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Sincerely,

Jose Noronha Rodrigues
ELP Editor in Chief

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Financial Inclusion and its Impacts on Business Growth: A Comparative Analysis between Male and Female Entrepreneurs in Lagos State, Nigeria

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Abstract

Entrepreneurial activity is an important business activity, especially in developing countries where high level of poverty and inadequate job opportunities are still more prevalent. For entrepreneurs to ensure continuity in their business, the issue of business growth/expansion is of significant importance. This paper focuses on examining the effect of microcredit programme on the business growth of the beneficiary from the gender's perspective in a Cowries Microfinance Bank's (CMB) credit programme in Lagos, Nigeria. A systematic sampling technique was used to select a sample of 191 male entrepreneurs and 359 female entrepreneurs from the study bank. The data were analysed through a Propensity Score Matching (PSM). The results of the Average Treatment Effect on the Treated, obtained from the PSM analysis, indicate that the microcredit loan programme has a positive impact on the profit of both male and female entrepreneurs in the study area. Therefore, financial inclusion, through access to microfinance bank credit, has the potential of enhancing growth in the business of entrepreneurs. It is, thus, recommended that more focus should be given to microfinance banks. This is because it has the potential to enhance the business growth of the entrepreneurs in the study area.

Introduction

Nigeria's financial exclusion for adult is one of the highest in Africa and this stood at 46.3% as at 2011 (CBN, 2012). According to the CBN in 2012, a total of 39.2 million (46.3%) of the total adult population, which stood at 84.1 million, are inaccessible to financial services. Also, in a recent survey by EFinA (2016) among some selected countries (South Africa, Madagascar,

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Togo, Zambia, Rwanda, Ghana, and Kenya), Nigeria still has the highest percentage of financially excluded adult which stood at 41.6%. In terms of gender, 46.6% of adult female are financially excluded, while 36.8% of adult male are financially excluded (EFinA, 2016).

In view of this, Nigeria has initiated many financial inclusion strategies through the CBN. The apex bank in its efforts to address the high financial exclusion and to reduce it to 20% by the year 2020, and also in accordance with the Maya declaration, has formulated a financial inclusion strategy that is channeled through simplified risk-based framework, national financial literacy framework, consumer protection framework, mobile payment system and cashless policy, established linkages, and the introduction of credit enhancement schemes and programme.

It should, however, be noted that for any economy that needs to increase its GDP growth, enjoy some levels of economic development, and thus maintain a sustainable growth and development in the business of the entrepreneurs, the issue of business growth (in terms of additional outlet or change in the status/size of the business firm from micro business to small-scale enterprises or medium scale enterprises) is very vital. Thus, this will help to ensure continuity in the business, increase employment, and reduce poverty.

However, capital which is one of the essential factors of production is one of the impediments to business growth and development which entrepreneurs often faced in most developing countries. Consequently, the little available capital needs to be utilized effectively and efficiently so that the growth of the business can be achieved. Entrepreneurs in Nigeria, like in some developing countries, still derive most of their sources of capital through borrowing from banks, especially microfinance banks. This is because most microfinance banks often require lesser collateral securities when compared to conventional banks. In addition, government in Nigeria has recently instructed microfinance banks to focus their lending activities more on entrepreneurs (CBN, 2012). Given this, this study strives to examine the impact of microcredit loan on the business growth of entrepreneurs by making a comparison between men entrepreneurs and women entrepreneurs in Lagos State, Nigeria. Many studies have often looked at the effect of microcredit access on the business growth of entrepreneurs. This is without disaggregating their data regarding the gender of the beneficiary of the loan programme. Some studies that looked at the gender aspect often based their analysis on women alone. However, this study has found out that men also play an active role in entrepreneurial activities in Nigeria, owing to the high unemployment rate and high rate of poverty.

In Nigeria, unlike some developing countries where most of the enterprise's businesses are done by women, the situation is entirely different as both men and women often engage in microenterprises businesses.

Nevertheless, the number of women involving in this activity outweighs that of men. However, the difference is not too noticeable when compared to some developing countries. Thus, this study makes a comparative analysis between women and men entrepreneurs in order to assess the impact of microcredit programme on the business growth of the loan beneficiaries based on their gender. The profit earned by the entrepreneurs is used to measure growth in the business of entrepreneurs as used in some studies to measure business growth (Idowu & Oyeleye, 2012; Wang, 2013; Laetitia, Shukla & Luyanda, 2015).

Furthermore, a number of studies have looked at the financial inclusion at the macro level. The objective of this study is to examine the impact of financial inclusion through access to credit at the micro level based on the business growth of entrepreneurs. Hence, this is with specific emphasis on the gender of the participants in the credit programme.

The rest of this paper is divided into four sections. The next section sequel to this introductory section deals with some literature review on the impact of microcredit on business growth. Section three of the paper deals with the methodology employed by the study. The fourth Section presents the result, findings, and discussion of the study. Finally, the last section which is Section five provides the conclusion, recommendation, and some suggestions that may be useful for further research.

