excel at identifying opportunities					
4.	When faced with challenges I always know the way out.					

No.	Risk taking behavior of the respondent	1	2	3	4	5
		SD	D	N	A	SA
1.	I don't mind investing my money into this business even.					
2.	I take calculated risk when investing in this cassava enterprise					
3.	I often accept and factor in competition and take steps to block or limit it.					
4.	The more the risk the more the returns					

No.	Competitive aggressiveness	1	2	3	4	5
		SD	D	N	A	SA
1.	My agrienterprise is intensely competitive					
2.	I always have alternatives when faced with stiff competition					
3.	In general., my business takes a hold or aggressive approach when competing for opportunities					
4.	I try to undo and out-manuever the competition as best as I can					

No.	Autonomy aspects of the respondent	1 SD	2 D	3 N	4 A	5 SA
1.	I don't consult any expert in making operation decisions in my enterprise					
2.	I don't depend on somebody in solving a problem faced by my business					
3.	I encourage my employees to be self-reliant when doing actual processing of cassava products					
4.	I leave my employees to make decision on their own in my absence.					

PART FIVE: SUPPORTIVE ENVIRONMENT

a) With regard to access to financial/ credit resources

47. Is it easy to get loan/credit facilities? [1] Yes [0] No If No, proceed to 48

48. What are challenges you face to get a loan/credit?

[1] Lack of access [2] Lack of proper collateral [3] Availability of other alternatives [4] Others (Specify).....

49. If yes in 47, how much did you get in the last one year (2018)? Ksh.....?

50. Where did you get the loans/credit from?

[1] Commercial banks [2] Savings and Credit institutions [3] Partnership groups/ associations

[4] Others, Specify.....

51. Do you receive government subsidies on loans?

[1] Yes [0] No

52. What did you do with the borrowed money?

S.N	Target activity	1=Yes 0=No	Rank according to degree of expenditure (1=Low, 2=Medium, 3=High)
i	Purchased equipment for value addition		
ii	Hired labour		
iii	Renting business premise		
iv	Cassava value addition		
v	Others (Specify)		

53. How do you assess the cost of getting credit/loan (interest and other charges)?
 [1] Expensive [2] Affordable [3] Cheap
 b) Access to non-financial resources/institutional factors
54. What are the nature of the roads towards the market?
 1] All weather roads [2] Murram road
 [3] partially tarmacked road [4] Fully tarmacked
55. Are these roads passable and in good condition?
 [1] Yes [0] No
55. Do you always get good and reliable information on cassava products?
 [1] Yes [0] No
56. Do you receive good and reliable electricity?
 [1] Yes [0] No
 c) Concerning cultural views
57. Do you receive support on entrepreneurial activities?
 [1] Yes [0] No, If Yes, Proceed to 57
58. Who provides the entrepreneurial support?
 [1] National government [2] County government [3] Non-Governmental
 Organizations (NGOs) [4] Others, Specify.....
59. Do you value the importance of entrepreneurship in cassava businesses?
 [1] Yes [0] No
60. Do entrepreneurs recognized and celebrated by the society?
 [1] Yes [0] No
 d) With respect to social capital/ networking in a group
61. Do you belong to any agripreneurs/business group?
 [1] Yes [0] No If yes, proceed to 62
62. Which association do you belong to?
 [1] Entrepreneurs/farmers' Cooperative [2] Savings and credit Institution [3]
 Women's association [4] Table Banking group [5] Other (Specify).....
63. How does the membership benefit you?

S.N	Membership benefits	1=Yes 0=No
i	Fast input(Raw material) delivery	
ii	Affordable input/raw material price	

iii	Fair value added product (output) price	
iv	Strong bargaining power	
v	Easy access to credit/loan	
vi	Low cost credit/loan	
vii	Agrienterprise information access	
viii	Others (Specify)	

e) Regarding market access factors

64. How do you transport your cassava products to the market?
 [1] On foot [2] Bicycles [3] Motorcycle [4] Tuktuk [5] Pick-up [5] Lorry [6] Others (Specify).....
65. How long do you take to reach the market?
 [1] Less than 10 Minutes [2] 10-20 Minutes [3] 20-30 Minutes [4] 30-40 Minutes [5] 40-50 Minutes [6] More than 50 minutes.
65. Do you get access to local market to sell and buy product is easily?
 [1] Yes [0] No
66. What is the distance (Km) from your home to the nearest market where you sell your products?(Km)
67. Do you always access information on national market opportunity easily?
 [1] Yes [0] No
68. If Yes in 67 above, how do you receive the information?
 [1] Extension officers [2] Group membership [3] phone calls [4] Media [5] From local traders/ entrepreneurs [6] Others (Specify).....
69. In which form do you sell cassava?
 [1] Raw [2] Processed [3] Both
70. If raw in 69 above, who are the main customers?

