**Economic Analysis of Youth Participation in
Agripreneurship in Benin**

by Rexford Akrong and Bekele Hundie Kotu

# ECONOMIC ANALYSIS OF YOUTH PARTICIPATION IN AGRIPRENEURSHIP IN BENIN

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## Abstract

Many development agencies encourage the youth in developing countries to pursue entrepreneurship in agriculture (agripreneurship) due to the employment opportunities that the sector offers. However, youth participation in different agribusiness activities in Benin has received little attention in both academic and policy circles. Using data from the School-to-Work Transition Survey (SWTS) and applying the triple-hurdle econometric model, in this study, we identified factors affecting youth participation in rural entrepreneurship in Benin. The results showed male youth who have larger number of children are more likely to choose agricultural businesses (agri-preneurship) while those who have formal education, who have received training on entrepreneurship, who have registered business, and those who have located in urban areas are more likely to engage in non-agricultural businesses. Within agri-preneurship, male youth who belong to larger household are more likely to engage in farming while those who are educated, who have access to credit, and who are located in urban areas are more likely to be engaged in non-farming agri-businesses. The study also revealed that cash crop production among Beninese youth was positively influenced by access to credit. The findings suggest that it would be necessary to promote development programmes which are geared towards enhancing capacities of the youth with regards to concepts and skills of entrepreneurship in agriculture and measures to overcome challenges associated with different agribusiness activities. Moreover, improving the access of the

youth to institutional credit will enable them to use exiting market opportunities and become successful entrepreneurs.

Keywords: Agribusiness, Agripreneurship, Cash Crop, Entrepreneurship, Youth

## 1. Background

Achieving the eighth Sustainable Development Goal (SDG 8) of inclusive and sustainable economic growth, employment and decent work for all requires devising strategies that are critical to providing new employment opportunities for all persons. This includes making seemingly unattractive but lucrative sectors of economies of developing countries attractive and more lucrative to all persons. Agriculture presents several employment opportunities to the African youth (people in the age bracket of 15-30) whose population is estimated to grow by 40 percent by 2030 (African Development Bank, 2016). Agriculture can also be an avenue for income generation, poverty reduction and improvement in food and nutrition security for this group of the population (Kidodo et al., 2016). Thus, agriculture is a pathway to youth empowerment. Therefore, making the agricultural sector attractive and lucrative implies achieving the first, second and eighth SDGs of no poverty, zero hunger, and decent work and economic growth.

The importance of agriculture to the economy of Benin cannot be overemphasized. The sector is a source of livelihood and employment to about 70 to 80 percent of the country's population (Adjimoti, 2018), provides foreign exchange earnings and food and nutrition security (USDA, 2014). These benefits call for investment in the agricultural sector as the key driver of the country's economic growth (Karimou, 2018).

Despite the significant contribution of agriculture to the economy of Benin, the sector is fraught with some serious constraints such as inadequate input supply, high dependence on rainfall, land

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tenure (lack of land title), distrust among farmers, pest and diseases, and inadequate access to finance. These challenges coupled with the negative perceptions of youth, who form about 60 percent of the population, about agriculture being less lucrative, labor and capital intensive, and an activity with low self-esteem make agriculture unattractive to the youth, hence their low participation in agriculture (IFAD, 2019; Mangal, 2009; Yami et al., 2019). Meanwhile, youth engagement in agriculture has been found to increase agricultural productivity given that this group are in their physical and mental primes of their lives, are flexible and dynamic, and are relatively more educated than the elderly population (Mangal, 2009; Naamwintome & Bagson, 2013). Furthermore, youth participation in agriculture is important in replacing the elderly population in agriculture, decrease imports of staple food, reduce the poor image of agriculture, reduce rural-urban migration and reduce youth unemployment and its associated social problems (Naamwintome & Bagson, 2013; Twumasi et al., 2019). Thus, there is the need for agricultural transformation programmes to boost engagement of this group in agriculture.

However, over the past decades, West Africa has seen a phase of rising cases of youth unemployment which is more pronounced in urban areas. Studies have identified that key drivers of the problem of youth unemployment particularly in urban areas include job-skills mismatch (Morsy & Mukasa, 2019) and the influx of rural youth in urban centers through rural-urban migration, which has increased the supply of labor. Meanwhile, there are limited formal employment opportunities to absorb this increasing labor force in Benin. To curb the incidence of unemployment in Benin and West Africa at large, government and development partners alike have emphasized the need for entrepreneurship. Agripreneurship (i.e., entrepreneurship in agriculture) has been identified as a major pathway to increase employment among rural youth, thereby decreasing the incidence of rural-urban migration of youth and its spillover effects. This

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is due to the employment potential of the agricultural sector given that this sector employs nearly 80% of the Beninese population (Adjimoti, 2020). To this end, several studies in different countries have examined the willingness of youth to participate in agricultural training programs, pursue agriculture in school or pursue agribusiness as well as the drivers of youth participation in agriculture and agribusiness (Adeyanju et al., 2020; Haruna, 2019; Magagula & Tsvakirai, 2020; Ng'atigwa et al., 2020; Twumasi et al., 2019). However, there is limited information on drivers of young people's choices of different agripreneurship activities as well as their crop production decisions in Benin. To this end, this study extends the literature by assessing what drives youth to participate in the different nodes of agribusiness as well as the production of different categories of crops in Benin. Such information is necessary to devise policies regarding institutions and infrastructure that are critical to empowering these vulnerable members of the population through agriculture.