Literature Review

Despite many empirical studies on the impact of microfinance on business growth (Idowu & Oyeleye, 2012; Ngugi & kerongo, 2014; Babagana, 2010; Olusanya, Sufiani & Temi, 2014; Laetitia, Shukla & Luyanda, 2015), limited evidence still exist in this area of studies in terms of gender. This is because most studies often look at the impact generally without disaggregating the sample size into male and female. On the other hand, the few ones that are gender specific often focus on women. This is because women are believed to be the major clients of microfinance banks. Also, Myoux and Harti (2009) emphasized that little research has been recorded on the gender impact of financial services for men. In this section, this study reviewed some of the general literature on the impact of microcredit on the business growth of microenterprises. In addition to this, some few empirical studies that are gender specific were also reviewed.

Some of the non-gender specific studies are found in Idowu and Oyeleye (2012) who used a foster Greer Thurbecke Matching Framework analysis and partial correlation in analyzing the impact of microfinance banks on poverty alleviation in some selected local government areas in Oyo State, Nigeria. The study found that the profit and asset acquisition of the

respondents are positively and significantly affected by access to microcredit in the study area.

Ngugi and kerongo (2014) found in their study of the effect of micro-financing on the growth of small and micro-enterprises in Mombasa County, Kenya, a positive effect of the loan on the business activities in the study area. Similarly, Wang (2013) identified the important role played by microfinance on the revenue and profit growth of small and medium enterprises (SMEs) in the study area. In the same vein, positive effect has also been found on the growth of small enterprises (Babagana, 2010; Olusanya, Sufiani & Temi, 2014).

Furthermore, in a study in Rwanda, it was found that access to microcredit has helped in the beneficiaries' business performance in terms of increase in their capital profit, growth in the size of the business, and expansion (Laetitia, Shukla & Luyanda, 2015). However, the authors emphasized on the entrepreneur's skills as a complementary factor to credit facility, that could help to enhance business growth. Johnson, Copestake and Bhalotral (2001) found in their impact assessment study of microcredit in Zambia a significant and higher growth on the profit of those who accessed the second loan cycle. Wang (2012) found in a study in China a positive effect of microfinance on the revenue and profit growth of SMEs in the study area. The author also identified the important role played by microfinance on the revenue and profit growth of small and medium enterprises (SMEs). In a study in Eastern Uganda, Wilfred, et al. (2016) found a positive impact of microfinance on SMEs in terms of growth in their businesses, capital, and stock accumulation.

Similarly, Yadessa, Jina and Akessa (2015) found that micro-financing schemes have been positively added to the development of small-scale enterprises and enhanced entrepreneurial attitude in Jimma Town, Oromia, Ethiopia. Also, Ferdousi (2015) in his study found a positive impact of access to loan on entrepreneurs business. Nevertheless, the author cautioned that less innovation in business may hinder this positive impact. As a result, he recommended that microcredit loan should be associated with proper business skills, information, and technologies. This makes it possible for the loan to be utilized effectively in order for the loan beneficiaries to enjoy the full benefit of the loan.

 In spite of the insensitive nature of most studies on the gender aspect of the impact of microcredit on business growth, however, some few studies still exist that are gender specific. Among these studies is the study of Gichuki, Mulu-mutuku, and kinithua (2014) that assessed the performance of women-owned enterprises access to credit in a village in Kenya. In the study, they found that access to credit by women in the study area has a positive impact on the net profit and capital of small micro enterprises.

Similarly, Ike (2013) found in a study in Enugu State, Nigeria, a positive impact of microfinance services on the business performance of the loan beneficiaries' women entrepreneurs through the increase in their income. Also, Rathirance and Semassinghe (2016) found that access to credit has enhanced the business performance of women in Sri Lanka by increasing the income/profit of the beneficiaries.

Michelle (2014) stated that at the early stage of the business, the impact of microcredit on women's business activities is positive; on the other hand, for men, the impact is negative both at the early stage and at the later stage of their business.

Methodology
i)   Area of Study
The study was conducted in Lagos State, Nigeria. Lagos State was preferred because of its high business activities and high number of microfinance and microenterprises. Hence, this is in contradiction with its high poverty level. Cowries Microfinance Bank was selected from other microfinance bank because the bank is affiliated with Lagos State Microfinance Institution (LASMI).
ii)   Data
A total of 550 data were collected through a systematic sampling technique. This data compose of 191 male entrepreneurs and 359 female entrepreneurs.
iii)   Model Specification and Analysis
Various measurements were used in the literature to measure business growth. Some of these measurements are profit, asset, expansion in business, number of workers employed etc. However, this study used the profit earned by the entrepreneurs after the collection of the loan as used by some studies in the literature (Idowu & Oyeleye, 2012; Wang, 2013; Laetitia, Shukla & Luyanda, 2015). Based on this, the model for this study is given as:

$$G = F(X, A)$$

$G = a_0 + a_1 X_i + a_2 A + \mu$

Where
G represents growth in the business of entrepreneurs
a_o represents the constant term
X_i represents vectors of household characteristics
A represents access to the microcredit which is given as 1 and 0 otherwise
a_1 and a_2 are the parameters to be estimated
μ represents the error term

To analyse the model, Propensity Matching Score (PSM) technique was employed by the study. PSM is the conditional probability of participating in a programme/treatment by taking into consideration some pre-treatment characteristics of the participants. The PSM matches the treatment observation

with the control observations that are similar or same in character. Therefore, this is done in order to eliminate the self-selection bias which is often common in observational studies.

