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.

Original Research Article

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<.01), owner experience (P<.1), number of trained employees (P<0.01), enterprise age (P<0.05), competitive aggressiveness (P<.01) and agripreneurial orientation (P<0.05) with Psedudo 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.

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1. INTRODUCTION

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 to the world. It represents a significant proportion of the global economies [1,2,3]. Moreover, SMES 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 SMES and jobs they created [3]. There is a need for understanding what compels individuals to become prosperous as entrepreneurs. However cassava based small and medium individuals are experiencing challenges regarding there agripreneurial orientation in terms of innovativeness, risk taking, proactiveness, competitive aggressiveness and autonomy [4].

In Migori County, cassava plays a key role as a needed food crop. The crop is resilient to drought and requires minimal external inputs and it is therefore, taken to mitigate risks in Agripreneurship as insurance crop [5]. 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 [6]. Since cassava based enterprise can generate greater benefits, the possibilities for commercialization exist.

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 [5]. 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.

Agripreneurship entails a progression which relies on not only opportunities but also the individual agripreneur [7]. 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 [8,9,10].

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 [11,12,13]. 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.

Firm growth is non-one-dimensional in nature and differently measured. Growth has been measured using different aspects which made it yielded different outputs, making it difficult to compare various research outputs [14]. 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 [15,5,12].

A study by [14] 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 [16] 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 agripreneurs that have effects on performance of an enterprise and they have distinctive effects in various stages of ventures' growth [17]. A study by [18], 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, while during growth and maturity phases, an administrative mentality or a combination of both (administrative and entrepreneurial) leads to high performance of agrienterprises.

The specific objectives of the study include;

i) To describe the characteristics of cassava-based agripreneurs.
ii) To determine influence of agripreneurial orientation and other factors on growth of cassava based small and medium agrienterprises.

Based on the scope and limitations, the study specifically limited to 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 Suna East and Uriri, Migori County were reached out. 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.

2. METHODOLOGY

This study was specifically conducted in Migori County using exploratory research design. The county is geographically located between coordinates of 1° 4′ 0″ S and 34° 28′ 0″ E. Crops grown in Migori are not limited to beans, maize,

sorghum, finger millet, Sweet potatoes and cassava. Cassava is the second tuber crop majorly grown and sold after sweet potatoes [19]. The agripreneurial orientation of cassava based agripreneurs is still unknown.

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 (SMES), 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 [20]. Sample size of 171 cassava business people were determined by method of [21].

2.1 Methods of Data Collection and Analysis

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 August to September 2019 in Suna East and Uriri Sub-counties of Migori County, Kenya. Well trained enumerators filled the questionnaires via personal interviews from cassava-based agripreneurs selling cassava products. Growth of enterprise was measured in terms of sales from the year 2017 to 2019(three consecutive years) as definite years.

The enterprise growth was categorically measured as:

Category 0=No growth
Category 1= growth

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

$$Y^* = \beta' X_i + \varepsilon_i \quad \text{Where i=1...N, and} \quad (2.1)$$

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

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

$$Y = 1 \text{ if } 0 < Y^* \leq 1 \qquad (2.2)$$

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 [22].

Empirical model

$$Y^* = \beta_1 + \beta_2 (\text{PROACT}) + \beta_3 (\text{INOV}) + \beta_4 (\text{AUT}) + \beta_5 (\text{RSK}) + \beta_6 (\text{COAGR}) + \varepsilon \qquad (2.3)$$

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.

B1=Constant
B1= Proactiveness
B2= Innovativenss
B3 = Autonomy
B4 = Risk Taking
B5 = Comptitve gressiveness
ε= Error term

3. RESULTS AND DISCUSSION

3.1 Socia-economic Characteristics of Cassava-based Small and Medium Agripreneuerus and their Enterprises

The socio-economic characteristics of cassava agripreneuers studied in this research were the following; age of the agripreneur, gender, level of education, age of agrienterprise, quantity of cassava sold per week, number of workers employed and distance to the market. The distribution agripreneurs is shown in Table 1.

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.

Table 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

The average age of the respondents was 43 years. This means that the middle aged individuals were involved in cassava based agripreneurship.

A study by [23] found the average age of the farmers was 51 years which was middle-aged which was involved in rice farming. A study by [24] 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 [25] 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.

