

**CHARACTERISTICS OF AGRICULTURAL ENTREPRENEURS AND THEIR
AGRIBUSINESSES IN SUB-SAHARAN AFRICA: EVIDENCE FROM BENIN****Thoto FS^{1,2*}, Kpenavoun Chogou S, Honfoga BG¹ and MD Houessou^{1,2,3}****Thoto Frejus Sourou**

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ABSTRACT

Entrepreneurship in the sub-Saharan African agricultural sector has been growing in recent years because of increasing unemployment and underemployment. In Benin, policies and programs are encouraging individuals to start their own agribusinesses. To further sharpen these policies and programs to improve agricultural entrepreneurship's contribution to the economy, it is essential to avail information on the entrepreneurs, their businesses, and the typologies of agribusinesses. Such information is limited, which reduces the ability to develop evidence-informed policies and programs. This research aims to fill the gaps by describing the features of agricultural entrepreneurs in Benin. A random sample of 819 agricultural entrepreneurs was used, and data were collected on entrepreneurs and their businesses. Descriptive analysis and hierarchical clustering of principal components were performed. The study found that women's participation in agricultural entrepreneurship in terms of new business formation is still low. Also, the agricultural entrepreneurs are more driven by necessity than opportunity, although they have a highly positive personality, mainly in terms of optimism and risk. At the enterprise level, most agribusinesses have been in operation for more than three years, but only one out of ten entrepreneurs felt that their business was at a mature phase. The research also evidenced that informality in the agribusiness sector is high because almost half of the agribusinesses were not registered with any formal governmental entity, and only three out of ten complied with tax regulations. Agricultural entrepreneurs were active in knowledge networks to expand their activities and improve their performance. Three categories of agribusiness were defined with the cluster analysis: 'informal agribusinesses' essentially built for profit, not registered, and owned by not highly educated adult entrepreneurs; 'professional new agribusinesses' were mainly operated by young entrepreneurs with a university education and agricultural professional training; and 'mature agribusinesses' were mostly formally registered and owned by highly educated entrepreneurs. This research will be instrumental for policymakers and practitioners to better understand agricultural entrepreneurship and improve its economic outcomes. It provides a strong evidence base to support the ongoing motivation of policymakers to provide solutions to unemployment and underemployment through agricultural entrepreneurship.

Key words: agriculture, entrepreneurship, agribusiness, typology, cluster analysis, formalization, knowledge networks, Benin



INTRODUCTION

Benin is a lower-middle income country with a population of 11.5 million people and an annual *per capita* income estimated at US\$ 1,219 in 2019 [1]. In the past three years, economic growth has been moderate and steady (5 to 6% annually). However, this economic performance was coupled with growing rates of unemployment and underemployment [2]. At the same time, the public and private sectors combined were unable to help decrease the rates. To face this challenge, there is a consensus that entrepreneurship can provide career options for those who are unemployed or underemployed [3, 4]. It can also offer greater independence, higher income potential, and increased job satisfaction. Consequently, policies and programmes are increasingly encouraging individuals to get into entrepreneurship by starting a business. Entrepreneurship is well mainstreamed in the policy landscape in Benin. In the current National Development Plan (2018-2025), “...the government is focusing on promoting entrepreneurship and the transition to the formal sector in the agribusiness sector [5]. This global vision is supported by existing more targeted policies. Chief among them are the National Employment Policy developed in 2012 and the Strategic Plan for the Development of the Agricultural Sector, launched in 2017, which provide options for promoting employment and entrepreneurship with mixed results [6, 7]. Consequently, several programmes are launched to encourage entrepreneurial activities in the country.

These programmes place a strong focus on agriculture because of its importance to the country’s economy. It contributed about 27% of the national gross domestic product in 2019 [1] and offers many business opportunities. Thus, the agricultural sector can reduce unemployment and, at the same time, reduce food insecurity and support economic growth. The Benin government and many other stakeholders have implemented several initiatives to support youth entrepreneurship in agriculture. For example, the Benin Government, the United Nations Development Programme (UNDP), and the Songhai Center established a programme that provides youth with training in agricultural production and funding to launch small businesses in the agricultural sector [8]. In addition, other organizations such as Technoserve and GiZ have established agricultural entrepreneurship programs to provide incubation and acceleration support to thousands of entrepreneurs [9]. The number of young people (over 1000 per year for the Government-UNDP-Songhai project) who expressed interest in this, and many other programmes proves a strong commitment to venture into the agricultural sector. As a result, many agribusinesses have been created in recent years.

Although the creation of businesses in the agricultural sector is good, the lack of information on entrepreneurial activities in the sector impedes the development of sound policies. For example, there is a dearth of information on agricultural entrepreneurs’ socioeconomic profiles, personalities, and motivations, although these elements are essential for understanding entrepreneurship dynamics [10-12].