Therefore, the PSM compares the impact of access to microcredit programme on the business growth of the treated male entrepreneurs with their control group (counterfactual) in the credit programme. Also, for the female entrepreneurs, PSM compares the impact of access to microcredit programme on the growth of the treated female entrepreneurs with their control group. Therefore, for this study, we matched the participant men/women entrepreneurs based on their propensity score using the probit model. Thus, the propensity score is given as:

$$P(x) = \text{prob}(y = i \mid x) = E(y \mid x)$$

Where

y= Dependent variable (outcome)

X= Independent variable (characteristics of the respondents)

In observational studies like this study, where the observation is not randomly selected due to some self-selection bias (which could arise from non-random programme placement or individual self selecting into the programe), the PSM analysis result is based on the Average Treatment Effect on the treated (ATT). The essence of ATT is that it takes care of the selection bias between the control and the treated observation (Beker & Ichino, 2002). The ATT result is obtained by subtracting from the outcomes of the treated observation the outcome of the treated observation as if they had been treated. Therefore, ATT is given as:

$$ATT = E(y_1 \mid x_1 \; D=1) - E(y_0 \mid x_1 \; D\text{-}1)$$

From the equation above, the counterfactual is the second part of the equation on the right-hand size. This counterfactual is the observable characteristic of the respondents that needs to be estimated. Therefore, $E(y_1 \mid x_1 \; D=1)$ is the expected outcome of women/men entrepreneurs involvement in the credit programme on their business growth, while $E(y_0 \mid x_1 \; D\text{-}1)$ is the expected outcome of women/men involved in the credit programme given that they had not participated in the programme.

In carrying out the matching of the characteristics of the treatment and the control group, some matching techniques were suggested in the literature. However, for this study, we employed the radius matching technique because of some merits it has over other matching techniques.

The first procedure for PSM is to obtain the propensity score. However, this involves the matching of the characteristics of the treatment group for men/women entrepreneurs with the characteristics of the control group so that men/women with the same covariate or observable characteristics can be selected. For this purpose, the probit model was used to calculate the propensity score.

Result and Discussion

a)   Descriptive Statistics

From the descriptive statistic result in Table 1, less than half of the male entrepreneurs participated in the credit programme. This is represented by the frequency and percentage of 67 (35.08%) respectively and the remaining 124 (64.92%) representing the frequency and percentage did not participate in the credit programme. However, for the female entrepreneurs, more than half participated in the credit programme as indicated by the percentage and frequency of 50.97% and 183 respectively. In addition, the remaining frequency 176 and percentage of 49.03% did not collect any loan.

Among the male entrepreneurs, 64.92% belong to a political party while the remaining 35.08% is not a member of any political party. For the female entrepreneurs, 62.40% participated in one political party or the other and the remaining 37.60% did not belong to any political party.

Furthermore, over 60% of the male entrepreneurs are in their active working age group. Also, for the female entrepreneurs, over 70% are in their active working age. In terms of marital status, more than half (over 50%) of the male entrepreneurs were married, while over 60% of the female entrepreneurs were married.

Majority of the female respondents have a formal education and this is represented by 93.87%. Also, this falls in the area of primary level of education, secondary level of education, and ordinary National Diploma level of education while the remaining 6.13% did not have any formal education. Similarly, majority of the male entrepreneurs are educated. This is represented by 94.76% and 5.24% with their level of education fallen in the area of primary, secondary, and Ordinary National Diploma.

Table 1. **Descriptive Statistics**

Variables	Frequency	Percentage (%)
Gender		
Male	191	34.73
Female	359	65.27
Treat		
Male -		
Treated	67	35.08
Untreated	124	64.92
Female –		
Treated	183	50.97
Untreated	176	49.03
Mem_ political		
Male -		
Member	124	64.92
Non-member	67	35.08
Female-		
Member	224	62.40
Non-member	135	37.60

| **Age group**		
Male		
<=25	16	8.36
26 -35	84	43.98
36 – 45	45	23.56
46-55	34	17.80
56-65	12	6.28
Female		
<=25	62	17.27
26 -35	223	62.12
36 – 45	31	8.64
46-55	6	1.67
56-65	37	10.31
Marital Status		
Male -		
Single	84	43.98
married	107	56.02
Female -		
Single	136	37.88
Married	223	62.12
Education		
Male -		
No formal education	10	5.24
Formal education	181	94.76
female -		
No formal education	22	6.13
Formal education	337	93.87