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

Level of education was measured in years shown in Fig. 1. 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 (form two). Therefore, the knowledge gained by the agripreneurs was adequate to enable respondents do financial calculations for their enterprises. 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.

3.3 Age of Cassava Based Small and Medium Agripreneur

In Fig. 2, resuts of the percentage of casava based enterpreneurs in Migori County. Majority (30%) of the respondents were within the age bracket of 30-39 years. Respondents wihin 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 one that are mostly involved in running cassava based enterprises.
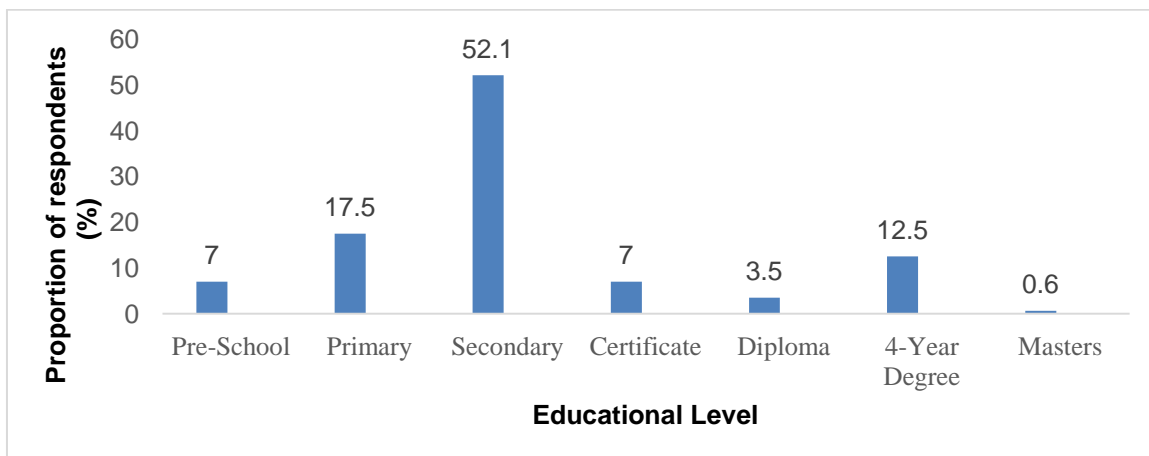

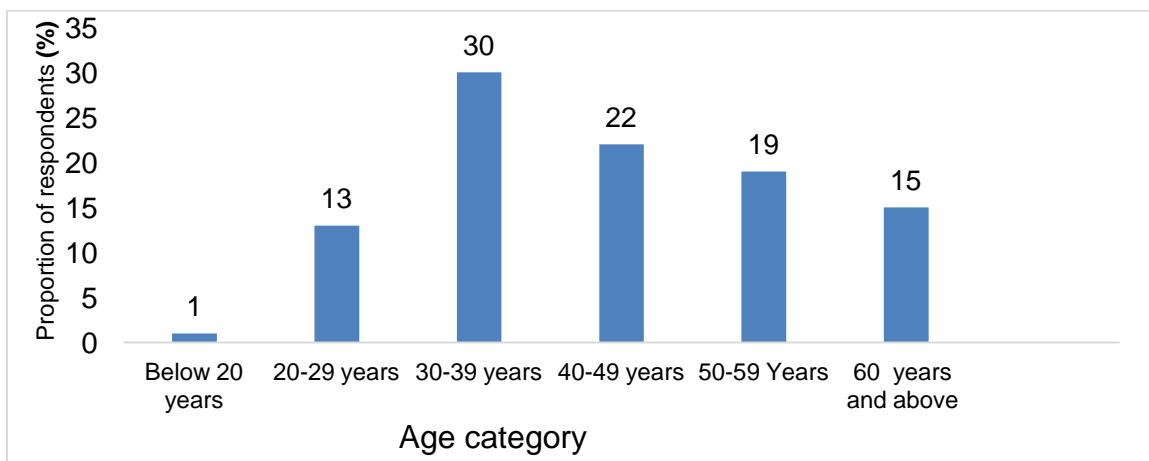**Fig. 1. Educational level of cassava based agripreneurs and their enterprises (n=171)**

Fig. 2. Summary percentage of Age category of respondents in Migori County

Table 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**
Male	21.64	6.25	17.89	81.25	
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	16.00	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 (%)					
No	71.93	96.90	71.54	25.00	27.324***
Yes	28.07	3.10	28.46	75.00	
Received Grants (%)					
No	45.61	53.13	39.84	75	7.9517**
Yes	54.39	46.88	60.16	25	
Employed workers (%)					
No	27.49	84.4	16.26	0	65.803***
Yes	72.51	15.6	83.74	100	

*Note: ***, ** & * represent 1%, 5% & 10% significant levels at 99%, 95% and respectively N=171*

The results in the Table 2 indicate the distribution and significant test for categorical variables for cassavabased 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. Therefore, they channel most of their resources to run enterprises and become more agripreneurial orientated compared to young generations.