Also, there is not enough information about the characteristics of businesses that exist in the agricultural sector. For example, although businesses formalization is relevant and important [13], there is a lack of information on the formalization of



agribusinesses. More broadly, there is a lack of information on the typology of agribusinesses. The most popular typologies distinguish between subsistence and commercial farmers [14], and small, medium, and large farms [15], but in reality (the activities of) agribusinesses are more diverse [16-18]. This paper proposes a new typology of agribusinesses in Sub-Saharan Africa, with a Benin case study, using a different approach. By learning from the extant literature and conceptual debates around the characteristics of agribusinesses, data were collected on various dimensions that could offer a better description and typology of agribusinesses. Afterwards, statistical procedures were used to organize the data to capture similarities and dissimilarities to build a typology that better reflects the reality.

In general, improving the availability of information on agricultural entrepreneurs and their businesses is a good starting point for formulating policies, strategies, and programs that would support the agricultural sector's development. This study aims to bridge the knowledge gap by reporting a survey on the general characteristics of 819 agricultural entrepreneurs and their enterprises in Benin. The rest of the paper is structured into three sections. Section one outlines the methodology adopted for the research including sampling, data collection, and data analysis. The following section presents and discusses the findings of the study. The last section of the paper concludes, makes recommendations for policy and practice, and proposes avenues for future research.

MATERIALS AND METHODS

Data collection

In the context of this study, agricultural entrepreneurs were individuals who were engaged in agricultural economic activities that met three main criteria: (i) they produced agricultural goods or services; (ii) these products or services were predominantly oriented towards the market, and (iii) the activities were performed to generate personal income for the entrepreneur and were not perceived as an effort of all members of an agricultural household. The third criterion was the main differentiating element between the entrepreneur (as conceptualized in this study) and a farmer who is embedded in an agricultural household. Another essential characteristic of the “entrepreneur” considered in this study was that such individual attempts to create an economic unit in the form of an informal or formal enterprise, for example, by giving a name to it.

In the absence of a national sampling frame of such agricultural entrepreneurs, the study compiled partial lists of agricultural entrepreneurs throughout the country to establish a sampling frame of 3004 agricultural entrepreneurs. The partial lists were obtained from government agencies such as the Territorial Agricultural Development Agencies, the Small and Medium Enterprises Directorate, and the National Institute of Statistics and Economic Analysis. Over time, those agencies generated lists of agricultural entrepreneurs for different purposes (e.g., service provision, administrative work). In addition, development organizations such as GiZ, Technoserve, UNDP, Agriprofocus, and Sens-Benin, who provided support to agricultural entrepreneurs



(training, financing), were also contacted to obtain partial lists. Finally, an exploratory survey was conducted to complement the sampling frame.

The initial list was cleaned to remove duplicates and a final list of 2029 agricultural entrepreneurs was obtained. A random sample of 819 entrepreneurs was selected using a stratified sampling approach in which three strata differentiated by agricultural sub-sector were considered: primary production ($n_1 = 366$), processing ($n_1 = 327$) and services ($n_1 = 126$). Data collection was conducted between October and December 2019 and included individual face-to-face interviews with agricultural entrepreneurs. Data were collected using mobile-based forms deployed on Kobo Toolbox (<https://www.kobotoolbox.org>), with each interview lasting 45 to 60 minutes. Face-to-face interviews were organized with the support of 12 highly qualified enumerators.

Data covered two main themes: the characteristics of the entrepreneurs as individuals and their business characteristics. Regarding the entrepreneurs, data were collected first on key sociodemographic and economic aspects such as age, education, and income, and then on personality, motivations, and business acumen. In terms of the enterprise's characteristics, data were collected on investment, finance, growth, formalization, human capital, and knowledge networks. Furthermore, informal discussions were held with some entrepreneurs to clarify and understand some business venture experiences.

Data analysis

Descriptive statistics were used to compute the proportions of entrepreneurs regarding different variables. Two-way frequency tables were produced to display different subgroups per variable. The Chi-squared test was used to check for significant differences among subgroups.

Hierarchical clustering on principal components (HCPC) was performed to detect the similarities among agribusinesses and study the relationships between all the variables - both qualitative and quantitative variables. Hierarchical clustering is a statistical technique that identifies groups of samples that behave similarly or show similar characteristics and thus, quantify the structural characteristics of the samples or variables. In this research, the objective to perform a cluster analysis was to identify natural categories of agribusinesses differentiated by various characteristics such as age, education, personal income, business revenue, business location, and formalization. By doing so, we aim to draw from the large heterogeneous sample groups with homogeneous properties. Thus, those categories or groups of agribusinesses should be as homogenous as possible, while the differences among the different groups are as large as possible.

The variables were qualitative, so a Multiple Correspondence Analysis (MCA) was first performed, and then the coordinates of the individuals on the principal components were used for the hierarchical classification. The MCA is used before the classification to transform qualitative variables into dummy variables. We retain only the axes of the MCA, which summarize 85% of the information. The Hierarchical Clustering on Principal Component based on MCA classified agribusinesses into three groups or clusters (Figures 3 and 4).



The function ‘FAMD’ (Factor Analysis for Mixed Data; with parameter “ncp” set to 20) and the function ‘HCPC’ from the *FactoMineR* package were used for this purpose [19]. A dendrogram (Figure 3) of obtained clusters was created using the ‘fviz_dend’ function from the *factoextra* package [20]. The R 3.5.0 programming language was used to perform these statistical computations and analyses.

