

## Socio-economic determinants of the economic profitability of cashew nuts marketing in North-Eastern- Benin: Case study of Tchaourou municipality

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**ABSTRACT:** This paper investigates the determinants of the economic profitability of cashew nuts marketing in North-Eastern Benin. The study was conducted in the municipality of Tchaourou by using survey methods on respondents randomly selected from different categories of actors interacting on the market. Primary data were collected with respect to the marketing year 2013-2014 on up to 160 cashew nut traders such as 91 collectors, 25 retailers, 31 semi-wholesalers and 13 wholesalers. The methodological approach used was based on the paradigm Structure-Conduct-Performance (SCP). As a result, four types of marketing systems of cashew nuts were identified in the municipality of Tchaourou. The analysis of the net margins showed that the cashew nuts marketing in Tchaourou generates average net margins of about 9.08fcfa/Kg for the collectors; 13.12 fcfa/Kg for the retailers, 10.56 fcfa/Kg for the semi-wholesalers and 21.16 fcfa/Kg of cashew nut for the wholesalers. The test of ANOVA highlighted a significant difference between these average values of net margins recorded by the different actors. Moreover the marital status, the experience in marketing, the invested capital in the campaign, the cost of commercial labor and the category of commercial actor determine the level of economic profitability of cashew nuts marketing. As a matter of fact, a particular attention has to be given to these determinants in order to sustain the cashew nuts marketing field in North-Eastern Benin.

**KEYWORDS:** cashew nuts, Marketing, Determinants, Economic Profitability, Tchaourou.

### 1 BACKGROUND

Agriculture plays a significant role in the economy of many countries in the world particularly in developing countries. Sub-Saharan Africa is highly dependent on agriculture because of the involvement of more than half of the population on agriculture-based activities for their livelihoods. In Benin, it employs about 80% of the labor force, contributes up to 40% in the Gross Domestic Product (DSCR, 2007) [1] and 80% to the exports earnings (Doligez, 2001) [2]. Indeed, among the cultivated cash crops, cotton is the one which contributes significantly to the economic development of Benin; 40% of foreign exchange earnings (PRSA, 2011) [3].

For long, because of it generates income for rural households and its strong contribution to the Gross Domestic Product; previous agricultural policies have supported for decades the cotton sector. However, due to the crisis in the aforesaid sector in recent years, diversification of crops, including cashew which occupies a prominent place, was adopted by policies of rural development supports and particularly farmers as an immediate solution to maintain the level of wealth based on agriculture and reduce the risk of volatility of agricultural income.

Thus, the cashew has become a priority crop and represents according to SOFRECO (2002) [4] the second export crop in Benin, with over 9% of national exports and 12.5 billion of revenue. It represents for Benin a great opportunity of agricultural

export. With regard to INSAE (2009) [5], 98.9% of cashew nuts were exported to the Asian market including India (89.5%), Singapore (5.1%) and Viet Nam (1.6%) with significant revenue corresponding to 8% of national export income and 24.87% of the agricultural exports. Cashew nut sector is of paramount importance due to the foreign earnings that it generates. After the production and availability of cashew nut at producer's level, the marketing sector takes place to boost the economy at local level because of the processing sector which is still atrophied in Benin. According to Singbo et al. (2004) [6] the commercial actors such as collectors, wholesalers in the village, large wholesalers, retailers and exporters are involved in cashew nuts marketing. As outcomes, the marketing of cashew nuts has significant importance for all the actors involved in the marketing chain. It mobilizes many rural and urban people and appears as safer and less prone to the risk of trade flows. Such business at low-risk income deserves special attention because it could reduce the risk of income volatility as well at the producers' level, commercial actors as the state. Unlike the cotton industry has long attracted decision makers of the country; the marketing of cashew nut involves the intervention of local agents requiring additional earnings at each level of the chain. Thus one could hypothesize that cashew nut sector would be a promising source of economic growth and stability in Benin, but such statement deserves further research on economic performance analysis of cashew nut marketing. Some studies including those of [6]; Adegbola et al. (2011) [7], Komlan et al. (2013) [8] were interested on this dynamic of economic performance of the marketing of agricultural products. However, most of these studies focus only on the analysis of economic profitability without addressing the factors behind the obtaining of economic results. Also no sustainable suggestion can be made if the socio-economic characteristics of the marketing actors and their capital, real instruments determining their level of profitability are not taken into account. Accordingly, it comes that the research should also consider the determinants of economic profitability of cashews nut marketing. Thereby, the current research attempts to analyze the socio-economic factors influencing the economic profitability of cashew nuts marketing in North-Eastern Benin. The expected results will provide guidelines to support the economic profitability of the activity.