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. 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 there small and medium enterprises compared to women. 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 [26] which concluded that cassava related activities are majorly practiced by women.

The results further showed that agripreneurial orientation is statistically significant (p<0.05) at 95% confidence level.

3.4 Cassava Value Added Products

Fig. 2 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%), row cassava (6.43) and only 1.17 % of the respondents were involved in dealing with cassava porridge. 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).

3.5 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 3. Challenges experienced by agripreneurs from Migori County 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 [27] that low prices of cassava products contributes to low profitability and this has

sometimes forced agripreneurs to substitute cassava business with other businesses.

Other challenges faced by 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%) as shown in Table 3.

3.6 Influence of Agripreneurial Orientation on Growth of Cassava-based Small and Medium Agrienterprises

Table 4 depict 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 Smalla and Medium Enterprises (CBSMES). Education level of an agripreneurs had a statistically significant effect at 5% (*P*<.05) on growth if cassava based small and medium enterprises. Increase in education level by one year reduces growth level by the proportion of about 0.17.This implies that growth of an enterpirise is influncied by level of education because as the level of education increaases, the most learned people divert to white collar jobs.

The number of Skilled employees had a statistically significant effect at 1% (*P*<.01) on growth if cassava based small and medium enterprises. An increase in number of Skilled employees increased enterprise growth level by proportion of approximately 1.55. This could be as the number of skilled employees are introduced in the enterprise, job specialization becomes paramount and helpful in growth of the enterprise. Differently skilled personnel reduce redundancy in the agrienterprises leading to good and increased growth performance.

Table 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

Number of trained employees had a statistically significant effect at 1% (*P*<.01) on growth of cassava based small and medium enterprises. An increase in Number of trained employees reduces enterprise growth level by proportion of approximately .92. This could be as the number of trained employees increase, the growth becomes a less important aim of the agripreneur as these employees search for higher scale and paid jobs. This becomes detrimental to the agrienterprise.

The results further indicate that enterprise (firm) age had a stistically significant effect at 5% (*P*<.05) on growth of cassava based small and medium enterprises. An increase in enterprise age reduces enterprise growth level by proportion of approximately .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 [28] which found a positive impact between a firm (enterprise) age and its growth and 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) [29].

Agripreneurial orientation was statistically significant at 5% (*P*<.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, [30] using other analysis showed that entrepreneurial orientation had a negative effect on the performance which the ultimate result of growth in aparticular configurations. This result is contrary to the study by [3] 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 [31,9,32].

Table 4. Summary of results for Probit model indicating influence of agripreneurial orientation on growth of cassava-based small and medium agripreneurs

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
Ownerexperience (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*

4. CONCLUSIONS AND RECOMMENDA-TION

The study revealed that respondents were at most productive age, educated and were running a grown enterprise. Among the constructs of agripreneurial orientation, competitive aggressiveness and overall agripreneurial orientation were responsible for agrowth of cassava based small and medium agrienterprises. In this regard, 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 agriprenurs while poviding incentives in venturing into cassava for the growth of the agrienterprises as well as individual growth. The govenrment can achieve these through its agricultural organizations with collaborations with Non-Governmental organizations.

Policy implications of the study is that , there is need for Kenyan Government to impose policies to enable agripreneurs' venture into investment in cassava agrienterprise through agrienterprise management skills, financial institutions and improved access to market information across the other parts of Kenya.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

REUSLTS OF PROBIT MODEL

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. probit ENT_SALESGROWTHLEV OverINNOLevel OverProacLevel OveralRiskTakLev OveralCompLevel OveralAutoLeve 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
OveralRiskTakLev	.0877128	.3565667	0.25	0.806	-.611145	.7865706
OveralCompLevel	-.7201078	.4196324	-1.72	0.086	-1.542572	.1023565
OveralAutoLeve	.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