RESULTS AND DISCUSSION

Entrepreneurs’ characteristics

Socioeconomics

In general, entrepreneurs were more active in primary production (44.69%) and less active in the services sub-sector (15.38%). The agribusiness sector, in general, is dominated by men, who accounted for 75% of all agricultural entrepreneurs (Table 1). This indicates that agricultural entrepreneurship is not yet a well accessible field for women, although women play an essential role in it [21]. This finding seems to contradict the popular notion that women participation in agricultural activities is high [22-24]. The apparent contradiction is due to the conceptualization of women’s participation in the agricultural sector. Most past studies have looked at their participation in agricultural activities within the household, while our study is about the concept of entrepreneurship in terms of business formation. For the latter, we found that men are founding more agricultural enterprises than women. It also appears that women and men are, respectively, more active in agricultural processing (70.39%) and primary production (54.81%). In terms of age, around 44% of agricultural entrepreneurs were young (15–35 years old), and about half were aged 35–60. Despite recent efforts to improve the involvement of young people in the agricultural sector, they are not yet the dominant group. Moreover, as agricultural entrepreneurs’ age increases, they tend to reduce their participation in primary production and become more active in agricultural processing. The fact that 56% of all agricultural entrepreneurs are aged above 35 signals that a sizeable proportion of the agricultural workforce is aging. This calls for continued efforts to engage more young people in agribusiness.

As for the education level, agricultural entrepreneurs were, in general, well educated. Around 45% attended university, and only 9% did not receive any formal education. As such, the human capital in the sector may be an excellent asset whose performance to improve. However, more than half of agricultural entrepreneurs did not attend professional training before starting any agribusiness. Therefore, the sector has many non-professionals, which may hinder its development. In terms of the agricultural sub-sector, it was observed that entrepreneurs with university degrees were less active in primary production and undertook more entrepreneurial activities in the services sub-sector (for example, marketing of agricultural products, selling of agricultural inputs, extension, and ICT services) than other groups of lower education levels.

Regarding their location, agribusinesses were distributed between rural (42%) and urban areas (58%), indicating a growing interest in developing agribusinesses beyond the rural family farming setting, to target middle-income consumers in urban cities. More specifically, it was observed that agricultural processing businesses are well dispersed in



the country, whereas service-based businesses are concentrated in a few locations, primarily urban ones. Because the geographical dispersion of businesses has implications for their performance [26, 27], such a finding is essential to better design programs that mainstream this aspect.

Personalities, motivations, and business acumen

In general, agricultural entrepreneurs displayed a highly positive personality (Figure 1). The personality aspect in which they were the most positive was “optimism”, and the second was “risk”, which means agricultural entrepreneurs were generally as optimistic and willing to take risks as entrepreneurs of other sectors [28]. Those two aspects are important for engaging in agriculture because of the high level of risk that the sector activities involve. However, a relatively low level of proactiveness was also noted, impeding entrepreneurs' performance in the sector [27].

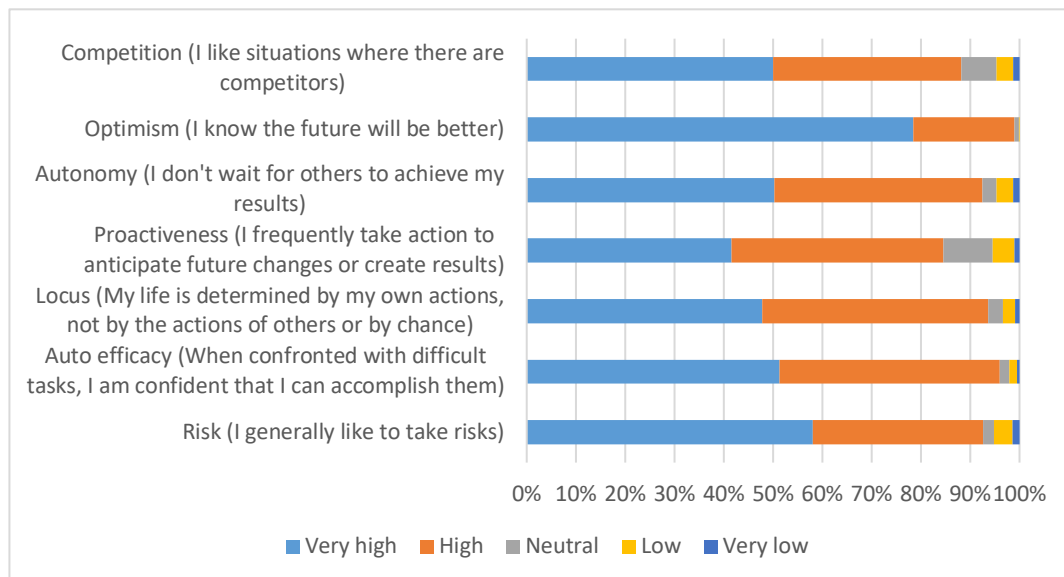


Figure 1: Personalities of agricultural entrepreneurs

Table 2 shows that entrepreneurs started their businesses due to a number of motivations. Most entrepreneurs reported having gone into agribusiness to “earn money” (75%) and “be independent” (59%). Surprisingly, only 20% said they started their agricultural enterprise to “pursue a business opportunity”, and 28% reported that their motivation (among others) was to “develop solutions to solve challenges in the agricultural sector”. When grouped into opportunity and necessity motivations, 88% of the entrepreneurs were motivated by both opportunity and necessity motivations. Only 9% and 3% of entrepreneurs reported exclusively opportunity and necessity start-up motivations, respectively. Over time, they seemed to report exclusively more opportunity motivations than necessity motivations, supporting the argument that entrepreneurs’ motivations are dynamic [29]. The most remarkable change occurred to “escape unemployment”, which dropped by 13%.