## 2 MATERIAL AND METHODS

### 2.1 STUDY AREA

The study area is the municipal of Tchaourou located in the department of Borgou in Northern Benin. The choice of this area is based on the fact that it is the most productive region of cashews in the department of Borgou in North-Eastern Benin and belongs to the zone 1, second zone in the productive area of cashew nuts in Benin. This also lies in the ambition of research to understand the reasons behind the concentration of local people in the cashew nuts marketing systems and thus to sustain the economic performance of the sector. Figure 1 shows the study area.

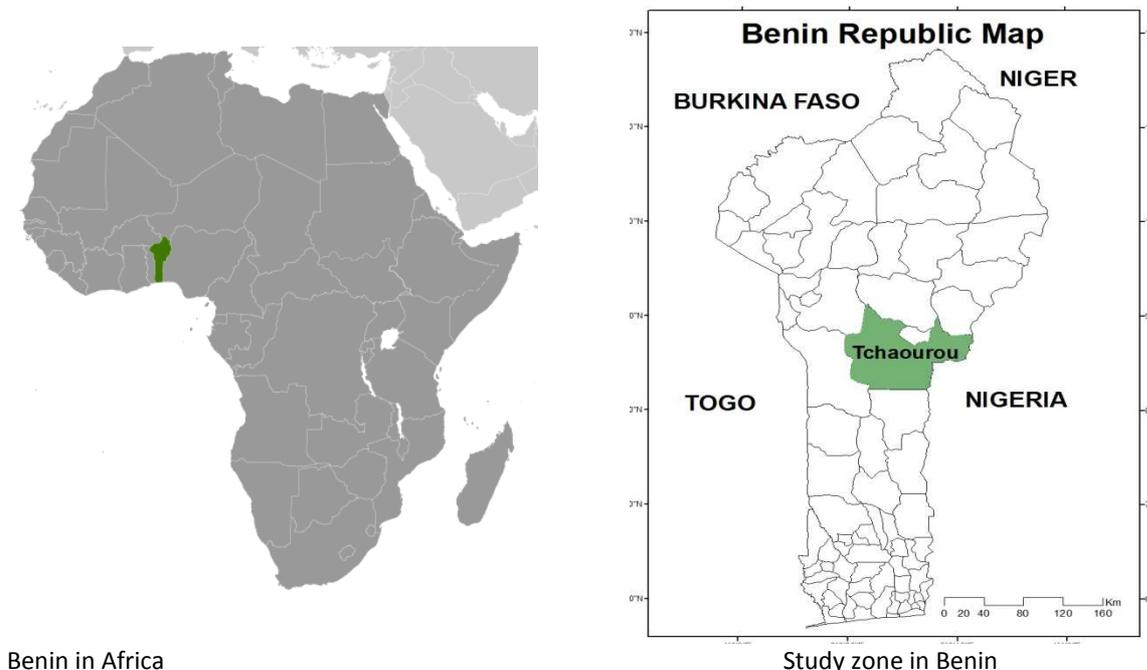


Fig. 1. Study area

## **2.2 SAMPLING AND DATA BASE**

To carry out this study, a sample of 160 commercial actors was formed randomly. The sampling was done by category of available actors locally. Several types of commercial actors have been identified and investigated such as collectors, retailers, wholesalers and semi-wholesalers or local wholesalers. Table 1 shows the structure of the sample.