Propensity Score Matching (PSM) Results
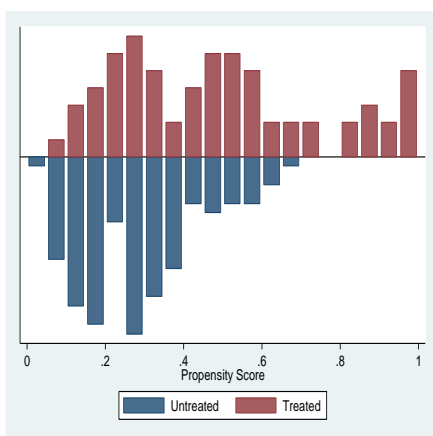
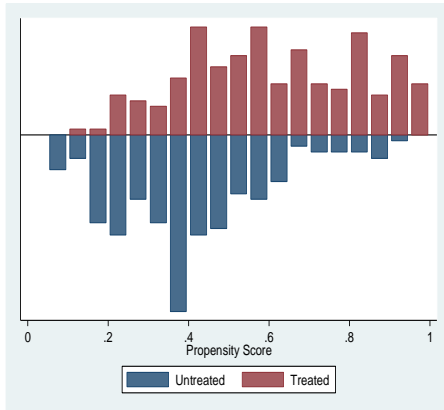Figure 1. The Distribution of the conditioning

Figure 2. The Distribution of the conditioning probability for Male
probability for Female

The Figure 1 above shows the distribution of the propensity score for
the matched sample (treated and control observation). From this figure, it is
observed that the distribution of the conditioning covariate is equal across the
treatment and control observation for men/women entrepreneurs in the
matched sample. This indicates that the balancing property has been satisfied.
        Furthermore, Table 2 below shows the matching quality before the
matching and after the matching was done. From the table, it can be observed
that there are no pretreatment differences between the treated observation and
the control observation for both male and female entrepreneurs from the P
value matched as shown by column 3 in the table.

Table 2. Indicators of the Matching Quality before and After matching

Samples	P-value: Unmatched	Matched	Mean bias (%): Unmatched Matched		Mean bias Reduction ((%)
Male Entrepreneurs	0.000	0.111	31.6	16.0	49
Female Entrepreneurs	0.000	0.208	35.1.	12.2	65

Also, from the table, it can be observed that there was a substantial fall
in the mean bias after the matching had been completed for both male and
female entrepreneurs. Thus, the mean bias of the covariates X for both samples
falls below the 20% as advised by Rosembaum and Rubin (1985). This
indicates that the self-selection bias has been eliminated and the matching
criteria have been satisfied.

Table 3. Average Treatment Effect (ATT) – Radius Matching

Sample	Outcome Variable	ATT (NGN)	Treated on support	Off-support	Control on support	Off-support
Male Entrepreneurs	Pr_af_loan	12878.21***	52	15	117	7
Female Entrepreneurs	Pr_af_loan	6144.24**	172	11	168	8

Significant at 1%*** 5%**, 10%*, NGN Naira amount, Pr_af_loan – Profit after the collection of loan

The result of the Average Treatment effect on the Treated (ATT) was done with Radius matching technique and this is presented in Table 3 above. This result indicates that participation in microcredit has a highly significant and positive effect on the business growth of both male and female entrepreneurs in the study area. For the male entrepreneurs, the ATT result shows that those that accessed credit have on the average a higher growth on their profit of NGN 12878.21 than those entrepreneurs that did not access the credit facility.

Similarly, for the female entrepreneurs, the estimates from the ATT indicates that those that participated in the microcredit programme have on the average a significant and higher growth on their profit of NGN 6144.24 than those who did not participate in the credit programme.

These findings depict that entrepreneurs that participated in the microcredit programme are better off in their earning on profit than those who did not partake in the programme for both male and female. Therefore, our result is consistent with the findings of Yadessa, Jina, and Akessa (2015) and Ferdousi (2015).

Table 3. Treatment Effect: Sensitivity Analysis of Matching Algorithms
Neighbor Matching

Sample	Outcome Variable	ATT Result (NGN)	Treated: On support	off support	Control: On support	off support
Male Entrepreneurs	Pr_af_loan	5653.73**	67	-	124	-
Female Entrepreneurs	Pr_af_loan	4995.08*	183	-	176	-
		Kernel Matching				
Male Entrepreneurs	Pr_af_loan	11044.78**	67	-	124	-
Female Entrepreneurs	Pr_af_loan	1778.69**	183	-	176	-

Significant at 1%*** 5%**, 10%*, NGN Naira amount, Pr_af_loan – Profit after the collection of loan

Furthermore, to verify if the result of the radius matching technique used by the study is robust than other matching techniques, sensitivity analysis was carried out with the use of neighbor and Kernel matching technique for both male and female entrepreneurs. The estimates from the sensitivity analysis in Table 3 above reveals that radius matching method is better, robust, and insensitive to other matching techniques (neighbor and Kernel). Though the result of the radius matching method is higher than the two other matching methods, nevertheless, the result is however in line with other methods of matching techniques.

Conclusion and Recommendation

Based on the findings from our results, it is therefore concluded that financial inclusion through access to microcredit programme has significantly increased the profit of both male and female entrepreneurs and have enhanced business growth in the study area. It is, therefore, recommended that more attention should be focused on microfinance programme by policymakers and the government. This is because it has the potential of improving the business status of entrepreneurs so that sustainable growth and development can be achieved in the area of entrepreneurship development. Also, it helps to stimulate employment and reduce poverty.