In terms of prior experience in entrepreneurship, most agricultural entrepreneurs started their entrepreneurial journey with the current agribusiness. Only 12% had started a

business before their current ventures in the agricultural sector. To further analyze the business acumen of agricultural entrepreneurs, the survey also asked whether they were managing only one business or more. Eighteen percent indicated that they were managing more than one business, hence developing a serial entrepreneurship attitude. The main reasons for running more than one business were that they did it because of a passion for entrepreneurship and wanted to diversify their income sources. Agriculture is a very risky sector, and diversification of activities is also a risk management strategy.

Enterprise characteristics

Growth, investment, and finance

Among the surveyed agribusinesses, around 23% had been established for three years or less, 17% between 3 and 10 years, and 60% for ten years and above. This indicates that the agribusiness sector is dominated by enterprises in operation for a long time, except that many small agribusinesses do not survive, and were not captured in this study. Regarding how entrepreneurs perceived their growing status on the market, 16% estimated that they were still at the start-up phase, meaning that they had started a few years ago and had at least a prototype of a product or service on the market or about to be commercialized. Sixty-four percent were in the growth stage. In the context of this study, the growth stage refers to agribusinesses that have a stable product or service on the market whose sales have been steadily growing over the past few years. Around 10% of agricultural entrepreneurs felt that their businesses were in the mature phase, considered as a stage in which the enterprise offers a well-known product or service to a well-established customer base and has a considerable market share. However, some entrepreneurs indicated that their businesses were in a decline phase in terms of sales and market share. Informal discussions with entrepreneurs had revealed that the reasons include concurrence from other companies, especially those importing substitutes to their products, challenges in innovating and meeting the customers' needs, and financial constraints.

In terms of investments, agribusinesses started with varying levels of capital. Around 3% of entrepreneurs indicated that they started their businesses with no financial capital. The majority (82%) had invested less than FCFA 1 million into the business when they started. Only 2% had invested more than FCFA 10 million into the business. The remaining 13% had invested between 1 and 10 million in the business. To finance the start-up capital, entrepreneurs combined different sources of financing. The dominant source was self-financing because 92% of entrepreneurs indicated that they invested their own financial resources into the business. The other sources of start-up capital financing were the following: gifts and grants (13%), credit from financial institutions (8%), credit from individuals (3%), and shares of business partners (2%). This finding provides more evidence on the poor access of agribusinesses to start-up capital from financial institutions. The first reason was that financial institutions find it too risky to invest in agriculture. As a result, they refrain from giving start-up capital and adapting loans conditions to agricultural businesses, making it difficult for small entrepreneurs to obtain credit. Next, high collaterals, high-interest rates, and short deferred periods combined with entrepreneurs' lower capacity to navigate the credit process make it difficult to access credit, especially at the start-up phase. However, the



situation was improved in terms of financing operating costs. Around 24% of agribusinesses reported having access to credit from financial institutions to finance their operating costs. This means that financial institutions are more inclined to finance agribusinesses when they have completed the start-up phase.

Formalization

In general, agricultural entrepreneurs were more informal (52%) than formal (48%), meaning that almost half of businesses were not registered with any formal governmental entity; hence, operating as an off-the-book entrepreneur. Among them, entrepreneurs in the primary production sector seemed to be more informal (57%) than those in the processing (53%) and services (33%) sector. Business formalization is considered necessary for the economy because it improves access to finance, public contracts and supports programs [13]. Those elements could, in time, improve the performance of formal businesses. Second, formal businesses help in increasing the revenue base for the government. For these two reasons, formalization should be encouraged for businesses within the informal sector, such as the agricultural sector, as revealed by this study.