## 2. METHODOLOGY

### 2.1. Data

The data for this study were gathered from the School-to-Work Transition Survey (SWTS) (ILO, 2015). The SWTS generates relevant labor market information on youth (15 to 29) including longitudinal information on transitions within the labor market. In Benin, the SWTS was implemented in December 2014 to January 2015 by the Institut National de la Statistique et de l'Analyse Economique (INSAE) in collaboration with the International Labour Organization (ILO) and the MasterCard Foundation, under the "Work4Youth" project. The data is nationally representative of individuals 15-29 years old. The sampling frame for the survey was a list of all households in Benin obtained from the Institut National de la Statistique et de l'Analyse Economique (INSAE). A total of 4,306 eligible respondents (youth) from households in Benin

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participated in the survey. The questionnaire used in the survey contains six sections for collecting quality information on youth. This information includes household demographic characteristics, formal education/training, activity history and aspirations, young workers, non-working youth and youth not in the labour force (i.e., youth who were still in school at the time of the study). Generally, these participants include both employed and unemployed youth. From the 4,306 youth who participated in the survey, this study used a total sample of 765 young entrepreneurs who were engaged in all sectors of the economy. These sampled entrepreneurs included agripreneurs (youth who either farm or trade in agricultural products, as their main occupation) and non-agripreneurs (youth who are engaged in other sectors of the Beninese economy).

The main outcome variables were "entrepreneur type", "agripreneur type", and "farmer type". Based on the available data, the study categorized young entrepreneurs into agripreneurs and non-agripreneurs as defined above. Further, agripreneurs were categorized into farmers and traders based on their main activity which was represented by the variable "agripreneur type". Finally, the study categorized farmers into farmers who produced only cash crops, farmers who produced only food crops and farmers who produced both food crops and cash crops. The sample size of the main categories of entrepreneurs is presented in Table 1. The study analyzed data on the socio-demographic and socioeconomic characteristics, business or firm characteristics, and institutional support services available to these entrepreneurs.

Table 1: Sample size of categories of young entrepreneurs in Benin

| Category | Sample |
|---|---|
| Non-agripreneurs | 427 |
| Agripreneurs | 338 |
| *Type of Agripreneurs:* | |
| Farmers | 211 |
| Traders | 127 |

### 2.2. Method of data analysis

Based on the random utility theory, a youth chooses an entrepreneurship activity that maximizes his/her utility. The choices of entrepreneurship activities available to youth include agripreneurship or non-agripreneurship activities, and farming or trading agricultural products which are both binary choices and were estimated with the binary logit model. Also, the youth can choose to produce food crops or cash crops or both food and cash crops as entrepreneurial activities which are unordered multiple choices and were estimated with the multinomial logit model.

Literature has revealed econometric models that are frequently used in modelling youth agripreneurship participation decisions. The main criteria for choosing a model in youth agripreneurship include: the sequence of the decision (i.e., if the decision involves a single-step, two-steps or three-steps); the statistical distribution of the dependent variable; and the need to control for selection bias among study subjects (i.e., the event where individuals choose to belong to a group or not, based on some comparative advantage rather than a random assignment (Maddala, 1983). In the case of a single step decision making process leading to a binary outcome without the need for self-selection, a binary choice model (either logit or probit) is sufficient, but if the chooser's decision results in a multiple choice outcome, then a multivariate model (either a multinomial logit or probit) is used.

***The binary logit model***

For binary choices, the utility a youth can derive from being an agripreneur or not and for choosing farming or trading agricultural products as a main agripreneurship activity follows a random utility model (Greene, 2012). Following Greene (2012), the utility, $U_{ij,}$ that the *ith* young entrepreneur would obtain from his/her choice of entrepreneurship activity $j$, can be expressed as a linear sum of two components; a deterministic part $V_{ij}$ that captures the observable components of the utility

function, and a random error term $\varepsilon_{ij}$ that captures the unobservable components of the function, that is:

$$U_{ij} = V_{ij} + \varepsilon_{ij} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{ (1)}$$

For binary choices regarding participation in agripreneurship activities, equation (1) translates to:

$$y_i = x_i'\beta + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{ (2)}$$

where $y_i$ is the dependent variable which takes a value of 1 if the entrepreneur is an agripreneur for the decision between agripreneurship or not and a farmer for the decision to be a farmer or a trader; $X$ = regressors; $\beta$ = parameter estimates; $\varepsilon$ = stochastic error term which is assumed to be iid (independently and identically distributed) with mean = 0 and variance = $\delta^2$.