Suggestions for Further Research

It is advised that further studies should be conducted to examine other geographical areas in Lagos State to verify if these results can be obtained. Also, further research could also delve into anecdotal evidence to make the result more robust.

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Economic Analysis of the Cotton Industry in Cote d'Ivoire

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Abstract

This study aims at assessing the competitiveness of the cotton industry in Cote d'Ivoire. The survey involved two hundred and eighty-nine (289) producers, four (04) ginning companies, one (01) spinning company, two (02) crushing companies and seven (07) management structures of the sector. The data were analyzed using Monke and Pearson's (1989) Policy Analysis Matrix (PAM). Results show that the cotton industry is competitive and has a comparative advantage. The different actors achieve economic and financial profitability. The cotton industry is protected by the agricultural policy of Cote d'Ivoire. Each link has joint protection on the price of outputs and tradable inputs and also an implicit subsidy.

Keywords: Cotton, PAM, profitability, competitiveness, Cote d'Ivoire.

Introduction

Cote d'Ivoire is a country in West Africa that has two ecological zones in terms of vegetation. It is the forest located in the Southern part and the Savannah found in the north of the country. The economy, based mainly on agriculture, has relied on these ecological zones to develop agricultural speculations. Thus, in the southern forest, there has been a cacao-coffee pairing, which accounts for almost 20% of the Gross Domestic product (GDP) and 40% of the export earnings. In the north, cotton cultivation has become essential and today a contribution of 1.7% in the GDP (Simplice, 2013). It remains one of the main sources of monetary income in the northern and central regions of the country.

Besides, it occupies more than 150 000 producers and directly or indirectly feeds nearly 3.5 million of people. Cotton represents about 10% of the volume of exports and occupies the 3rd place after the coffee and cocoa. In terms of results, the turnover of the cotton industry is between 100 and 120 billion of Franc CFA of which 70% to 80% in currency (Kouakou, 2014).

It should be noticed, however, that the cotton sector is not immune to the effects of price declines on the international market in recent years. Better, to guarantee a minimum income to the producers, the State had to intervene several times to support the cotton industry by important financial contributions (Fabio, 2006).

Moreover, even if a great literature exists on cotton, one notices a lack of study on the competeveness of this sector. Then, this study will allow us to examine the profitability, competeveness and efficiency of the sector and also to evaluate the impact of agricultural policies.

Specifically, it will be to:

- analyze the financial and economic profitability, the comparative advantage, the incitation measures put in place as well as the social gain generated by various subsectors of the cotton sector ;

- measure the impact of government policies on private profitability ;

- estimate the current resource efficiency used in the different production systems ;

- evaluate the level of protection of the actors and determine the factors that influence the profitability and competeveness of the sector.

I-   Methodology
1-1   Study area

The survey took place from May 25th to June 30th, 2017. The choice of sites was made by taking into account the importance of the activity according to the data of the Intercoton (Structure responsible for the management of the cotton sector). So, on that basis, we chose the sub- prefectures of Kassere and Baya from the department of Boundiali for producers and Korhogo and Bouaké towns for ginning, spinning and crushing companies.

1-2   Sampling

The target population of our survey mainly included cotton producers, ginning, spinning and crushing companies, the organizations of management, of regulation and of the development of the cotton sector and professional agricultural organizations.

Our sampling consists of three hundred (300) actors of the sector distributed as follows: 289 producers, (04) ginning companies, (02) crushing companies, (01) spinning company and (07) framework structures and regulation of the sector. The number of seed cotton producers surveyed (289) is obtained on the basis of one-tenth of the total number of producers identified. This sample is chosen excessively with reference to the result obtained from the following formula:

$$Xi = n.\frac{ni}{N}$$

where:

Xi = number of producers to be surveyed per production area;

n = size of sampling;

ni = number of producers per production area;

N = total population of producers;

$Xi = n.\frac{ni}{N}$ = relative frequency.

The number of producers surveyed per site is recorded in the Table I.

Table I: Distribution of respondents per production areas

Sites (Villages)	ni (agricultural production unit listed)	ni/N	n.ni/N	Xi (agricultural production unit surveyed)
Landjougou	217	0.07519	21.73008	22
Pangafre	206	0.07138	20.62855	21
Chiere	198	0.06861	19.82744	20
Kassere	202	0.06999	20.228	20
Yiele	196	0.06791	19.62717	20
Tiasso	235	0.08143	23.53257	23
Gbalo	310	0.10742	31.04297	31
Pinvoro	226	0.07831	22.63132	23
Lafi	252	0.08732	25.23493	25
Naganan	280	0.09702	28.03881	28
Torba	187	0.0648	18.72592	19
Siofan	152	0.05267	15.22107	15
Sissougou	225	0.07796	22.53119	22
TOTAL (N)	**2886**	**1**	**289**	**289**

1-3   Data analysis method
Policy Analysis Matrix (PAM)

In this study, the Policy Analysis Matrix (PAM) has been used for the analysis. That tool is commonly used in studies aiming at evaluating the impact of an economic policy on the efficiency of agricultural production systems. It is a double entry accounting system that allows you to evaluate the impact of the macroeconomic policies on producers and community incomes. The PAM is composed of two (2) types of budgets: a budget valued at private prices or financial prices and the other at social costs or economic costs.