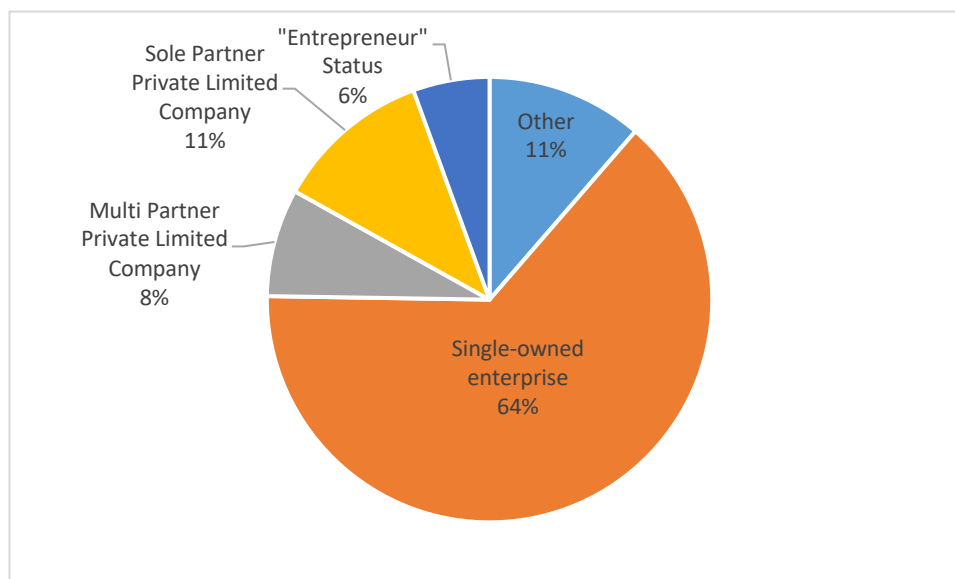


Figure 2: Different ownership types of formally registered agribusinesses

The dominant type of business organization was “*Single-owned enterprise*” (64%) which is the easiest type of business to register. In this business organization, the company's liabilities are borne by the owner; hence, they are not limited. More than half of the formalized agribusinesses were registered under this type (Figure 2). Few entrepreneurs were formalized under the “Entrepreneur” status, which is an innovation of the Organization for the Harmonization of Corporate Law in Africa (OHADA) to foster formalization of businesses operated by individuals who are not yet ready to set up a company. It serves as an entry point to formalization and provides an identification number and professional card to the entrepreneur who wants to be registered under this type. Private limited companies are only 19% of the formalized businesses, with most of them choosing to operate as sole proprietors. Therefore, it can be concluded that the

agricultural entrepreneurship sector is dominated by businesses whose resources and liabilities are merged with the owners' capital.

Human capital

The study also analyzed the human capital of agribusinesses and how they are managed. The results showed that agricultural businesses displayed varying degrees of human capital regarding the number of people employed. Only half of the agribusinesses had permanent staff other than the owner, and 75% of these had a maximum of three permanent employees. This shows that agribusinesses do not have many permanent staff. Most of the businesses made extensive use of temporary staff. Regarding formal contracting, such practice is not common in the agricultural entrepreneurship field because only 9% of agribusinesses indicated having signed formal contracts with their employees. Among those who engaged in formal contracting with their employees, 33% and 44% reported that employees were declared at the fiscal authority and social security authority, respectively. In terms of payment, 32% of agribusinesses indicated paying at least the nationally determined minimum wage to their staff. Therefore, it can be argued that compliance with labor regulations is low among agricultural businesses.

Knowledge networking

To expand their activities and improve their performance, entrepreneurs engage in various knowledge networking activities [30]. In this study, it was found, for example, that 59% of agricultural entrepreneurs had an active membership in a professional association. Those associations were either sector- or location-based. Beyond the professional associations, agricultural entrepreneurs also established relationships with different organizations (for example, Technoserve, United Nations Development Programme, Foundation of the University of Abomey-Calavi, Ministry of Agriculture, Livestock and Fisheries), mainly through agricultural projects and programs from which they gain information, knowledge, resources, and capital. Also, many agricultural entrepreneurs (61%) were active in mentorship, incubation, or acceleration programs to improve their businesses' overall performance.

Types of agribusinesses

Cluster 1 was made of informal agribusinesses, owned by non-educated people (94.52% of agribusinesses owners who had never been to school were assigned to that group). They were essentially built for profit (96.09%) and owned by people aged between 35 and 60 years (76.22%). The proprietors mostly had no agricultural professional training. Most of the agribusinesses in cluster 1 were not formally registered (74.59%), predominantly operate in the primary sector (52%) and 88.6% did not pay the Interprofessional Guaranteed Minimum Wage (SMIG). Since April 1, 2014, the SMIG is FCFA 40,000 (about 61 euros) in Benin for a 40-hour work in a week. Some 66.12% of agribusinesses in cluster 1 were located in rural areas, and 82.41% were in the growth stage (only 2.61% were start-ups, 6.84% were declining, and 8.14% were at mature phase) with annual revenue that fell mainly into the range of FCFA 2 to 10 million (63.85%).