From the generic equation (equation 2), a probit or a logit model can be estimated. However, according to Greene (2012), a probit model is used when the dependent variable is normally distributed, whiles a logit model is used when otherwise. However, the logit model is often used due to its mathematical convenience. The logit model used in the study is given by:

$$P\left(Y = \frac{1}{X}\right) = \frac{\exp(x'\beta)}{1+exp(x'\beta)} = \Lambda(x'\beta)\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{.(3)}$$

where the notation $\Lambda$ (.) indicates the logistic cumulative distribution function.

### The multinomial logit model

Unordered choice models can be motivated by a random utility models (Greene, 2012). For the *ith* youth faced with *j* crop choices, the utility of choice *j* is given by:

$$U_{ij} = Z'_{ij} + \varepsilon_{ij} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{.(4)}$$

Following Green (2012), the choice of the type of crop to produce, equation (4) translates to:

$$Prob\ (U_{ij} > U_{ik}) \text{ for all } k \neq j \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{.(5)}$$

If the decision-maker chooses alternative $j$ in particular, it is assumed that $U_{ij}$ is the maximum utility decision-maker $i$ derives from choosing alternative $j$ (Greene, 2012). The probability that alternative $j$ is chosen is given by equation (5).

Following Greene (2012), the model can be operationalized by a parameter choice of distribution for disturbances. Let $Y_i$ denote a random variable that indicates the choices made. If and only if the $J$ disturbances are independently and identically distributed, then:

$$Prob\ (Y_j = j) = \frac{\exp\ (Z'_{ij}\theta)}{\sum_{j=1}^{J}\exp\ (Z'_{ij}\theta)} \dots\dots\dots\dots\ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (6)$$

Let $Z_{ij} = (X_{ij},\ w_i)$, and $\theta$ conformably into $[\beta',\alpha']$. $X_{ij}$ varies across the choices and possibly across the decision-makers as well. $X_{ij}$ represents the characteristics of the choices or alternatives. $W_i$ represents the characteristics of the decision-maker and it is the same for all choices. Incorporating these assumptions into the model, equation (6) becomes:

$$Prob\ (Y_i = j) = \frac{\exp\ (X'_{ij}\beta + w'_i\alpha)}{\sum_{j=i}^{J}(X'_{ij}\beta + w'_i\alpha)} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\ (7)$$

Equation (7) is the multinomial logit model. A generic specification of the multinomial logit model is represented by:

$$Prob\ (y_j = i) = P_{ij}(\beta_0 + \beta_1 \dots \beta_k x_k) = P_{ji}(\beta_0 + X\beta) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (8)$$

$Y_j$ is the probability of farmer $j$ choosing alternative $i$ (food crop only, cash crop only or both food crop and cash crop)

$X_{i\ =}$ vector of household and production characteristics

$\beta_i$ = the vector of coefficients associated with the crop choice

Since youth in this study faced a three-step decision-making process regarding their participation in agripreneurship, a triple-hurdle model was used. The first step involved youth's decision to be an agripreneur or not; the second step entailed deciding the agripreneurship activity to undertake

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(i.e., whether to be a farmer or a trader), while the third step involved deciding whether to be a food crop or a cash crop farmer or both since there are different levels of utility derived from producing different types of crops. To operationalize this, the study estimated two binary logit models to capture the first two decisions and a multinomial logit model to capture the final decision.

The study used a triple-hurdle model to analyze the three-step decision-making process involved in agripreneurship. Two separate logit models were estimated for the first two stages since the dependent variable in two stages are binary variables. In the final stage, the study estimated a multinomial logit model given that the dependent variable had more than two unordered categories. From equations (2) and (6), the following estimation equations were developed for the three stages:

$$entrepreneurtype_i = \alpha_0 + \alpha_1 demographics_i + \alpha_2 firm\_Xtics_i +$$

$$\alpha_3 institutional\_support_i +$$

$$\varepsilon_i\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.(9$$

$$)$$

$$agripreneurtype = \beta_0 + \beta_1 demographics_i + \beta_2 firm\_Xtics_i +$$

$$\beta_3 institutional\_support_i + \varepsilon_i\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.(10)$$

$$farmertype_{ij} = \gamma_0 + \gamma_1 demographics_i + \gamma_2 firm\_Xtics_i + \gamma_3 institutional\_support_i +$$

$$\varepsilon_i\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots....(11)$$

Where *entrepreneurtype and agripreneurtype* represent the binary dependent variables which take the value of 1 if a youth is an agripreneur or a farmer, respectively. *farmertype represent the type of crop a farmer chooses to produce* (i.e., cash crop only, food crop only, or both cash crop and food crop.

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**2.3. Description of variables**

Table 2 presents the description of variables used in the econometric models. The dependent variables included in the models include entrepreneurship type to capture youth who were engaged in agribusiness and those who where not; agripreneurship type to capture youth who were mainly farmers and those who mainly traded in agricultural products; and farmer type to capture the type of crops produced by the farmer. The explanatory variables included socio-demographic variables (location of the youth, sex, household size, number of children, age, and educational status), firm characteristics (formalization and gross margin), and institutional factors (group membership, access to training and access to credit).