S.N	Customers	^a Main location	Price/Kg KSh
i	Local consumers		
ii	Local intermediary traders		
iii	Others (Specify)		

^a codes: 1=Market centres 2=Vibanda (Kiosks) 3= others (Specify)

71. if processed in 69. Who are the main customers? (Tick the main)

S.N	Customers	^a Main location	Price/Kg KSh
i	Retailers		
ii	Small scale hoteliers		
iii	Final consumers		

^a codes: 1=Market centres 2=Vibanda (Kiosks) 3= others (Specify)

72. Who determines prices of the processed/ value added cassava products?

[1] Entrepreneur/ businessman [2] The customer [3] Market forces (demand and supply) [4] Negotiable

73. What do you look for when buying cassava? [1] Moisture content [2] cassava maturity [3] Cleanliness of cassava [4] Size of cassava [5] Any other (Specify).....

74. Are there any contractual agreements between you and the suppliers? [1] Yes [0] No

75. If yes in 74, what form of arrangements? [1] Formal contracts [2] Informal contracts [3] Any Other (Specify).....

76. What is that you consider most when setting price for cassava products you sell?

[1] Demand [2] Distance to the market [3] Quality [4] Others (Specify).....

77. What cost do you incur in marketing your cassava products?

Type of cost	Cost per Unit	Total cost in KSh
Transport (Per km)		
Cost of labour (Per person)		
Value addition (Kg)		
Market charges		
Cost of storage (Per month)		

f) With respect to training

78. Did you receive agripreneurial trainings in the last one year? [1] Yes [0] No

79. If yes in 69, who provided the training?

[1] Extension/ agribusiness officers [2] Self Help Africa [3] Financial institutions [4] NGOs [5] Development partners (donors) [6] Others (Specify)

70. If yes, how often do you receive trainings?

[1] Every month [2] every three months (Quarterly)

[3] Every six months [4] Per year

71. What are some of the benefits that you derived from training you received?

- [1] Entrepreneurial skills [2] Marketing skills [3] financial management skills
 [4] Others (Specify).....

PART FIVE: CASSAVA SALES GROWTH BETWEEN TIME OF INITIATION AND PRESENT

a) Approximately how many quantities did you sell in the last five years since the enterprise began in Kgs?

2015	2016	2017	2018

b) What quantities of cassava do you sell on weekly basis in Kg?

- [1] Less than 5kg [2] 5-10kg [3] 10-15kg [4] More than 15 kg

c) How much do you sell per unit in Ksh?Ksh /kg

d) How would you rate the growth strategy adopted in your organization in relation to the performance of your business?

- [1] Good [2] Bad

Number of employees

e) Did you employ someone to run your enterprise when initiating it?

- [1] Yes [0] No

If yes proceed to e.

f) Currently how many workers do you have? -----employees

In your own opinion what would you suggest should be done for the growth strategies adopted by your business to be effective?

.....

Business growth likert scale

No.	Growth aspects	1	2	3	4	5
		SD	D	N	A	SA
1.	Business growth by introducing new products					
2.	Business growth by introducing quality inputs					
3.	Business growth by introducing mobile applications for payment					

4.	Business growth by increasing employee salary payment					
5.	Business growth by increasing branches of selling cassava products					
6.	Business growth by improving products and services					
7.	Business growth by introducing new and improved methods of production					
8.	Business growth by introducing new channels of distribution					
9.	Business growth by introducing improved modes of communication to customers					
10.	Business growth by improving service delivery					
11.	Business growth by introducing new marketing strategy					
12.	Business growth by introducing new technologies inform of machines and equipment.					