Before the budget design, it is necessary to distinguish between tradable and domestic inputs. Tradable or marketable products are those which can be theoretically imported or exported while non-tradable products or domestic factors are those which are not normally tradable on international markets. In this case, with regard to exchangeable inputs, we can quote : the spray, the cart, the plow, fertilizers, phytosanitary products and the small material (hoe, sowing machine) for seed cotton producers ; the fiber conditioning equipment (general compacter, fiber slides, humidification device, groomer feeder, groomer, hydraulic and strapping press / bagging), the

seed cotton transport equipment(tractors, containers, poly skips), the seed cotton storage equipment (transport containers, compacted modules) and unloading systems (hydraulic telescopes, the module feeder) for the ginning; textile spinning machines consisting of cleaner-harvester or cleaning machine, carding, stretching or drawing and processing equipment such as the bleaching and dyeing for textile spinning and lastly the crushing equipment consisting of settling tanks, a system consisting of breaker or grinder, mixer, horizontal settling tanks and separator for the crushing. As for domestics inputs, it is the ground, manpower and capital for seed cotton producers ; of exploitation capital, financial costs, insurances, taxes, social charges, shops, staff costs, maintenance, security and training costs, energy for ginners, spinners and crushers.

Financial prices are those that actors pay or receive while economic prices reflect the cost of the economy and society. For determining the financial prices of rural labor, agricultural land and capital, the opportunity cost was estimated. Thus, for labor, the wages of agricultural laborers in times of intense activity was price as opportunity cost. For land, the rental cost has been taken as opportunity cost. As for the capital, the opportunity cost is that of the financial market. As the determination of economic prices is concerned, the principle is based essentially on a valuation of production factors and goods and services produced at international parity prices according to the module EASYpol 046 (FAO, 2005). Then, for all imported tradable, the parity price is the sum of the border price and shipping cost. As for exported goods or products, their parity price is the difference between the price of goods at the point of entrance, the CIF price and exit price of the country, the FOB. For the value-added elements of the operating account, we used standard conversion factors:

- labor costs: conversion factor equal to 1;
- transfers with State (taxes and subsidies): conversion factor equal to 0;
- social charges, financial costs and insurance: conversion factor equal to 0;
- elements of capital (technical and economic depreciation): conversion factor equal to 1;
- rental fees: conversion factor equal to 0;
- transport: conversion factor equal to 0.85;
- miscellaneous management fees: conversion factor equal to 0.96;
- expenditure on non-depreciable tools: conversion factor equal to 0.97.

The construction of the Policy Analysis Matrix was based on the prices observed in 2016. Tables **II** and **III** present respectively the model and competitiveness and economic efficiency indicators of the Policy Analysis Matrix (PAM).

Table II: Policy Analysis Matrix (PAM)

	Revenues	Input cost		Profit
		Tradable	Non-tradable	
Private prices	A	B	C	D
Social prices	E	F	G	H
Net transfers	I=A-E	J=B-F	K=C-G	L=D-H

Source: Monke and Pearson (1989)

Table III: Competitiveness and economic efficiency indicators of the Policy Analysis Matrix (PAM)

1-	Private profit	D=A-B-C
2-	Private Cost Ratio	PCR=C/ (A-B)
3-	Social profit	H=E-F-G
4-	Domestic Resource Cost Ratio	DRC=G/(E-F)
5-	Social Cost Ratio	SCR= (F+G)/E
6-	Transfer	L=I-J-K
7-	Nominal Protection Coefficient	NPC=A/E
8-	Effective Protection Coefficient	EPC= (A-B)/(E-F)
9-	Profitability Coefficient	PC=D/H
10-	Subsidy Ratio to Producers	SRP=L/E
11-	Equivalent Subsidy to producers	ESP=L/A

II-   Results and discussion
2-1 Competitiveness of the sub-sector of seed cotton production
Policy Analysis Matrix (PAM) of seed cotton producers

The analysis of the results in the Table IV indicates that private and economic profits are greater than 0. The production of seed cotton is profitable for the producers of the department of Boundiali. It also contributes to the economic growth of the locality. Moreover, the sub-sector of seed cotton production has a comparative advantage and, as such, the country has every interest in encouraging this activity. Positive net transfers say economic prices are lower than what they currently receive. Then cotton producers in this area are subsidized. These results are similar to those of Hubert (2011).

Table IV: PAM for the production of one hectare of cotton

	Revenue	Input cost		Profit
		Tradable inputs	Non tradable inputs	
Private prices	A 266 325	B 134 795	C 119 805	D 11 725
Social prices	E 246 225	F 124 198	G 115 030	H 6 997
Net transfers	I 20 100	J 10 597	K 4 775	L 4 728

Competitiveness and economic efficiency indicators of the Policy Analysis Matrix (PAM) of seed cotton production

According to the results in the table V, the Private Cost Ratio (PCR), the Social Cost Ratio (SCR) and the Domestic Resource Cost Ratio (DRC) are less than 1. The producers allocate their resources efficiently. As a result, the income from the cotton production activity is well above the expenditure. It is cheaper in domestic resources to produce cotton locally. The country should increase its exports in the cotton sector. The production activity is economically profitable. Domestic production is competitive. The cost of inputs is lower than the income generated by cotton. These same results also indicate that the production of cotton has an Effective Protection Coefficient (EPC) and a Nominal Protection (NPC) respectively greater than 1. The producers thus benefit from a subsidy of the order of 2%. They are thus protected by the current Ivorian agricultural policy.