**Table 2: Description and measurement of explanatory variables**

| Variable | Description | Measurement | Hypothesized signs | | |
|---|---|---|---|---|---|
| | | | Entrepreneurship type | Agripreneurship type | Farmer type |
| Location | Whether the youth is located in rural or urban area | Dummy (1 = urban; 0 = rural) | - | - | +/- |
| Sex | Sex of respondent | Dummy (1 = male; 0 = female) | + | + | +/- |
| Household size | Total members in the household including the youth | Continuous | + | + | +/- |
| Number of children | Number of children the youth has | continuous | + | + | +/- |
| Age | Age of youth in years | Continuous | + | + | +/- |
| Education | Whether the youth has received formal education | Dummy (1 = yes; 0 = no) | - | - | +/- |
| Formalized | Whether the current business of youth is registered | Dummy (1 = yes; 0 = no) | - | - | +/- |
| Group membership | Whether youth belongs to a group | Dummy (1 = yes; 0 = no) | +/- | +/- | +/- |
| Training | Whether youth has received any training on field of engagement | Dummy (1 = yes; 0 = no) | +/- | - | +/- |
| Gross margin | Monthly total revenue less total variable cost (CFA) | Continuous | - | - | +/- |
| Access to credit | Whether youth has access to financial credit | Dummy (1 = yes; 0 = no) | - | - | +/- |

### 3. Results

### 3.1. Descriptive statistics

The main agripreneurship activities in Benin include crop production (both food crops and cash crops) which was done on semi-subsistence or market-oriented levels, sale of agricultural inputs and sale of agricultural outputs. On the other hand, the non-agripreneurship activities are mainly in the areas of trading of non-agricultural goods and artisanal works (such as dressmaking and masonry). The results are presented in Table 3.

**Table 3: Characterization of entrepreneurs by entrepreneurship type (i.e., agripreneurs and non-agripreneurs)**

| Variable | Agripreneurs n = 338 | Non-Agripreneurs n = 427 | | Pooled n = 765 |
|---|---|---|---|---|
| *Continuous variables* | | | t-value | |
| Household size | 7.95(0.28) | 6.68(0.21) | -3.69*** | 7.24(0.17) |
| Number of children | 1.26(0.10) | 0.94(0.06) | -2.9186*** | 1.08(0.55) |
| Age | 22.48(0.24) | 22.90(0.20) | 1.3508 | 22.72(0.15) |
| Gross margin per month (CFA) | 3503.15(406.77) | 4153.79(446.81) | 1.0510 | 3866.32(307.44) |
| *Categorical variables* | | | *Chi² value* | |
| Sex (1 = Male) | 45% | 47% | 0.2830 | 46% |
| Education (1 = Formal) | 44% | 72% | 62.9521*** | 60% |
| Formalized (1 = Yes) | 6% | 10% | 4.3060** | 8% |
| Group membership (1 = Yes) | 1% | 9% | 21.6465*** | 5% |
| Training (1 = Yes) | 4% | 24% | 63.4844*** | 15% |
| Access to credit (1 = Yes) | 11% | 15% | 1.7833 | 13% |
| Location (1 = urban) | 53% | 71% | 27.6941*** | 63% |

**Notes:** numbers in parentheses represent standard errors
*, ** and *** represent statistical significance at 10%, 5% and 1% level respectively
1 West African CFA franc = USD$ 0.00168 at the time of the study

The results show that the average age of entrepreneurs in Benin Republic is about 23 years. Agripreneurs were found to belong to larger households (7.95) compared with non-agriprenuers (6.68). Also, agripreneurs had more children than non-agripreneurs. More of the non-agripreneurs (72%) had access to formal education than the agripreneurs (44%). This is expected because most people who are engaged in agricultural activities do not have access to formal education. The

results reveal that on average, a young entrepreneur in Benin makes a monthly profit of CFA 3,866.32.

The results show that access to credit among entrepreneurs in Benin was low given that only 13% of the entrepreneurs had access to credit. More of the non-agripreneurs had received institutional support services compared with the agripreneurs. The differences in access to these support services were statistically significant at 1% level. The results show that the non-agripreneurs had an edge over the agripreneurs in terms of access to entrepreneurship training, membership to groups and the ability to register a business which was measured by having registered a business (formalized). The results also show that the percent of non-agripreneurs who reside in urban areas is greater than that of the agripreneurs. This finding is intuitive given that agriculture and its related activities are predominantly undertaken in rural areas.

Generally, young agripreneurs in Benin are either involved in crop production (farming) or trading as their main activities. The characteristics of these different agripreneurs are presented in Table 4. The average age of agripreneurs in Benin is 22 years. The results show that farmers had a larger household compared with traders. However, traders had more children than farmers. Although not strongly statistically significant, traders made more profits than farmers. This implies that trading as a main agripreneurship activity is more lucrative than farming in Benin Republic.