Sales as the indicator of enterprise growth

Period during which revenue was made/generated	Amount of sales revenue in KES
Average amount of sales revenue of the start-up period (first year of operating an enterprise)	
Average amount of sales revenue of the start-up period (first year of operating an enterprise)	
Average amount of sales revenue of the last financial year (last year)	

Appendix B: Stata output

Table 1. Values of factor loadings used in generating different cluster levels (Totals)

Variable	Factor 1	Uniqueness
Innovativeness		
Inno 1	0.5349	0.7139
Inno 2	0.7934	0.3706
Inno 3	0.7329	0.4629
Inno 4	0.5286	0.7206
Total	2.5898	
Proactiveness		
proa5	0.7782	0.3944
proa6	0.807	0.3488
proa7	0.7583	0.425
proa8	0.5724	0.6724
Totals	2.9159	
Risk Taking		
risk9	0.7622	0.4191
risk10	0.8258	0.318
risk11	0.8316	0.3085
risk12	0.7001	0.5098
Total	3.1197	
Competitive aggressiveness		
competitive~13	0.9002	0.1897
competiti~14	0.7451	0.4449
competiti~15	0.9002	0.1897
competiti~16	0.8652	0.2515
Total	3.4107	
Autonomy		
autonomy17	0.8688	0.2451
autonomy18	0.8462	0.284
autonomy19	0.8409	0.2928
autonomy20	0.8164	0.3334
Total	3.3723	

Overall Agripreneural orientation

Overall AO		
Overall Innovativeness	0.7112	0.4942
Overall Proactiveness	0.8836	0.2192
Overall Risk Taking	0.9011	0.1879
Overall Competitive aggressiveness	0.9375	0.1211
Overall Autonomy	0.9204	0.1528
Total	4.3538	

. tab Innov_Level

Innovativeness level	Freq.	Percent	Cum.
1. Low	29	16.96	16.96
2. Medium	129	75.44	92.40
3. High	13	7.60	100.00
Total	171	100.00	

. tab Proactive_level

Proactiveness level	Freq.	Percent	Cum.
1. Low	37	21.64	21.64
2. Medium	118	69.01	90.64
3. High	16	9.36	100.00
Total	171	100.00	

. tab Risk_level

Risk level	Freq.	Percent	Cum.
1. Low	33	19.30	19.30
2. Medium	122	71.35	90.64
3. High	16	9.36	100.00
Total	171	100.00	

Level of competitive aggressiveness	Freq.	Percent	Cum.
1. Low	34	19.88	19.88
2. Medium	136	79.53	99.42
3. High	1	0.58	100.00
Total	171	100.00	

. tab Autonon_level

Autonomy level	Freq.	Percent	Cum.
1. Low	35	20.47	20.47
2. Medium	115	67.25	87.72
3. High	21	12.28	100.00
Total	171	100.00	

```

. ologit AOlevelNEW Years_schooling gender_sex bage ownexp Emplytrain employee_operateenterpr Skill
> led_trainedemployee Rev_frm_cassava Other_revenue cassva_landaccess Kiloconsumed_perday Enterpri
> se_age Grantsupportreceived, or

```

```

Iteration 0: log likelihood = -132.06082
Iteration 1: log likelihood = -90.650668
Iteration 2: log likelihood = -78.529034
Iteration 3: log likelihood = -76.496877
Iteration 4: log likelihood = -76.442114
Iteration 5: log likelihood = -76.442074
Iteration 6: log likelihood = -76.442074

```

Ordered logistic regression

```

Number of obs = 171
LR chi2(13) = 111.24
Prob > chi2 = 0.0000
Pseudo R2 = 0.4212

```

Log likelihood = -76.442074

AOlevelNEW	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]	
Years_schooling	1.028252	.0848669	0.34	0.736	.8746722	1.208797
gender_sex	4.224566	3.303878	1.84	0.065	.9121971	19.56481
bage	1.002194	.0193165	0.11	0.909	.965041	1.040778
ownexp	1.28813	.1114143	2.93	0.003	1.087269	1.5261
Emplytrain	2.269288	.9993108	1.86	0.063	.9573084	5.37932
employee_operateenterpr	3.362505	.9235672	4.42	0.000	1.962757	5.76049
Skilled_trainedemployee	1.017257	.3302357	0.05	0.958	.538396	1.922026
Rev_frm_cassava	1.09985	.1391467	0.75	0.452	.8583101	1.409362
Other_revenue	1.112063	.1392781	0.85	0.396	.870006	1.421466
cassva_landaccess	.0762311	.0514438	-3.81	0.000	.0203099	.2861261
Kiloconsumed_perday	1.03196	.0113167	2.87	0.004	1.010016	1.05438
Enterprise_age	.8500597	.0761104	-1.81	0.070	.7132417	1.013123
Grantsupportreceived	.5586625	.2539784	-1.28	0.200	.2291804	1.361826
/cut1	10.97516	12.68055			-13.87825	35.82857
/cut2	19.16526	12.86295			-6.045667	44.37619