Data collection was conducted through surveys in the form of semi-structured interviews by questionnaire addressed to the commercial actors. The data collected are those relating to socio-demographic and economic characteristics of commercial actors, their quantities of cashew nuts bought and sold, the variable costs (labor, transport costs, storage costs, etc.) and fixed costs (interest paid, paid taxes, depreciation, etc.). Also interviews with resource persons namely group leaders, officials of institutions related to the production and marketing of cashew nuts were performed. In addition, triangulation of information through focus groups was organized to ensure the accuracy of the data collected.

*Table 1. Structure of the sample*

Actors	Frequency	Percentage (%)
Collectors	91	56,9
Retailers	25	15,6
Semi-Wholesalers	31	19,4
Wholesalers	13	8,1
Total	160	100

Source: Author's computations

## **2.3 THEORETICAL APPROACH**

Marketing is defined as a series of sequential functions performed during the transfer of a product from production to consumption (DESA, 1991; FAO, 2005) cited by Koffi-Tessio et al. (2007) [9]. However, the economic analysis of market performance refers to the theoretical basis. Many researches on economic performance of marketing of agricultural products are based on the SCP approach Structure - Conduct - Performance ([6], [8]). The SCP approach implies that the structure of the market, in particular the degree of competition identified there, determines the behavior of the market, and the structure and behavior taken together in turn determine the performance (Demont et al., 2003, Tollens, 1997 quoted by Mastaki, 2006 [10]). According to Harriss (1980) quoted by [6], the use of this paradigm by economists is an effort to find a compromise between the formal structures of economic theory and the empirical observations of organizational experience of the imperfect markets. This approach is based on three fundamental elements defined by Clodius and Mueller (1961) [11].

The market structure is the set of organizational characteristics that seem to influence strategically the market through the nature of the competition and the process of price formation on the market. These characteristics determine the relationships among the actors. In accordance with the market structure, the research has identified the degree of market concentration by focusing on the presence of commercial actors regarding their number on the cashew nuts market.

The conduct of the game is the behavior patterns that follow the actors to be able to adapt or adjust to the markets in which they sell or buy. These are the strategies used by actors operating in the market. It is also useful in terms of market performance, due to its influence on the prices. Finally, the market performance is about the economic performance of all stakeholders in the sector. The performance or economic profitability in this study was measured by analyzing the net margins of commercial actors.

## **2.4 ASSESSMENT OF THE ECONOMIC PROFITABILITY OF CASHEW NUTS MARKETING**

Several studies have used "Net Margin" as a performance indicator for the marketing of agricultural products ([9]; ([8]). Following these authors, this research focused on net margin as an economic indicator of profitability of cashew nuts marketing in North-Eastern Benin.

According to ([9], Gross margin is the difference between the sale price and the purchase price of an agricultural product. It is expressed in FCFA/kg by the following

$$\text{Gross Margin} = \text{Sales Price} - \text{Purchase Price} \quad (1)$$

Net margin is defined as the difference between Gross Margin and other transaction costs. It is expressed in FCFA/kg by the following formula (2)

$$\text{Net Margin} = \text{Gross Margin} - \text{Cost of total transactions or charges} \quad (2)$$

If Net Margin is positive, then the activity is economically profitable. If Net Margin is negative, then the activity is not economically profitable.

## 2.5 RESEARCH OF SOCIO-ECONOMIC DETERMINANTS OF THE ECONOMIC PROFITABILITY OF CASHEW NUTS MARKETING

Marketing of cashew nuts will better integrate rural economy if the research focuses on the determinants of such economic profitability. In this case, the literature reveals that multiple linear regressions can be used (Yabi and Idrissou, 2008) [12]. Considering that the socio-economic characteristics (Z) affect the economic profitability of commercial actors [12], the economic profitability P of a commercial actor i of cashew nuts is given by:

$$P_i = f(Z_i) \quad (3)$$

With Yegbemey et al. (2014) [13], the total capital used (C) influences the level of economic profitability of the farm. Under this assumption, the economic profitability of the marketing of cashew nuts is therefore a function of the latter factor, the equation (3) becomes

