Determinants of agricultural practice among women in the Republic of Congo

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ABSTRACT

The objective of this study is to analyze the factors influencing the practice of agriculture among women in Congo. This study uses the logit model on a sample of 2,270 women. The results obtained show that marital status, socio-professional status, and place of residence have no influence on the practice of agriculture among women in Congo. On the other hand, the factors level of education, subsidy, access to credit, and age influence the practice of agriculture among women.

Keywords: agricultural practice, women, Republic of Congo

INTRODUCTION

Women play a central role in the agricultural sector and constitute a backbone of the sector (Singh et al. 2019). They represent 52% of the total population in this sector and are responsible for about 50% of agricultural work on farms in sub-Saharan Africa (SSA). They also produce 60 to 80% of the food on the African continent. This may seem paradoxical, but African women still represent an untapped potential in the agricultural sector, as the level and quality of their participation do not provide benefits in terms of socio-economic development. Women, described as farmers, livestock owners and entrepreneurs within this sector, systematically have limited access to productive resources compared to their male counterparts Bongiwe et al. (2015).

Agricultural activity holds an important place for women, but women farmers have relatively limited access to productive resources and to the services needed by farmers. A woman is also less likely than a man to own land or livestock, to adopt new technologies, to have access to credit or other financial services, or to benefit from training or extension services. It even happens that women cannot independently decide on their own schedule (FAO, 2010).

Congolese agriculture is strongly dominated by the individual or family village farming model, limited to the use of rudimentary tools and techniques, very little innovation, and spread across the national territory. This village agriculture is limited to the production of subsistence food crops, notably cassava, yams, taro, groundnuts, maize, vegetables and various fruits. Indeed, this sector employs 40% of the country's active population and shows a growth rate estimated at 13% in 2016 (PND, 2018-2022). However, although it is a sector that occupies an important place in the Congolese economy, agriculture shows low participation by women in the practice of agriculture. According to the RGA (2014-2017), out of 267,419 farmers surveyed, only 76,523 women practice agriculture compared to 190,896 men. Regarding the holding of farms, only 88,588 women are farm heads compared to 178,831 male farm heads.

In most sub-Saharan African countries, women often make a significant contribution to food production, as well as to the processing and marketing of foodstuffs. However, the potential participation of rural women in the development of their country's agricultural sector, as a decisive economic and social force, still faces enormous obstacles. Among the factors that hinder the development of women's entrepreneurial activities and their potential capacity to exert greater influence over their living conditions.

In light of the foregoing, this research raises the following question: what are the factors that influence the practice of agriculture among women in the Republic of Congo?

The objective of this research is to analyze the factors influencing the practice of agriculture among women in Congo

To answer the above question, this research is based on the hypothesis that socio-professional status and socio-economic characteristics (age, access to credit, income, marital status) influence the practice of agriculture by women.

This research is structured into 4 parts: 1 literature review, 2 methodology, 3 results and discussion.

1 LITERATURE REVIEW

The analysis of the determinants of agricultural practice by women has been carried out in several studies in order to understand the factors that determine the practice of agriculture by women. Anselm et al. (2010) studied women's participation in agricultural activities in the Ekiti region of Nigeria. The authors use a probit model in their analysis, and the results obtained show that it is socio-economic factors such as number of years, formal education, experience, financial contribution to household activities, number of hours spent in the field, and household size that explain women's participation in agricultural activities.

Amina (2016) studied the determinants of rural women's participation in agricultural activities in Algeria. Indeed, the study uses a probit model as Anselm et al. (2010) did in the case of Nigeria, on a sample of 678 women. The results obtained show that a woman's age from 35 years onward and socio-professional category influence women's participation in agricultural activities.

Subbulakshmi et al. (2019) studied the determinants of the practice of agriculture by women in India. On a sample of 600 rural women, they use "regression weights," and the results obtained reveal that strength and willpower are the factors that explain the practice of agriculture by women. In light of the works cited above, it appears that women's participation in the practice of agriculture remains an important factor for the development of this sector. However, the practice of agriculture among women faces several constraints that condition this participation of women.

2 METHODOLOGY

In this part of the study, the model used, the data used, and the variables on which the analysis of the practice of agriculture by women will be based will be presented.