The results reveal that majority of farmers are males (60%) whereas majority of traders are females (81%). This that trading as an agripreneurship activity is female-dominated in Benin Republic. More of the traders than farmers had access to formal education. Only a few of the agripreneurs had registered their business (6%) and were members of groups (1%). The results show that the traders had an edge over the farmers in terms of access to entrepreneurship training and financial credit. further, the study show that majority of the traders were in the urban areas whereas majority

of the farmers were in the rural areas. This shows that agricultural production is a predominant

activity in the rural areas whereas agricultural trading is a predominant activity in the urban areas.

**Table 4: Characterization of Agripreneurs by agripreneurship type (i.e., farmers and traders)**

| Variable | farmers n = 211 | traders n = 127 | | Pooled n = 338 |
|---|---|---|---|---|
| *Continuous variables* | | | t-value | |
| Household size | 8.7 (0.39) | 6.7 (0.31) | 3.4977*** | 7.95(0.28) |
| Number of children | 1.1 (0.10) | 1.5 (0.20) | -1.9770** | 1.26(0.95) |
| Age in years | 22.3 (0.30) | 22.7 (0.402143) | -0.9643 | 22.48(0.24) |
| Gross margin per month (CFA) | 2930 (508.50) | 4455 (671.04) | -1.8223* | 3503.15(406.77) |
| *Categorical variables* | | | *Chi$^2$ value* | |
| Sex (1 = Male) | 60% | 19% | 54.6909*** | 45% |
| Education (1 = Formal) | 37% | 55% | 10.6121*** | 44% |
| Formalized (1 = Yes) | 6% | 6% | 0.0600 | 6% |
| Group membership (1 = Yes) | 1% | 1% | 0.2728 | 1% |
| Training (1 = Yes) | 2% | 6% | 4.4895** | 4% |
| Access to credit (1 = Yes) | 4% | 23% | 27.3960*** | 11% |
| Location (1 = urban) | 42% | 72% | 28.54*** | 53% |

Notes: numbers in parentheses represent standard errors
*, ** and *** represent statistical significance at 10%, 5% and 1% level respectively
1 West African CFA franc = USD$ 0.00168 at the time of the study


## 3.2. Challenges encountered by young entrepreneurs

Table 5 presents the business challenges which the sample youth entrepreneurs reported. It shows

that the challenges faced by youth entrepreneurs differ between non-agripreneurs and agripreneurs.

The majority of young entrepreneurs in Benin (31%) stated insufficient financial resources as their

main challenge. The results suggest that scarcity of labor was a major challenge and even when

labor was available, they were less qualified. Other challenges that the young entrepreneurs

encountered include market competition, insufficient business knowledge, scarcity of primary

resources, and lack of access to technology. Financial constraint was more intense among

agriprenuers than non-agripreneurs.

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**Table 5: Challenges encountered by young entrepreneurs**

| Challenges | Total Frequency n = 765 | percent | Non-Agripreneurs n = 427 | percent | Agripreneurs n = 338 | percent |
|---|---|---|---|---|---|---|
| Insufficient financial resources | 235 | 31 | 110 | 26 | 125 | 37 |
| Poor personnel quality | 15 | 2 | 5 | 1 | 10 | 3 |
| Insufficient personal knowledge of the business | 9 | 1.2 | 7 | 2 | 2 | 0.6 |
| Scarcity of primary resources | 11 | 1.4 | 5 | 1 | 6 | 2 |
| Scarcity of labor | 17 | 2.2 | 10 | 2 | 7 | 2 |
| Technological access | 1 | 0.1 | 0 | | 1 | 0.3 |
| Product development | 9 | 1.2 | 1 | 0.2 | 8 | 2.4 |
| Market competition | 38 | 5 | 23 | 5 | 15 | 4 |
| Other | 430 | 56 | 266 | 62 | 164 | 48 |

Pearson $\text{Chi}^2$ = 28.38 P = 0.0004

### 3.3. Factors influencing entrepreneurship decisions among youth in Benin

Table 6 presents the results of binary logit model. Columns (2) and (3) present results of the determinants of the choice between agriprenuership and entrepreneurship in other sectors of the economy (non-agrpreneurship) by youth entrepreneurs in Benin. The results show that the determinants of the choice between agripreneurship and non-agripreneurship include gender, age, education, household size, number of children, access to training, registered business, being a member of a group and the location of the youth (rural or urban area).

Males are more likely to be agripreneurs than females. This is reflected in the positive relationship between sex and agripreneurship. Agriculture or agribusiness is predominantly undertaken by men and has been perceived as a male activity. This could be because women lag behind in access to information, advisory services and training, and productive resources such as land and agricultural technologies.