$$P_i = f(Z_i, C_i) \quad (4)$$

As cashew nuts marketing involves several actors ([6], [12]), the easiest way to identify the actors that earn more revenue is to introduce the commercial actors (A) in the regression model. Based on this, the equation (4) becomes

$$P_i = f(Z_i, C_i, A_i) \quad (5)$$

Considering j, k and h respectively the socio-economic characteristics, capital and categories of commercial actors; the econometric model that comes out is:

$$P_i = \alpha_0 + \sum_j \alpha_j CS_{ij} + \sum_{j'} \beta_k C_{ik} + \sum_{j''} \delta_{j''} A_{ih} + u \quad (6)$$

On the basis of these specifications and field study observations, the characteristics of the commercial actors such as the access to education, the contact with marketing services, the experience in marketing, the invested capital, the cost of commercial labor and the type of commercial actors such as wholesalers, local wholesalers or semi-wholesalers, retailers were introduced into the regression model. Table 2 shows us the various variables considered in the model of regression.

**Table 2. Various variables considered in the model of regression**

Variables names	Types of variables <sup>1</sup>	Modality	Expected sign
<b>Socio-economic and demographic characteristics (Z)</b>			
Marital status	D	0 = not married 1 = Married	±
Contact with marketing services	D	0 = No; 1 = Yes	+
Access to education	D	0 = No; 1 = Yes	+
Experience in marketing	C	—	+
<b>Capital</b>			
Cost of commercial labor	C	—	±
Invested capital	C	—	+
<b>Types of commercial actors</b>			
Wholesalers	D	0 = No; 1 = Yes	+
Semi-wholesalers	D	0 = No; 1 = Yes	+
Retailers	D	0 = No; 1 = Yes	+
Collectors	D	0 = No; 1 = Yes	+

Types of variables<sup>1</sup> D : discontinuous Variables and C : Continuous Variables

Source: Authors' Specification

### 3 RESULTS

#### 3.1 SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS

The socio-economic characteristics of the respondents are summarized in Table 3. These characteristics show that the average experience in cashew nuts marketing is about 10 years and more than half of the respondents of cashew nuts marketing actors are male (53 %). 95% of the research units are married and 31% are in contact with advisory structure on marketing of agricultural products, through which they receive oriented training. Considering the invested capital; retailers, collectors, semi-wholesalers and wholesalers used respectively on average capital of 142,000fcfa, 136,648.35fcfa, 1,193,548.387 fcfa and 9,161,538.462 fcfa. The commercial labor is estimated to on average value of 100.50 fcfa/kg. The descriptive statistics of these variables are summarized in Table 3.

*Table 3. descriptive statistics of variables introduced in the model*

<b>Qualitative variables</b>	<b>Frequency</b>	<b>Percentage</b>
Marital status	----	----
Married	152	95
Contact with marketing services	50	31.25
Education	96	60
<b>Quantitatives Variables</b>	<b>Mean</b>	<b>Standard Deviation</b>
Experience in marketing	10.29	6.71
Cost of commercial labor (fcfa/kg)	100.50	175.631
Invested Capital (fcfa/kg)	1075531.250	6441098.987

Source: Author's computations

#### 3.2 CASHEW NUT MARKETING CHAIN

Depending on the purchase and sale strategies adopted by cashews nuts marketing actors, three types of cashew nuts marketing circuits or channels are represented (Figure 2):

- Short channel of direct sale involving the producer and semi-wholesalers or wholesalers of whom the purpose is the export. However, some producers sell directly to cashew nuts processors at local level,
- Long sales channels including collectors, retailers, wholesalers and semi-wholesalers of whom the purpose is export,
- The intermediate sales channels involving collectors, middlemen and retailers of whom the purpose is export and/or processing locally.