2.1 The logit model

To analyze the factors that explain the practice of agriculture, this research uses the logit model. The Logit model is represented by the following equation:

$$Y_i = \beta X_i + \varepsilon_i \quad \text{.....(1)}$$

With Y_i the dependent variable of the study (the decision to practice agriculture), X_i the set of independent variables of the study, β the coefficients associated with each independent variable, and ε_i ε_i the error term.

In this research, Xi being the set of variables that influence the decision to practice agriculture, it is presented as follows:

X1 = age

X2 = sex

X3 = level of education

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X5 = marital status

X5 = access to credit

X6 = place of residence

X7 = subsidy

X8 = socio-professional status

Y_i is a latent variable, we are interested in its result represented by the following equation: where Yi=1 if the woman practices the agricultural activity and Yi=0 if the woman doesn't practice the agricultural activity

The logistic regression can be specified as follows:

$P_i = F(X_i \beta) = \wedge(X_i \beta) = \frac{1}{1+e^{-X_i\beta}}$; ∀ i=1 ……., N…………………………………………………......(2)

The maximum likelihood method is the most appropriate estimation procedure. The likelihood function is given by relation (3).

2.2 Data used

This study uses data from the 2021 General Census of Enterprises of Congo. Indeed, the general census of enterprises of Congo (REGEC) had the overall objective of contributing to the establishment of an integrated system of business statistics at the National Institute of Statistics (INS). This system will make it possible to develop a reference directory to serve as a sampling frame for business surveys, and to update and put in place structural and short-term indicators enabling better decision-making. The sample used in this study consists of 2,270 women.

2.3 Presentation of the variables

This section discusses the explained variable, or dependent variable, and the explanatory, or independent, variables of this study.

- ✓ **Dependent variable**

The explained variable of our model is the practice of agriculture by women. It is represented in this study by a qualitative variable, with a value of 1 for women who practice agriculture and 0 for women who do not practice agriculture. Most studies (Subbulakshmi et al., 2019; Anselm et al., 2010) show that women's practice of agriculture remains conditioned by a number of factors.

- ✓ **The explanatory variables**

The explanatory variables selected are the non-economic factors, which are the socio-demographic characteristics of farming households: household size, age, sex, level of education, access to credit, income, place of residence, access to subsidy, socio-professional status

Age : Age is an essential factor in the practice of income-generating activities. It is a variable measured by the number of years of the producer. Indeed, the older a woman gets, the more her motivation to practice an activity increases, and older women also show a strong desire to practice an activity (Ebojei et al.2012), which can act positively on the decision to practice agriculture. A positive influence of age on the practice of agriculture among women is therefore expected.

Sex: This is a binary variable, taking the value 1 if it is a man and 0 if it is a woman. It is often said that men are more willing than women to take the risk of practicing economic activities. Indeed, men practice agriculture more than women.

Level of education: This is a binary variable, taking the value 1 if the head of household is literate and 0 if illiterate. A woman's level of education is a factor that affects the decision to practice a given activity. Indeed, in Congo, educated women are not motivated to practice agriculture. Agriculture remains an activity often practiced by uneducated women. A positive or negative sign of this variable on the adoption variable is expected.

Marital status: In our study, this variable takes into account the following categories: 0 if the woman is unmarried, 1 if the woman is married. It is assumed that a woman in a married household works a great deal to be able to meet the needs of the family and has little choice in the practice of an income-generating activity. For this reason, married women are motivated to practice agriculture. A positive effect of this variable on adoption is therefore expected.

Access to credit: This is also a binary variable, taking the value 1 if the woman has access to credit and 0 otherwise. Access to credit represents a source of financing for the practice of an activity and is therefore an important factor for the practice of agriculture (Anselm et al., 2010). A positive sign of the coefficient of the access-to-credit variable is expected.

Place of residence: it is a binary qualitative variable. This variable takes the value 1 if the woman resides inland and 0 if she resides in the capital (Brazzaville or Pointe-Noire). Women living inland have agriculture as their main activity. In contrast, in cities, women are not really motivated to practice agriculture (RGA, 2014-2017). Place of residence is an important factor for the practice of agriculture among women.