Cassava products

. tab casva_products

Cassava products made and sold	Freq.	Percent	Cum.
Cassava flour	35	20.47	20.47
Cassava dried chips	123	71.93	92.40
Cassava Porridge	2	1.17	93.57
Raw Cassava and others	11	6.43	100.00
Total	171	100.00	

. tab Othercassprodct

Other cassava products produced	Freq.	Percent	Cum.
0	5	2.92	2.92
1. Unchopped dried cassava products	153	89.47	92.40
2. Cassava cuttings	5	2.92	95.32
3. Cassava porridge	3	1.75	97.08
4. Boiled cassava	2	1.17	98.25
5. Fermented dried chips	3	1.75	100.00
Total	171	100.00	

Ordered logit model results

```
. ologit AOlevelNEW Years_schooling gender_sex bage ownexp Emplytrain employee_operateenterpr Skilled_t
> rainedemployee Rev_frm_cassava Other_revenue cassva_landaccess Kiloconsumed_perday Enterprise_age Gra
> ntsupportreceived, or
```

```
Iteration 0: log likelihood = -132.06082
Iteration 1: log likelihood = -90.650668
Iteration 2: log likelihood = -78.529034
Iteration 3: log likelihood = -76.496877
Iteration 4: log likelihood = -76.442114
Iteration 5: log likelihood = -76.442074
Iteration 6: log likelihood = -76.442074
```

Ordered logistic regression

```
Number of obs = 171
LR chi2(13) = 111.24
Prob > chi2 = 0.0000
Pseudo R2 = 0.4212
```

Log likelihood = -76.442074

AOlevelNEW	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]	
Years_schooling	1.028252	.0848669	0.34	0.736	.8746722	1.208797
gender_sex	4.224566	3.303878	1.84	0.065	.9121971	19.56481
bage	1.002194	.0193165	0.11	0.909	.965041	1.040778
ownexp	1.28813	.1114143	2.93	0.003	1.087269	1.5261
Emplytrain	2.269288	.9993108	1.86	0.063	.9573084	5.37932
employee_operateenterpr	3.362505	.9235672	4.42	0.000	1.962757	5.76049
Skilled_trainedemployee	1.017257	.3302357	0.05	0.958	.538396	1.922026
Rev_frm_cassava	1.09985	.1391467	0.75	0.452	.8583101	1.409362
Other_revenue	1.112063	.1392781	0.85	0.396	.870006	1.421466
cassva_landaccess	.0762311	.0514438	-3.81	0.000	.0203099	.2861261
Kiloconsumed_perday	1.03196	.0113167	2.87	0.004	1.010016	1.05438
Enterprise_age	.8500597	.0761104	-1.81	0.070	.7132417	1.013123
Grantsupportreceived	.5586625	.2539784	-1.28	0.200	.2291804	1.361826
/cut1	10.97516	12.68055			-13.87825	35.82857
/cut2	19.16526	12.86295			-6.045667	44.37619

```
. probit ENT_SALESGROWTHLEV OverINNOLevel OverProacLevel OverallRiskTakLev OverallCompLevel OverallAutoLeve ownexp En
> terprise_age Poses_bsplan
```

```
Iteration 0: log likelihood = -110.17789
Iteration 1: log likelihood = -102.97518
Iteration 2: log likelihood = -102.91522
Iteration 3: log likelihood = -102.91522
```

```
Probit regression                               Number of obs =      171
                                                LR chi2(8)         =      14.53
                                                Prob > chi2        =      0.0691
Log likelihood = -102.91522                    Pseudo R2         =      0.0659
```