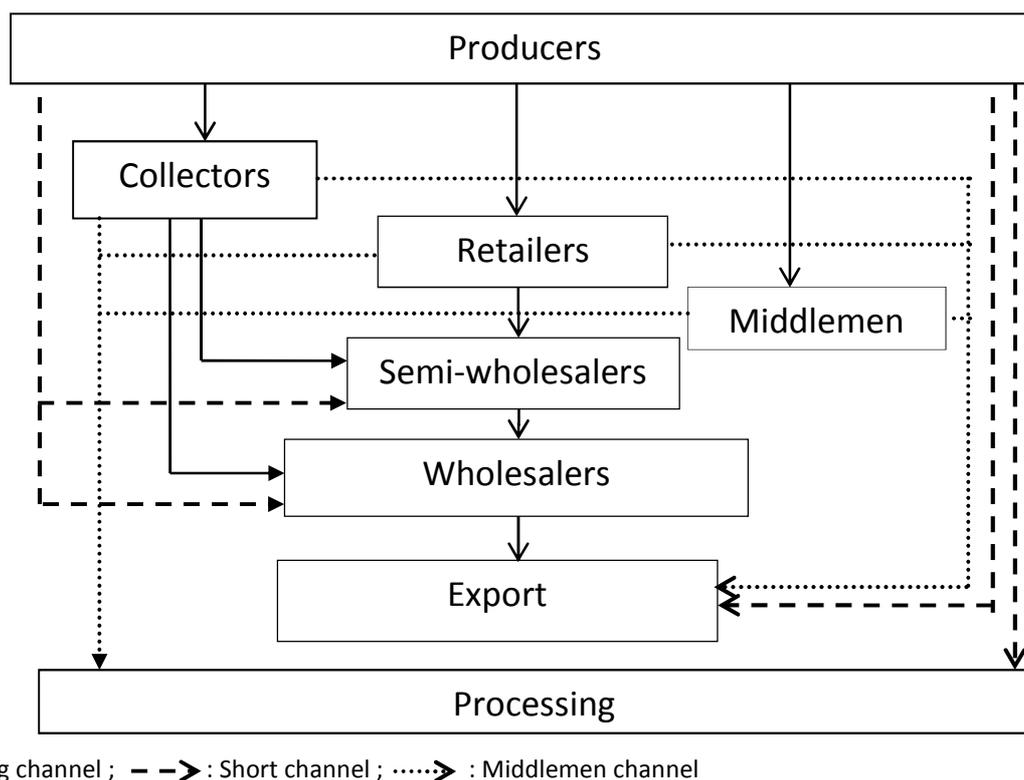


Fig. 2. Cashew nuts marketing channels in the municipality of Tchaourou

Source: Author's Achievement

### 3.3 ECONOMIC PROFITABILITY OF CASHEW NUTS MARKETING

The net margin obtained for each commercial actor (Table 4) is greater than 0, which implies that the marketing of cashew nuts is economically profitable in North-Eastern Benin.

Subsequently the test of ANOVA indicates that the difference in average of net margin from one actor to another is significant at statistical threshold of 1% level. That indicates that each actor makes a profit according to the rank he occupies in the marketing channel.

Table 4. Result of net margins per types of actors

Types of actors	Mean	Standard Deviation	Minimum	Maximum
Collectors	9.0787	7.84977	-22.60	25.53
Retailers	13.1186	7.35457	0.50	26.51
Semi-wholesalers	10.5647	5.87211	-13.58	17.48
Wholesalers	21.1579	7.68455	8.31	37.52
Total	10.9576	8.11362	-22.60	37.52
Signification	F= (3 ; 112) = 10.562 P=0.000			

Source: Author's computations

### 3.4 SOCIO-ECONOMIC DETERMINANTS OF ECONOMIC PROFITABILITY OF CASHEW NUTS MARKETING

The results of the regression model are summarized in Table 5. The estimated model is globally significant at the statistical threshold of 1% (Probability <0.01). In addition, 42.4% of the variations observed in the net margin value can be explained by the explicative variables introduced in the model. As a result, marital status, experience in cashew nuts

marketing, capital invested and the category of commercial actors are positively and significantly correlated with net margin of cashew nuts marketing. The cost of commercial labor used is negatively and significantly correlated with net margin of commercial actor. The two other variables such as access to education and the contact with marketing services although positively correlated with net margin of marketing are not significant.