**Table 6: Factors influencing entrepreneurship decisions among youth in Benin**

| Variable | Marginal Effects | Coefficient | Robust Std. Err | P-values | Confidence intervals | |
|---|---|---|---|---|---|---|
| | | | | | Lower bound | Upper bound |
| Sex (male) | 0.0749 | 0.3099 | 0.1761 | 0.0780* | -0.0352 | 0.6550 |
| Age | -0.0118 | -0.0487 | 0.0215 | 0.0240** | -0.0909 | -0.0065 |
| Formal education (yes) | -0.1947 | -0.8054 | 0.1733 | 0.0000*** | -1.1451 | -0.4658 |
| Household size | 0.01248 | 0.0516 | 0.0182 | 0.0050*** | 0.0160 | 0.0873 |
| Number of children | 0.0263 | 0.1089 | 0.0636 | 0.0870* | -0.0157 | 0.2335 |
| Gross margin | -6.57e-07 | -2.72e-06 | 9.47e-06 | 0.7740 | -0.0000213 | 0.0000158 |
| Training (yes) | -0.3742 | -2.0248 | 0.3696 | 0.0000*** | -2.7492 | -1.3003 |
| Access to credit (yes) | -0.0398 | -0.1666 | 0.2596 | 0.5210 | -0.6754 | 0.3422 |
| Registered (yes) | -0.0825 | -0.3533 | 0.3164 | 0.2640 | -0.9735 | 0.2668 |
| Group membership (yes) | -0.2827 | -1.4789 | 0.5571 | 0.0080*** | -2.5709 | -0.3869 |
| Location (urban) | -0.1073 | -0.4411 | 0.1746 | 0.0120*** | -0.7833 | -0.0989 |
| Constant | | 1.3135 | 0.5319 | 0.0140*** | 0.2710 | 2.3560 |
| Observations | 765 | | | | | |
| $LR\chi^2(13)$ | 97.7000 | | | | | |
| Log likelihood | -446.0767 | | | | | |
| Pseudo $R^2$ | 0.1504 | | | | | |

**Notes:** *, **and *** represent 10%, 5% and 1% significant levels respectively. Std. Err. Represents standard error.

There exists a negative relationship between age and the decision to be an agripreneur. This shows that as youth grow older, they are more likely to choose non-agricultural enterprises. This could be because with time, they accumulate the resources that can serve as capital for other businesses that are perceived to be more profitable and prestigious compared with agribusiness.

There exists a negative relationship between formal education and choosing agripreneurship which means that youth who have received formal education are less likely to venture into agribusiness and more likely to be entrepreneurs in other sectors of the economy. This implies that access to formal education deters youth from pursuing agribusiness and increases their tendency or propensity to pursue other options that appear to be more lucrative. This finding is consistent with

the findings of Adeyanju et al. (2020), Ogunmodede et al. (2020) and Ng'atigwa et al. (2020) who found that more educated Nigerian and Tanzanian youth, respectively, are less likely to venture into agribusiness because they perceive agribusiness as an occupation for less educated people.

The study also found a positive relationship between agripreneurship and household size; an increase in household size by one person increases the likelihood that a youth would choose agribusiness over other businesses. This result is in line with the finding of Nnadi and Akwiwu (2008) who found that larger households necessitate agricultural production to meet food security needs. Further, the results show that the number of children a youth had was positively associated with the decision to participate in agribusiness.

There is a negative relationship between access to entrepreneurship training and agripreneurship. This could be attributed to inadequate agricultural or agribusiness training facilities in Benin. Adesina and Favour (2016) note that a major constraint to youth participation in agribusiness activities is limited agribusiness training facilities in rural areas in Sub-Saharan Africa. Even when entrepreneurship training facilities are available, they are mostly in favor of non-agricultural entrepreneurship activities. Thus, youth who access these trainings are less likely to venture into agribusiness.

Collective action can influence the entrepreneurship decisions of youth in Benin. The study used group membership as a measure of collective action. The results show that there exists a negative correlation between young people's participation in groups and the decision to engage in agripreneurship. This could be attributed to the limited rural youth engagement in collective action and the low attention given to the relevance of collective action and youth groups by development partners (Scoones et al., 2016). Further, studies have found that the limited engagement of rural youth in collective action and youth groups has led to the failure of interventions that seek to

enhance youth participation in agribusiness activities (Amanor & Chichava, 2016; Lyocks et al., 2013). Even when youth participate in groups, differences in interests of stakeholders (such as development partners) and youth limit the performance of youth agribusiness ventures, thereby decreasing their propensity to increase participation in agribusiness activities.

The ability to register a business indicates the availability of educational, financial and technical capacities. The study found a negative association between having a registered business and the choice of agribusiness as an entrepreneurship activity.

Finally, as expected, youth who are located in the urban areas are more likely to be entrepreneurs in other sectors whereas those in rural areas are more likely to pursue agribusiness. This is because, agriculture is a predominant activity in rural areas. This finding reinforces the need to invest in making agribusiness lucrative to attractive to the urban youth given that the results suggest that urban youth perceive agriculture or agribusiness as a rural activity.

### 3.4. Factors influencing choice of different agribusiness activities

Table 7 presents the results of the determinants of the choice of different forms of agribusiness among youth in Benin. The results show that the factors that influence the choice of different agribusiness activities include gender, formal education, household size, access to formal financial services, access to credit and the location of the youth.