Subsidy: It is a binary variable and represents the mode of financing for the practice of agricultural activities. This variable takes 1 if the woman is a beneficiary and 0 otherwise. Agricultural subsidies constitute an incentive influencing the practice of agricultural activities (Carter et al., 2014; Chibwana et al., 2012).

Socio-professional status: it is a binary qualitative variable. This variable takes the value 1 if the woman has a job and 0 otherwise. Socio-professional status is a determining factor in the practice of agriculture. The practice of agriculture requires a great deal of time and availability (Amina et al., 2016); women who already have a job are wary of practicing agriculture and lack the time to do so. A negative influence of this variable on the practice of agriculture among women is expected.

3 RESULTS AND DISCUSSIONS

This part of the study presents the descriptive statistics and the results of the model estimation.

3.1 Descriptive statistics

This part of the study presents the statistics for the qualitative variables and the statistics for the quantitative variables.

Table 3 on the descriptive statistics of the qualitative variables presents the statistics for the variables practice of agriculture, marital status, level of education, access to credit, subsidy, socio-professional status, and place of residence. Our sample shows that the variable practice of agriculture consists of 286 women who practice agriculture and 1,984 women who do not practice agriculture. Regarding marital status, 1,464 women are married and 806 are not. Regarding level of education, 1,721 women are educated and 549 are not educated. Regarding access to credit, only 34 women have access to credit compared to 2,227 who do not have access to credit. Regarding subsidy, 294 benefited from a subsidy compared to 1,976 who did not benefit from a subsidy. Regarding socio-professional status, 1,957 women work while 313 do not work. Regarding place of residence, 1,780 women live in urban areas while 490 women are in rural centers.

Table 3: descriptive statistics of the qualitative variables

Variables	Category	Obs.	Frequency
PraticeAg	0 no	1984	87,40

	1 yes	286	12,60
Marital status	0 no	806	35,51
	1 married	1464	64,49
Education level	0 no	549	24,19
	1 educated	1721	75,81
CreditAccess	0 no	2227	98,11
	1 yes	43	1,89
SubsidyAccess	0 no	1976	87,05
	1 yes	294	12.95
Socio-professional status	0 no	1,957	13,79
	1 working	313	86,21
Place of residence	0 no	490	21,59
	1 urban	1,780	78,41

Source: author based on REGEC 2021 data

Table 3 presents the descriptive statistics of the variable "age." Indeed, in our sample, the average age of women who practice agriculture is 45, the minimum age is 18, and the maximum age is 98.

Table 3: descriptive statistics of the quantitative variable

Variable	Mean	Min	Max
Age	44.96564	18	98

Source: author based on REGEC 2021 data

3.2 Model estimation results

The results in Table 4 show that the variables marital status, socio-professional status, and place of residence are not significant. This means that these variables do not influence the decision to practice agriculture among women in Congo. However, the variables level of education, access to credit, subsidy, and age are significant. In other words, the factors level of education, access to credit, subsidy, and age influence women's decision to practice agriculture.

The level-of-education variable has a negative coefficient, significant at the 5% threshold; the level of education thus negatively influences the practice of agriculture among women. The access-to-credit and subsidy variables have positive coefficients, significant at the 5% threshold, meaning that access to credit and subsidy have a positive influence on the practice of agriculture. The age variable shows a negative coefficient, significant at the 1% threshold; age thus has a negative influence on the practice of agriculture among women in Congo. In other words, as women's age increases, they become less interested in practicing agriculture.

Table 4: model estimation results

PracticeAg	Coefficients	Probabilities
Marital status	0,116	0,390
Education level	-0,345	0,019
CreditAccess	0,514	0,047
SubsidyAccess	0,771	0,002
Socio-professional status	0,347	0,126
Place of residence	0,247	0,122
Age	-0,007	0,030
Constant	-2,650	0,000
R2	0.019	

Source: author based on REGEC 2021 data

CONCLUSION

The objective of this study is to analyze the factors influencing the practice of agriculture among women in Congo. Indeed, this study used the logit model and data from REGEC 2021 to achieve this objective. The results obtained show that the factors marital status, socio-professional status, and place of residence have no influence on the practice of agriculture among women in Congo. On the other hand, the factors level of education, subsidy, access to credit, and age influence the practice of agriculture among women.

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