ENT_SALESGROWTHLEV	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
OverINNOLevel	.1663581	.2342055	0.71	0.478	-.2926763	.6253925
OverProacLevel	-.413407	.2430826	-1.70	0.089	-.8898402	.0630262
OverallRiskTakLev	.0877128	.3565667	0.25	0.806	-.611145	.7865706
OverallCompLevel	-.7201078	.4196324	-1.72	0.086	-1.542572	.1023565
OverallAutoLeve	.6702273	.3928804	1.71	0.088	-.099804	1.440259
ownexp	.0409751	.0292486	1.40	0.161	-.0163511	.0983014
Enterprise_age	-.0420501	.0315635	-1.33	0.183	-.1039135	.0198132
Poses_bsplan	.8794233	.3322699	2.65	0.008	.2281863	1.53066
_cons	.4009794	.2605471	1.54	0.124	-.1096835	.9116423

Probit model results

```
. probit EntgrowthLevel bage Educ_level Skilled_trainedemployee Emplaytrain ownexp Enterprise_age OverIN
> NOLevel OverProacLevel OveralRiskTakLev OveralCompLevel OveralAutoLeve OveralAOLev , vce(robust)
```

```
Iteration 0: log pseudolikelihood = -48.447074
Iteration 1: log pseudolikelihood = -29.475208
Iteration 2: log pseudolikelihood = -21.6398
Iteration 3: log pseudolikelihood = -19.71039
Iteration 4: log pseudolikelihood = -19.640757
Iteration 5: log pseudolikelihood = -19.640553
Iteration 6: log pseudolikelihood = -19.640553
```

```
Probit regression                               Number of obs   =       171
                                                Wald chi2(12)  =       45.48
                                                Prob > chi2    =       0.0000
Log pseudolikelihood = -19.640553             Pseudo R2      =       0.5946
```

EntgrowthLevel	Robust		z	P> z	[95% Conf. Interval]	
	Coef.	Std. Err.				
bage	-.0370903	.0194766	-1.90	0.057	-.0752637	.0010831
Educ_level	-.1657354	.0724119	-2.29	0.022	-.3076602	-.0238107
Skilled_trainedemployee	1.552199	.5081493	3.05	0.002	.5562449	2.548153
Emplaytrain	-.9158068	.340195	-2.69	0.007	-1.582577	-.2490369
ownexp	-.1337438	.0696983	-1.92	0.055	-.27035	.0028624
Enterprise_age	-.2881109	.1240269	-2.32	0.020	-.5311991	-.0450226
OverINNOLevel	-.255698	.6153629	-0.42	0.678	-1.461787	.9503911
OverProacLevel	-.7693042	.658721	-1.17	0.243	-2.060374	.5217652
OveralRiskTakLev	.7966185	.8527905	0.93	0.350	-.8748202	2.468057
OveralCompLevel	3.866675	1.038352	3.72	0.000	1.831542	5.901807
OveralAutoLeve	-.5874876	.5616789	-1.05	0.296	-1.688358	.5133827
OveralAOLev	-2.462365	1.08056	-2.28	0.023	-4.580223	-.344507
_cons	1.970358	1.075577	1.83	0.067	-.1377343	4.07845

Note: 44 failures and 1 success completely determined.

```
. alpha inno1 inno2 inno3 inno4 proa5 proa6 proa7 proa8 risk9 risk10 risk11 risk12 competitiveness13 comp
> etitiveness14 competitiveness15 competitiveness16 autonomy17 autonomy18 autonomy19 autonomy20
```

Test scale = mean(unstandardized items)

```
Average interitem covariance: .4491145
Number of items in the scale: 20
Scale reliability coefficient: 0.9401
```

```

. alpha Busgrowth_newprodct1 Busgrowth_qualityinputs Busgrowth_mobileforpay3 Busgrowth_salaryincrease4
> Busgrowth_moresellingbranches5 Busgrowth_improvegoodsnservice6 Busgrowth_newprodctmethod7 Busgrowth_ne
> wdistribchannels8 Busgrowth_improvcommunodes9 Busgrowth_servicedelivery10 Busgrowth_newmarktstrategy
> 11 Busgrowth_newtechnologymachines1

```

Test scale = mean(unstandardized items)

Reversed item: Busgrowth_newprodct1

Average interitem covariance: .3312052

Number of items in the scale: 12

Scale reliability coefficient: 0.8648

Agripreneurial orientation items borrowed and sources

Risk taking 1: we value new strategies/ plans even if we are not certain that they will always work (Miller 1983)

Risk taking 2: To make effective changes to our offering, we are willing to accept at least a moderate level of risk of significant losses (Vitale, Gigloerano and Miles, 2003)