*Table 5. Determinants of level of economic profitability of of cashew nuts marketing*

Variables	Net Margin of Marketing			
	Coefficient	Standard Deviation	T	P > (T).
<b>Socio-economic and demographic characteristics</b>				
Marital status	3.386*	1.875	1.806	0.073
Education	1.004	0.652	1.539	0.126
Contact with marketing services	1.065	0.994	1.072	0.286
Experience in marketing	0.132**	0.065	2.041	0.043
<b>Capital</b>				
Invested capital	2.069E007**	0.000	3.042	0.003
Cost of Commercial labor	-5.273***	0.993	-5.308	0.000
<b>Commercial actors</b>				
Wholesalers	1.744***	0.299	5.840	0.000
Semi-wholesalers	0.450*	0.243	1.850	0.066
Retailers	1.486***	0.291	5.109	0.000
<b>Model summary</b>				
(Constante)	9.365***	1.961	4.775	0.000
Observations	120			
$R^2 = 0,424$				
$F(14, 145) = 10,96***$		Durbin-Waston=1,650		
$Prob > F = 0,000$				

\*, \*\*, \*\*\*: respectively significant at 10%, 5% and 1%

Source: Author's computations

#### 4 DISCUSSION

The analysis of socio-economic characteristics of the commercial actors shows that they are similar to those obtained by [12] and [6] who found that the actors were less educated. Most was married and engaged a commercial labor for their marketing activities. Also as obtained by [6], [7], wholesalers, semi-wholesalers, collectors and retailers were important actors in the cashew nuts marketing system in Benin. In addition the various marketing channels identified are identical to those of [8] in their studies on the analysis of marketing systems of corchorus olitorius produced in south-western Benin. According to [12], [6], [7], the marketing of cashew nuts is an economically profitable business for those involved in. Indeed, as pointed out by these authors, the wholesalers carry out the highest net margin in the marketing chain and the collectors have the smallest one because the former have the monopoly of trade, are the owners of capital, have a perfect knowledge about the market price and circumstances and employ most of the other actors. In contrary, the collectors are paid by the actors who use their services for the collection of cashew nuts. As for the semi-wholesalers or local wholesalers, the brokers of the wholesalers are also present locally and buy directly cashew nuts from producers or others actors at competitive prices, what is a drag to the profit maximization of the semi-wholesalers or local wholesalers who still sell back the majority of their products to the wholesalers. [8] had already pointed out the importance of retail trade with an average net margin of the retailers of corchorus olitorius in land trays in south-western Benin (1,48fcfa / kg) slightly higher than that of wholesalers (0,98fcfa / kg). However, as indicated by [13] marital status and invested capital determine positively the net margin of the maize producers in Northern Benin. Although both activities are different, the production and marketing of agricultural products involve the use of labor and adequate capital. With Gbetibouo (2009) [14], [13]; experience in agriculture is a key factor to farmers' adaptation to climate change, thus the experience in any business, marketing of cashew nuts for instance is of great importance to maximize the revenue. The effect of education does not feel because most market transactions are conducted in local language and the involved actors mastered very well the market change and price.

## 5 CONCLUSION

Based on the sales strategies developed in the municipality of Tchaourou, the marketing system of the cashew nuts is conducted by several actors namely wholesalers, semi-wholesalers, retailers and collectors in three types of commercial chain such as long chain, short and intermediate chain. The analysis of economic profitability of cashew nuts marketing system shows that the commercial actors realized important net margin in North-Eastern Benin depending on the category of actors. The determinants of such economic profitability are marital status, experience in marketing, invested capital and the cost of commercial labor. In addition, wholesalers and retailers got a higher economic profitability. From this research, policymakers should support the marketing of cashews nuts through targeted actions on these determinants including access to capital.

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