The results show that males are more likely to be farmers whereas females are more likely to be traders. This could be because Beninese women as less likely than men to own land and even when they have land, they have lower tenure security over such land (Goldstein, 2016). This reduces their propensity to engage in farming.

**Table 7: Factors influencing choice of different agribusiness activities**

| Variable | Marginal effects | coefficient | Robust Std. Err | P-values | Confidence intervals lower bound | upper bound |
|---|---|---|---|---|---|---|
| Sex (male) | 0.4002 | 1.9828 | 0.3286 | 0.0000*** | 1.3387 | 2.6269 |
| Age | 0.0061 | 0.0276 | 0.0379 | 0.4670 | -0.0467 | 0.1019 |
| Formal education (yes) | -0.2048 | -0.9268 | 0.3011 | 0.0020*** | -1.5168 | -0.3367 |
| Household size | 0.0185 | 0.0845 | 0.0305 | 0.0060*** | 0.0248 | 0.1442 |
| Number of children | -0.0051 | -0.0233 | 0.0838 | 0.7810 | -0.1875 | 0.1409 |
| Gross margin | -1.44e-08 | -6.55e-08 | 0.000019 | 0.9970 | -0.00004 | -0.00004 |
| Training (yes) | -0.3019 | -1.2530 | 1.0509 | 0.2330 | -3.3129 | 0.8068 |
| Access to credit (yes) | -0.3127 | -1.3098 | 0.4522 | 0.0040*** | -2.1960 | -0.4235 |
| Registered (yes) | -0.0928 | -0.4012 | 0.6381 | 0.5290 | -1.6519 | 0.8494 |
| Group membership (yes) | 0.1590 | 0.8776 | 0.9634 | 0.3620 | -1.0106 | 2.7658 |
| Location (urban) | -0.2579 | -1.2133 | 0.2946 | 0.0000*** | -1.7907 | -0.6358 |
| Constant | | -0.1642 | 0.9019 | 0.8560 | -1.9319 | 1.6035 |
| Observations | 338 | | | | | |
| LR$\chi^2$(13) | 79.09 | | | | | |
| Log likelihood | -162.3762 | | | | | |
| Pseudo R$^2$ | 0.2742 | | | | | |

**Notes:** *, **and *** represent 10%, 5% and 1% significant levels respectively.

Formal education has a negative relationship with the choice of farming as an agribusiness activity by youth in Benin. This could be because of wrong attitude of the youth towards farming. In fact, many youth consider farming as an activity for uneducated people (Ng'atigwa et al., 2020). This reinforces the need to increase investments in agriculture to increase the financial returns of agriculture. This can enhance the image of agriculture, thereby attracting more youth into farming. Household size is positively correlated with the choice of farming as an agribusiness activity. A large household leads to the intensification of the cultivation of land to meet food security needs of the household (Muriithi & Matz, 2014), thereby encouraging youth participation in farming. Access to credit is negatively correlated with a youth's decision to be a farmer. This finding

suggests that financial services drive youth to pursue trading activities which has been found to be more lucrative than farming activities. Access to financial services and credit increase the resource endowment of youth and hence, youth are capacitated to pursue trading activities. This finding is consistent with the findings of Beyene (2010) who found that access to credit increases participation in off-farm activities by rural households in Ethiopia.

Finally, the study found a negative relationship between location of the youth agripreneur and the choice of agribusiness activity. The study found that youth who are located in the urban areas were less likely to be farmers and more likely to be traders. This finding was expected because trading activities are predominantly undertaken in the urban centers whereas farming activities mainly take place in the rural areas.

### 3.5. Factors that influence young farmers' crop choice decisions

Table 6 displays results of the multinomial logit model regarding farmers' decision to grow cash crops, or food crops, or a combination of food and cash crops. The choice of food crops only has been taken as a base in the model. The results show that older youth are more likely to produce both food crops and cash crops and less likely to produce food crops only. Producing different types of crops is capital-intensive and requires experience. Since age is a proxy for experience and resource-endowment, older farmers can afford inputs required to produce different types of crops. Further, older youth have a higher propensity to be married which can induce them to produce both food and cash crops to meet household food security needs and to cover household expenses, respectively.