Risk taking 3: we encourage people in our enterprise to take risks with new ideas (Hughes, Hughes and Morgan 2007)

Risk taking 4: we engage in risky investments (e.g. new employees, facilities, debts and stock options) to stimulate future growth (Li, Zhao and Liu 2008)

Proactiveness 1: we consistently look for new business opportunities (Hughes *et al.*, 2007)

Proactiveness 2: our marketing efforts try to lead customers, rather than respond to them* (adapted from Li *et al.* 2008)

Proactiveness 3: we incorporate solutions to unarticulated customer needs in our products and services (Miller 1983)

Proactiveness 4: we work to find new business or market target (Vitale *et al.*, 2003)

Innovativeness 1: when it comes to the problem solving we value creative solutions more than solutions that rely of conventional sistom (Hughes *et al.*2007)

Questions used in determining likert scale

The twenty statements are shown below;

a) Innovativeness

- ❖ I quickly get fed up with old things and try new ways of doing things
- ❖ I most often come up with new ideas and plans in life and business
- ❖ I am much better in achieving goals on time and capturing opportunities

- ❖ I often look around the environment and make some slight changes in my products to better meet my customer needs

b) Proactiveness

- ❖ I initiate actions to which other businesses respond
- ❖ I often try to take the initiative in every situation like against my competitors.
- ❖ I will excel at identifying opportunities
- ❖ When faced with challenges I always know the way out.

c) Risk taking behaviour

- ❖ I don't mind investing my money into this business even.
- ❖ I take a calculated risk when investing in this cassava enterprise
- ❖ I often accept and factor in competition and take steps to block or limit it.
- ❖ The more the risk the more the returns

❖ Competitive aggressiveness

- ❖ My agrienterprise is intensely competitive
- ❖ I always have alternatives when faced with stiff competition
- ❖ In general, my business takes hold or aggressive approach when competing for opportunities
- ❖ I try to undo and out-manoeuvre the competition as best as I can

d) Autonomy

- ❖ I don't consult an expert in making operational decisions in my enterprise
- ❖ I don't depend on somebody in solving a problem faced by my business
- ❖ I encourage my employees to be self-reliant when doing the actual processing of cassava products

APPENDIX C: Research Permit

National Commission for Science Technology and Innovation (NACOSTI) Clearance Certificate

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 555519	Date of Issue: 10/October/2019
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<p>This is to Certify that <u>Mr. Gad Sambrumo</u> of Egerton University, has been licensed to conduct research in Migori on the topic: EFFECTS OF AGRIPRENEURIAL ORIENTATION ON GROWTH OF CASSAVA-BASED SMALL AND MEDIUM ENTERPRISES IN MIGORI COUNTY, KENYA for the period <u>ending</u> : 10/October/2020.</p>	
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Influence of Agripreneurial Orientation Constructs on Growth of Cassava-Based Small and Medium Enterprises in Migori County, Kenya

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The study sought to analyse influence of agripreneurial orientation constructs on growth of cassava based small and medium enterprises in Migori County, Kenya. Data were collected using snow balling sampling method from 171 cassava agripreneurs. Data analysis was done using descriptive statistics and Probit model. The study revealed that the respondents were middle aged (43 years), majority were female (78.4%), had reached formal education (52%), average age of enterprises was 10years and average quantity of cassava traded per week of 29 Kg, average number of workers employed of 2 persons while the average distance to the market being 3Km. The important and statistically significant variables that influence growth of cassava based small and medium enterprises include: Education level ($p < 0.05$), number of Skilled employees ($P < 0.01$), owner experience ($P < 0.1$), number of trained employees ($P < 0.01$), enterprise age ($P < 0.05$), competitive aggressiveness ($P < 0.01$) and agripreneurial orientation ($P < 0.05$) with Pseudo R^2 value (.5946). According to these findings, the study recommends that the government should empower cassava based agripreneurs through training, trade fairs and capacity building to change the mind-set of the agripreneurs while providing incentives in venturing into cassava for the growth of the agrienterprises as well as individual growth. The government of Kenya can achieve these through its agricultural organizations with collaborations with Non-Governmental organizations and other stakeholders.

Keywords: Cassava-based SMEs; growth; agripreneurial orientation; Migori County; agrienterprises.