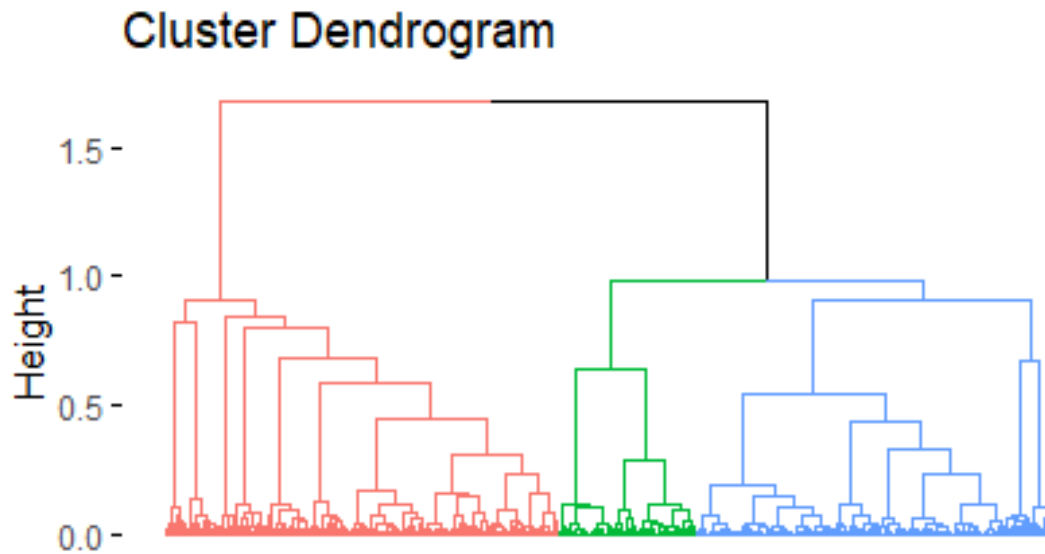


Figure 5: Dendrogram from hierarchical clustering on principal components

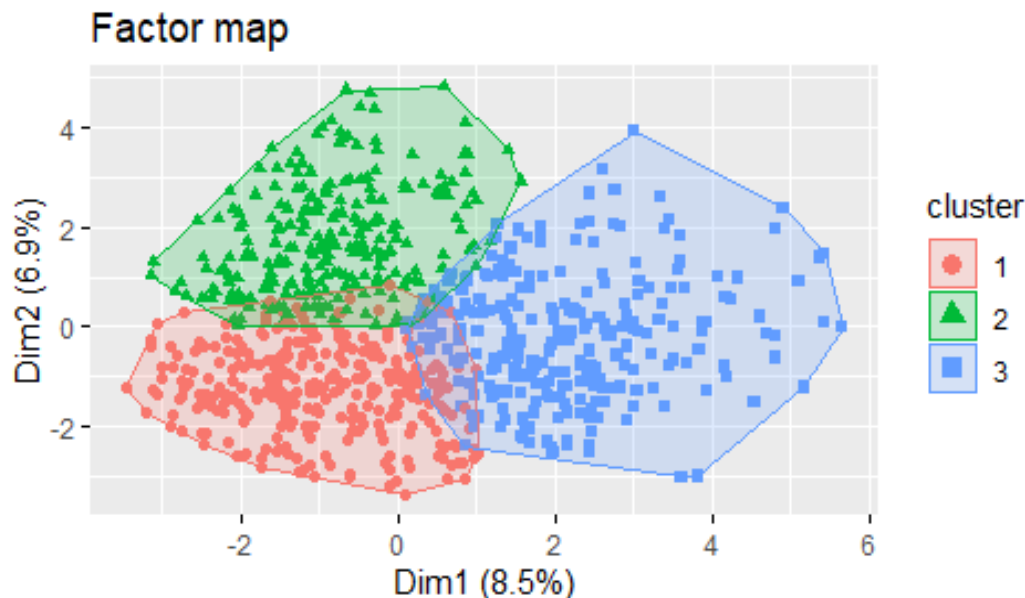


Figure 6: Factor map from hierarchical clustering on principal components

Cluster 2 was characterized by professional new agribusinesses. About 77.69% of the startups in our study were classified in that cluster. Agribusinesses in cluster 2 were mainly located in urban areas (69.84%) and are mainly active in the processing sub-sector. Owners of those agribusinesses were mainly male (66.27% vs. 33.73% female) and young, aging less than 35 years (84.13%). They generally had a low income - 78.57% of the agribusinesses had an annual revenue less than FCFA 2 million. On the other hand, most of the agribusiness owners in that group had attended university

(68.65%) and received professional training (75%). Within cluster 2, 68.25% of agribusinesses were not formally registered, and 82.14% did not pay taxes.

Of the 819 agribusinesses, cluster 3 contained 60.71% of the mature agribusinesses, and 83.57% of the agricultural entrepreneurs that earned a high personal income (more than FCFA 10 million). Agribusinesses in cluster 3 were located in urban areas (73.93%), formally registered (92.22%), and owned by highly educated people who were mainly male (84.82%). Taxes were paid by 68.87% of those agribusinesses, and more than half of them (59.14%) paid at least the SMIG. Agribusinesses assigned to cluster 3 were mainly for-profit (64.98%) and generally generated a higher annual revenue (26.85% of these agribusinesses generated an annual revenue between FCFA 5 and 10 million and 26.85% more than 20 million).

CONCLUSION

This paper aimed to provide critical information on entrepreneurial activities in the agricultural sector, to improve our understanding of the characteristics of entrepreneurs and their businesses. As such, the study generated evidence that could inform entrepreneurship practice and policy in the agricultural sector, especially the implementation of the National Employment Policy and the Strategic Plan for the Development of the Agricultural Sector that prioritizes the promotion of agricultural entrepreneurship. In general, it was found that men created more agribusinesses than women, and many of the agricultural entrepreneurs have received a university education. They displayed a highly positive personality and were driven by both necessity and opportunity motivations. However, most of the agricultural enterprises were informal in the growth stage and with limited access to finance.