**Table 6: factors that influence young farmers' crop choice decisions**

| Variable | Cash crop only | | Both food crop and cash crop | |
|---|---|---|---|---|
| | coefficients | Marginal effects | coefficients | Marginal effects |
| sex | 0.2031 | 0.0376 | -0.2154 | -0.0271 |
| | (0.397) | | (0.5024) | |
| Age | 0.0703 | 0.0084 | 0.1005* | 0.0084 |
| | (0.0484) | | (0.0600) | |
| Formal education | 0.3240 | 0.0317 | 0.7429 | 0.0670 |
| | (3838) | | 0.4858 | |
| Formalized | -1.7933 | -0.2622 | -0.7757 | -0.0323 |
| | (1.1927) | | (1.1609) | |
| Training | 1.5783 | 0.2363 | 0.4705 | 0.0069 |
| | (5863) | | (2.0461) | |
| Gross margin | -2.47e-05 | -4.57E-06 | 2.6e-05 | 3.28e-06 |
| | (3.29e-05) | | (2.72e-05) | |
| Household size | 0.0411 | 0.0044 | 0.0805** | 0.0038 |
| | (0.0316) | | (0.0396) | |
| Number of children | -0.0923 | -0.0085 | 0.2329 | -0.0212 |
| | (-0.1590) | | (-0.2089) | |
| Group membership | -15.23 | -2.4071 | 0.3435 | 0.4298 |
| | (1473.81) | | (2.0416) | |
| Credit access | 2.0869*** | 0.6855 | -13.96 | -1.4521 |
| | (0.8162) | | (-0.764) | |
| Location: urban | 0.77245** | 0.1333 | -0.4518 | -0.0659 |
| | (0.3715) | | (0.4990) | (0.0489) |
| Constant | -3.4475*** | | -4.4381** | |
| | (1.1369) | | (1.4116) | |
| Observations | 221 | | 221 | |
| LR$\chi^2$ | 2065.54*** | | | |
| Log likelihood | -176.0235 | | | |
| Pseudo R$^2$ | 0.0917 | | | |

Notes: *, ** and *** represent 10%, 5% and 1% significance levels respectively. Numbers in parentheses represent robust standard errors. Base outcome is farmers who produced food crops only

The youth having larger household size are more likely to produce both food crops and cash crops as compared to food crops only. Given that diversification is labor-intensive and that a large household implies availability of labor, farmers who belong to larger households are able to meet the labor needs regarding producing both food crops and cash crops.

Access to credit is positively correlated with producing cash crops. This could be because farmers who have access to credit are more likely to afford the inputs that can enhance cash crop production. Given the lucrative nature of cash crops, access to credit can increase the resource-endowment of youth thereby creating a durable livelihood for this group of the population.

Youth in urban areas are more likely to specialize in cash crops production as compared to youth in rural areas. This could be because of the fact that the urban-based youth have better access to markets arising from their proximity to the market.

### 4. Conclusions and policy implications

With the increasing rate of unemployment, public-private-partnerships supported self-employment and entrepreneurship initiatives have become common. Given the employment opportunities in Beninese agricultural sector, youth in Benin are currently being encouraged to pursue entrepreneurship in agriculture. However, there is lack of evidence on what drives the uptake of different entrepreneurship activities in agriculture. To this end, this study elucidated the factors that influence youth participation in different entrepreneurship activities in Benin, with a particular focus on agripreneurship. The results show that being a male, a large family size and a large number of children encouraged entrepreneurs to venture into agribusiness whereas age, belonging to a group, ability to register a business, access to formal education and entrepreneurship training encouraged entrepreneurs to pursue non-agribusiness activities. Further, among participants of agribusiness, males and youth who belonged to larger households were more likely to be farmers whereas youth who were located in the urban areas, and had access to formal education, and financial credit were more likely to be traders. Finally, the study revealed that cash crop production by Beninese youth was highly motivated by access to financial credit and being located in urban

areas. However, older Beninese youth and those who had a larger family size were more likely to produce both food crops and cash crops.

The study findings on the factors that influence youth to pursue agribusiness show that owing to the negative perception of youth about agriculture, support services such as training and access to social capital and collective action through group memberships can stimulate youth to shift to non-agricultural activities. Therefore, there is the need for capacity development programmes as well as agricultural training programmes. These programmes are necessary to enlighten Beninese youth on the potential of agribusiness to create a durable livelihood for them. Thus, with institutional support (such as belonging to a group, business registration or formalization, access to formal education, entrepreneurship training and credit facilities) rural youth would be encouraged to pursue a career in agribusiness. Further, the study recommends that young Beninese should be provided with modern agricultural technologies as well as productivity enhancing technologies. This will ensure that young farmers maximize gains from agriculture, thereby making agriculture lucrative and attractive.

The findings suggest that pro-agribusiness programmes should target trading activities since agricultural trading was found to be the most profitable entrepreneurship activity to the youth in Benin. To ensure the sustainability of agricultural trading by youth, the government of Benin and development partners alike should promote formal education and capacity development programmes among youth in Benin. This will equip Beninese youth with knowledge and skills required to ensure business success. Moreover, financial credit and formal financial services should be made available and accessible to these youths. This will increase their participation in trading activities as well as boost their profits. This will capacitate youth to meet business requirements as well as enable them to expand their businesses.

Given that availability of resources, wealth and experience, and labor, measured with age and household size, respectively, and access to financial credit encourage cash crop production among youth in Benin, it will be useful if the government of Benin and development partners alike can promote rural youth participation in such high value crops by ensuring that financial resources are made available and accessible to youth. This will enable the youth to afford hired labor and improved inputs and technologies that can encourage and enhance cash crop production.

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