Table V: Competitiveness and economic efficiency indicators of the Policy Analysis Matrix (PAM) of seed cotton production

1-	Private profit	D=A-B-C	11 725
2-	Private Cost Ratio	PCR=C/ (A-B)	0.91
3-	Social profit	H=E-F-G	6 997
4-	Domestic Resource Cost Ratio	DRC=G/(E-F)	0.94
5-	Social Cost Ratio	SCR= (F+G)/E	0.97
6-	Transfers	L=I-J-K	4 728
7-	Nominal Protection Coefficient	NPC=A/E	1.08
8-	Effective Protection Coefficient	EPC= (A-B)/(E-F)	1.09
9-	Profitability Coefficient	PC=D/H	1.68
10-	Subsidy Ratio to Producers	SRP=L/E	0.02
11-	Equivalent Subsidy to producers	ESP=L/A	0.02

2-2 Competitiveness of sub-sector of seed cotton ginning
Policy Analysis Matrix (PAM) of ginning companies

The activity of ginning presents a financial profit higher than 0. The sector of ginning is financially profitable (cf. Table VI). Moreover, with an economic return equal to 14 318 FCFA / ton and greater than 0, it can be said that this activity contributes to the economic growth of the locality and that it has a comparative advantage. The country has every interest in encouraging cotton processing. In addition, the analysis of the net transfer shows that the ginners are subsidized at 2 067 FCFA / ton. This result is similar to that of Adegbola et *al* (2006). In the study conducted on the profitability of the cotton sector, this author came to the conclusion that the ginning function is profitable.

Table VI: PAM of ginners for one ton of seed cotton

| | Revenue | Inputs cost | | Profit |
		Tradable inputs	Domestic factors	
Private prices	A 373 860	B 185 705	C 171 770	D 16 255
Social prices	E 347 730	F 169 600	G 163 812	H 14 318
Net transfers	I 26 130	J 16 105	K 7 958	L 2 067

Competitiveness and economic efficiency indicators of the Policy Analysis Matrix (PAM) of the ginning of seed cotton

The ginning subsector of the cotton sector has a Private Cost Ratio (PCR), a Domestic Resource Cost Ratio (DRC) and a Social Cost Ratio (SCR) of less than 1, respectively, according to the results in Table VII. The ginning is therefore a financially and economically profitable activity. The income from the activity is therefore well above the expenditure. In addition, there is a financial flow transfer of 2 067 FCFA / ton from the rest of the economy to the ginners. The ginning has a comparative advantage. It is cheaper to use domestic resources to process cotton locally than to import it.

Also, with an Effective Protection Coefficient (EPC) and a Nominal Protection Coefficient (NPC) of just over 1, it can be said that the ginning activity enjoys joint protection on the export selling price of cotton fiber and on tradable inputs. The ginners benefit from an implicit subsidy linked to the policy of transformation of agricultural raw materials initiated by the Ivorian State.

Table VII: Competitiveness and economic efficiency indicators of the Policy Analysis Matrix (PAM) of the ginning of seed cotton

1-	Private profit	D=A-B-C	16 385
2-	Private Cost Ratio	PCR=C/ (A-B)	0.91
3-	Social profit	H=E-F-G	14 318
4-	Domestic Resource Cost Ratio	DRC=G/(E-F)	0.92
5-	Social Cost Ratio	SCR= (F+G)/E	0.96
6-	Transfers	L=I-J-K	2 067
7-	Nominal Protection Coefficient	NPC=A/E	1.08
8-	Effective Protection Coefficient	EPC= (A-B)/(E-F)	1.06
9-	Profitability Coefficient	PC=D/H	1.14
10-	Subsidy Ratio to Producers	SRP=L/E	0.01
11-	Equivalent Subsidy to producers	ESP=L/A	0.01

2.3 Competitiveness of the spinning sub-sector
Policy Analysis Matrix (PAM) of spinning companies

The financial profit (D) and the economic profit (H) of spinners are superior to 0 according to the Table VIII. The cotton spinning business is financially and economically profitable. It also contributes to the economic growth of the locality and has a comparative advantage. The farmer has every interest in encouraging the processing of cotton fiber. However, positive net transfers (J) and (K) indicate that tradable inputs and domestic factors are taxed.