The study suggests that policies should create incentives to improve the participation of women in the agribusiness sector. This could be done by increasing the number of women students in agricultural training institutions through the offering of scholarships and incentives for women to embrace agricultural training. Furthermore, it would help provide better support to women entrepreneurs by creating exclusive incubation and capacity-building programs so that they receive the necessary support to launch their businesses in the agricultural sector. Access to finance and formalization are also important areas for policy interventions. The study has shown that firms in the start-up phase have the lowest access to finance. Therefore, entrepreneurship projects and programs should support start-ups in developing financially sound business plans to help them navigate the loan process with financial institutions. Institutions such as the African Development Bank or the National Fund for Agricultural Development (*Fonds National de Développement Agricole - FNDA*) could also reinforce existing guarantee funds and establish new ones targeting start-ups to stimulate financing to this type of risky enterprises. Regarding formalization, our study found that, despite recent efforts such as the launch of the “Entrepreneur” status in 2015 and the simplification of registration procedures and application of zero-cost that should improve business formalization, majority of agricultural entrepreneurs in Benin were still unregistered. One of the critical reasons for that, according to the entrepreneurs, is that the tax regime is not favourable to the formalization of agribusinesses. Therefore, it is advised that



better tax policies are put in place. These could be in the form of a longer period of grace, lower tax rates for young agribusinesses, and increased benefits for formalized agribusinesses such as better participation in public contracts.

This research provides essential background information that could guide future research on agricultural entrepreneurship. One research avenue is to deepen the understanding of the factors that can explain some of these research findings. For example, it would advance the entrepreneurship literature to understand the determinants of agribusinesses' motivations and formalization dynamics.

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Table 1: General characteristics of agricultural entrepreneurs (percentages)

		Primary production	Agricultural processing	Agricultural services	Total	Stat (chi2)	p
All		44.69	39.93	15.38	100.00		
Gender	Female	14.56	70.39	15.05	25.15	119.88***	0.000
	Male	54.81	29.69	15.50	74.85		
Age	Young (≤ 35 years)	46.52	37.33	16.16	43.83	3.90	0.420
	Adult (35–60 years)	44.20	40.74	15.06	49.45		
	Old (> 60years)	36.36	50.91	12.73	6.72		
Marital status	Not married	47.32	35.37	17.32	50.06	7.54**	0.023
	Married	42.05	44.50	13.45	49.94		
Education	No formal education	29.73	60.81	9.46	9.04	31.77***	0.000
	Primary	49.50	38.61	11.88	12.33		
	Secondary	54.04	33.82	12.13	33.21		
	University	39.52	40.59	19.89	45.42		
Agricultural professional training	No	43.68	42.96	13.37	51.16	4.45	0.108
	Yes	45.75	36.75	17.50	48.84		
Personal annual income	< 500,000 FCFA	43.29	45.73	10.98	20.02	19.35**	0.036
	500,000– 1,000,000 FCFA	49.32	38.36	12.33	26.74		
	1,000,001– 2,000,000 FCFA	48.42	37.37	14.21	23.08		
	2,000,001– 3,000,000 FCFA	40.57	41.51	17.92	13.06		
	3,000,001– 4,000,000 FCFA	33.33	43.59	23.08	4.76		
	> 4,000,000 FCFA	38.61	35.64	25.74	12.33		
Family entrepreneurship	No	43.44	39.96	16.60	59.58	1.58	0.455
	Yes	46.53	39.88	13.60	40.42		
Sample size		366	327	126	819		
Number of municipalities covered		29	35	17	40		

*** $p < 0.01$, ** $p < 0.05$ and * $p < 0.10$.

Table 2: Motivations cited by entrepreneurs

Motivation	At the start of the business	Present	Change over time
Earn money	75%	77%	+2%
Be independent	59%	66%	+7%
Develop solutions to solve challenges in the agricultural sector	28%	27%	-1%
Make use of the resources I have	22%	21%	-1%
Escape unemployment	21%	8%	-13%
Have prestige/self-achievement	21%	30%	+9%
Pursue a business opportunity	20%	26%	+6%
Satisfy the will of my parents or follow the family tradition	11%	7%	-4%
Unsatisfied with my job	5%	1%	-4%
<i>Exclusively opportunity motivations cited</i>	9%	14%	+5%
<i>Both opportunity and necessity motivations cited</i>	88%	84%	-4%
<i>Exclusively necessity motivations cited</i>	3%	2%	-1%