Table VIII: PAM of spinning for a ton of cotton fiber

| | Revenue | Input cost | | Profit |
		Tradable inputs	Domestic factors	
Private prices	A 971 300	B 763 000	C 193 569	D 14 731
Social prices	E 950 200	F 746 700	G 189 453	H 14 047
Net transfers	I 21 100	J 16 300	K 4 116	L 684

Competitiveness and economic efficiency indicators of the Policy Analysis Matrix (PAM) of the spinning companies

When reading Table IX, the subsector of the spinning has a Private Cost Ratio (PCR), a Domestic Resource Cost Ratio (DRC) and a Social Cost Ratio (SCR) less than 1. The spinning is a financially and economically profitable activity. The revenue from the activity is well above the expenditure. The spinners efficiently allocate their resources. It is cheaper in domestic resources to locally process cotton fiber than to import it. Moreover, with a net transfer valued at 684 FCFA / ton and positive, one can retain that the spinners benefit from a subsidy. This economic policy measure is confirmed by an Effective Protection Coefficient (EPC) and a Nominal Protection Coefficient (NPC) higher than 1. In fact, spinners benefit from joint protection on the selling price for the export of yarns and on tradable inputs. This result is identical to those obtained by Mariem (2013) in a study on the evaluation of the export potential of cotton and textiles in Cote d'Ivoire.

Table IX: Competitiveness and economic efficiency indicators of the Policy Analysis Matrix (PAM) of the spinning companies

1-	Private profit	D=A-B-C	14 731
2-	Private Cost Ratio	PCR=C/ (A-B)	0.93
3-	Social profit	H=E-F-G	14047
4-	Domestic Resource Cost Ratio	DRC=G/(E-F)	0.93
5-	Social Cost Ratio	SCR= (F+G)/E	0.99
6-	Transfers	L=I-J-K	684
7-	Nominal Protection Coefficient	NPC=A/E	1.02
8-	Effective Protection Coefficient	EPC= (A-B)/(E-F)	1.02
9-	Profitability Coefficient	PC=D/H	1.05
10-	Subsidy Ratio to Producers	SRP=L/E	0.01
11-	Equivalent Subsidy to producers	ESP=L/A	0.01

2-4 Competitiveness of the crushing subsector
Policy Analysis Matrix (PAM) of the crushing subsector

According to Table X, the crushing activity of the cotton seed generates a positive and interesting financial and economic profit. The activity is profitable for the crushers and also contributes to the economic growth of the locality. The transfers (J) and (K) are positive. This means that tradable and non-tradable factors are taxed.

Table X: PAM of crushers for a ton of cotton seed

	Revenue	Inputs cost		Profit
		Tradable inputs	Domestic factors	
Private prices	A 825 000	B 455 260	C 357 540	D 12 200
Social prices	E 810 000	F 444 500	G 354 762	H 10 738
Net transfers	I 15 000	J 10 760	K 2 778	L 1 462

Competitiveness and economic efficiency indicators of the Policy Analysis Matrix (PAM) of the seed crushing sub-sector

Table XI shows that the Private Cost Ratio (PCR), the Social Cost Ratio (SCR) and the Domestic Resource Cost Ratio (DRC) of the crushers are respectively less than 1. As a result, the activity is financially and economically profitable. The revenue from the crushing activity, which largely exceeds the expenditures made. The spinners efficiently allocate their resources. There is a transfer of financial flows of 1 462 FCFA / ton from the rest of the economy to the crushers and thus the crushers benefit from an implicit subsidy. Furthermore, the crushing subsector has a comparative advantage with regard to the results recorded in the table below. It will be remembered that it is less expensive than domestic resources to locally transform the cotton seed than to import it. This economy policy measure is

confirmed by an Effective Protection Coefficient (EPC) and a Nominal Protection Coefficient (NPC) slightly higher than 1. Crushing benefits from joint protection on the export selling price of cottonseed oil and on tradable Inputs. These results are similar to those obtained by Anne (2016).

Table XI: Competitiveness and economic efficiency indicators of the Policy Analysis Matrix (PAM) of crushing of the cotton seed

1-	Private profit	D=A-B-C	12200
2-	Private Cost Ratio	PCR=C/ (A-B)	0.97
3-	Social profit	H=E-F-G	10 738
4-	Domestic Resource Cost Ratio	DRC=G/(E-F)	0.97
5-	Social Cost Ratio	SCR= (F+G)/E	0.99
6-	Transfers	L=I-J-K	1 462
7-	Nominal Protection Coefficient	NPC=A/E	1.02
8-	Effective Protection Coefficient	EPC= (A-B)/(E-F)	1.01
9-	Profitability Coefficient	PC=D/H	1.14
10-	Subsidy Ratio to Producers	SRP=L/E	0.001
11-	Equivalent Subsidy to producers	ESP=L/A	0.001

Conclusion

The main objective of the study is to assess the economic competitiveness of the cotton industry in Cote d'Ivoire. On the basis of the results, it appears that each actor in the sector benefits financially. The cotton sector is competitive and has a comparative advantage. All actors have an interest in continuing their activities. It is cheaper to produce and process cotton locally. In addition, these actors benefit from an implicit subsidy and protection through agricultural policy of Cote d'Ivoire. Nevertheless, the sector is suffering the effects of disproportionate competition from Asian countries. Thus, to improve the competitiveness of the cotton sector in Cote d'Ivoire, agricultural policies must favor a better allocation of productive resources by taking into account the determinants of competitiveness such as prices, the quality of seed cotton, the output and the cost of production**.**

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