REFERENCES

1. **World Bank.** World Development Indicators. World Bank, Ed. Washington, 2020.
2. **International Labour Organization (ILO).** ILOSTAT database. International Labour Organization, Ed. Geneva, 2020.
3. **Omidyar Network Africa.** Accelerating entrepreneurship in Africa: understanding Africa's challenges to creating opportunity-driven entrepreneurship; Omidyar Network Africa & Monitor Group: US, 2012.
4. **Yami M, Feleke S, Abdoulaye T, Alene AD, Bamba Z and V Manyong** African rural youth engagement in agribusiness: achievements, limitations, and lessons. *Sustainability*, 2019; **11**: 185.
5. **MEPD.** Plan National de Développement 2018-2025; Ministère d'État chargé du Plan et du Développement (MEPD): Cotonou, Benin, 2018; p 300.
6. **Dalberg Ua.** Youth economic opportunity ecosystem analysis - Benin Country Report; UNCDF and Dalberg: Cotonou, Benin, 2015; p 57.
7. **Glidja J** Les déterminants du succès de l'entrepreneuriat féminin au Bénin, le rôle modérateur de l'appui institutionnel: cas de la WBPC. *Gestion 2000*, 2019; **36**: 39-59.
8. **PNUD.** Le Bénin forme les jeunes à l'entrepreneuriat agricole. https://www1.undp.org/content/undp/fr/home/ourwork/ourstories/le_benin_forme_lesjeunesalentrepreneuriatagricole.html (18 September 2021).
9. **AIG-Benin.** Mission conjointe de suivi des projets Benibiz et Prociva : La Coopération suisse et les institutions partenaires au contact des bénéficiaires. <https://aigbenin.com/2020/10/07/mission-conjointe-de-suivi-des-projets-benibiz-et-prociva-la-cooperation-suisse-et-les-institutions-partenaires-au-contact-des-beneficiaires/> (18 September 2021).
10. **Hessels J, Van Gelderen M and R Thurik** Entrepreneurial aspirations, motivations, and their drivers. *Small Business Economics*, 2008; **31**: 323-339.
11. **Smith R, Bell R and H Watts** Personality trait differences between traditional and social entrepreneurs. *Social Enterprise Journal*, 2014.
12. **Stephan U, Hart M, Mickiewicz T and CC Drews** Understanding Motivations for Entrepreneurship; Enterprise Research Centre and Aston Business School: UK, 2015; p 54.



13. **Benhassine N, McKenzie D, Pouliquen V and M Santini** Does inducing informal firms to formalize make sense? Experimental evidence from Benin. *Journal of Public Economics*, 2018; **157**: 1-14.
14. **Fan S, Brzeska J, Keyzer M and A Halsema** From subsistence to profit: Transforming smallholder farms. *Intl Food Policy Res Inst*: 2013: Vol. 26.
15. **Jayne TS, Muyanga M, Wineman A, Ghebru H, Stevens C, Stickler M, Chapoto A, Anseeuw W, Van der Westhuizen D and D Nyange** Are medium-scale farms driving agricultural transformation in sub-Saharan Africa? *Agricultural Economics*, 2019; **50**: 75-95.
16. **Adamopoulos T and D Restuccia** The size distribution of farms and international productivity differences. *American Economic Review*, 2014; **104**: 1667-1697.
17. **Chikowo R, Zingore S, Snapp S and Johnston A** Farm typologies, soil fertility variability and nutrient management in smallholder farming in Sub-Saharan Africa. *Nutrient cycling in agroecosystems*, 2014; **100**: 1-18.
18. **Guarín A, Rivera M, Pinto-Correia T, Guiomar N, Šūmane S and OM Moreno-Pérez** A new typology of small farms in Europe. *Global Food Security*, 2020; **26**: 100-389.
19. **Le S and J JoSse** FactoMineR: An R Package for Multivariate Analysis. *Journal of Statistical Software*, 2008; **25**.
20. **Kassambara A and F Mundt** Package 'factoextra'. *Extract and visualize the results of multivariate data analyses*, 2017; **76**.
21. **Lee IH and MR Marvel** Revisiting the entrepreneur gender–performance relationship: a firm perspective. *Small Business Economics*, 2014; **42**: 769-786.
22. **Doss C, Meinzen-Dick R, Quisumbing A and S Theis** Women in agriculture: Four myths. *Global food security*, 2018; **16**: 69-74.
23. **FAO**. The State of Food and Agriculture 2010-2011: Women in Agriculture: Closing the Gender Gap for Development. *FAO Home*, 2011.
24. **Raney T, Anríquez G, Croppenstedt A, Gerosa S, Lowder SK, Matuschke I and J Skoet** The role of women in agriculture. 2011.
25. **Jayne TS, Yeboah K and C Henry** The future of work in African agriculture trends and drivers of change. *International Labour Organization*, 2017.
26. **Barnard S, Kritzinger B and J Kruger** Location decision strategies for improving SMME business performance. *Acta Commercii*, 2011; **11**: 111-128.

27. **Veidal A and O Flaten** Entrepreneurial orientation and farm business performance: the moderating role of on-farm diversification and location. *The International Journal of Entrepreneurship and Innovation*, 2014; **15**: 101-112.
28. **Leutner F, Ahmetoglu G, Akhtar R and T Chamorro-Premuzic** The relationship between the entrepreneurial personality and the Big Five personality traits. *Personality and individual differences*, 2014; **63**: 58-63.
29. **Williams N and CC Williams** Evaluating the socio-spatial contingency of entrepreneurial motivations: A case study of English deprived urban neighbourhoods. *Entrepreneurship & Regional Development*, 2012; **24**: 661-684.
30. **Pratono AH** From social network to firm performance. *Management Research Review*, 2018.

