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Lumber Marketing, between 2017 and 2019, in the Communes of Touba Mosque and Mbacke (Senegal)

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Abstract— *In Senegal, people's demand for wood products, particularly wood energy and timber, is constantly increasing. Representing the country's second largest urban area after Dakar, the department of Mbacké, of which Mbacké and Touba Mosque are communes, is also a major destination for these products, especially timber. This is why we wanted to study the marketing of this product in this area, which is far from its production centers. This study was therefore carried out in the communes of Touba Mosque and Mbacke, with actors involved in the marketing of timber. The methodology consisted mainly of quantitative and qualitative surveys. The results showed that the types of timber marketed are: local timber, particularly Dimb (Cordyla pinnata) and Vene (Pterocarpus erinaceus) from Tambacounda, Kolda, and Sédhiou, and imported timber, which is easier to work with, generally from Côte d'Ivoire and represents 7.93% of consumption. The wood, sawn in the commune is sold to carpenters who transform it into furniture. The volume of timber entering the communes is noted in the year 2019 with 54.49% of Dimb of the volume of timber entering the communes and 29.05% of Vene. Thus, after the sale, the sawmill managers and carpenters obtain very important turnover. The quantity of timber has fallen sharply in the sawmills in the study area. The quantity of Venetian Timber (Pterocarpus erinaceus) sold is decreasing more and more due to fraudulent logging in the forests in the south of the country.*

Keywords— *Lumber, marketing; carpenters: Sawmill: Mbacke; Touba Mosque.*

I. Introduction

Senegal, a developing country, is characterized by limited natural resources and continuously growing economic needs. This situation also concerns forest resources, an integral part of the national economy.

Indeed, the geographical position of Senegal located at the western gates of Africa and its strong demographic pressure are reflected in new behaviors linked to the corollaries of globalization. This phenomenon creates a trend for rapid urbanization and industrialization and increased opening of national markets creating their interdependence. Thus, the demand for wood and non-wood products (energy, service wood, pharmacopoeia, etc.) tends to grow (Boye, 2000). Wood is the first source of energy in Senegal and covers 87 % of household energy needs (SIE, 2013). Thus, wood fuels, mainly wood and charcoal, represent an important part. In addition, the National Statistics and Demography Agency (ANSD, 2015) by analyzing the harvesting of timber resources, estimated that the pressure exerted on timber was significant, with an increase of 123.6% against 28% for charcoal.

The department of Mbacke is no exception. Indeed, with a population of 1.02 million inhabitants, Touba has 825,701 inhabitants, or 81.02% of the population of the department (ANSD, 2016). This holy city; has managed, in less than 100 years, to become the second largest city in Senegal, after Dakar in both economic and demographic terms. This is what gives it the rank of a major center of consumption of wood fuels, more particularly of lumber.

In Senegal, the development of forest massifs, for the benefit of populations living near forests, today occupies a very important place in natural resource management policy (Faye, 2015). It is entrusted to the Ministry of the Environment and Sustainable Development (MEDD), through its Department of Water and Forests, Hunting and Soil Conservation (DEFCCS) with its branches such as regional Inspectorates and the Water and Forests Sectors, in the departments.

From the analysis of the context, the orientations of the development policy and the current situation of the forestry sector, Boye in his prospective studies of the forestry sector in Africa, in 2000, draws the following conclusions: “Although certain efforts have been made been made, in the sense of a global approach to the development and management of natural resources, it remains to establish a real dialogue around the actions carried out in the various sectors to solve the specific problems of conservation of forest resources ”.

The wood produced in Senegal is not sufficient to meet demand, especially crafts and cabinetmaking industry. Consequently, the country imports a big part of this raw material (Faye, 2018). However, it is important to note that some forest products such as lumber from managed forests have not yet been the subject of in-depth studies that can help improve their marketing. Thus, to better understand the dynamics and possibly promote the development of the timber industry, the general objective of this study is to analyze the marketing of timber between 2017 and 2019 in the municipalities of Mbacke and Touba Mosque.

The specific objectives are as follows:

- identify the different actors, their role and their respective place in the marketing of lumber in the communes of Touba Mosque and Mbacke.
- determine the modes of supply, the volumes exchanged and their final destination, and
- estimate the economic results achieved by sawmill managers and carpentry workshop foremen in the communes of Touba Mosque and Mbacke.

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II. Material and Methods

Site Presentation

The region of Diourbel is subdivided into three departments which are Diourbel, Bambey, Mbacke. It has eight Baba Garage districts; Lambaye and Ngoye in Bambey, Ndindy and Ndoulo in Diourbel, Kaël, Ndame and Taïf in Mbacke and 39 municipalities. The Mbacke department is located in west-central Senegal. Its capital is the city of Mbacke. It has an area of 1,833 km^2 against 1,323 km^2 for Diourbel and 1,339 km^2 for Bambey.

It is made up of the three (3) districts of Ndame, Kaël and Taïf.

With the advent of Act 3 of decentralization, which advocates full communalization, the department has 16 municipalities.

The department of Mbacke is bordered to the north by the region of Louga, to the south by the region of Fatick, to the east by the regions of Fatick and Louga, to the west by the department of Diourbel. It is found in the peanut basin area.

Thid department is located at 14 ° 45'00 "North latitude and 16 ° 00" West longitude with an area of 1833 km^2 for a density of 388 hbts / km^2. It is located in the heart of Senegal, on the national road (RN3) between Diourbel and Dahra. Its geographical position is strategic insofar as the city is located only 180 km from the capital Dakar, not far from the main cities of Thies, Louga and Kaolack.

The Diourbel region, where the Mbacke department is located, is characterized by the absence of a classified forest. It is also marked by the non-existence of a habitat and refuge area for fauna, especially large mammals; nowadys, only small mammals (jackal, palm rat, hare, etc.) and some families of birds live there.

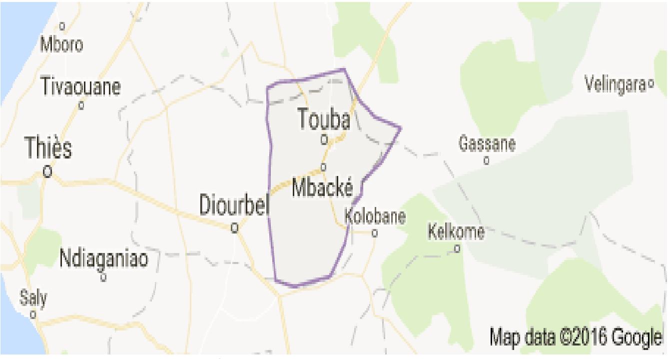

Fig. 1. Map of Mbacke department (Map data, Google)

Methods

Sampling

For woodworkers, they are estimated, by the Mbacke forestry sector, at around 1,000 carpentry foremen against 32 sawmills, including 30 in Touba and 02 in Mbacke.

For the sampling of carpentry workshop managers, we used the FAO sampling method (1992), applicable for a population of between 501 and 1000 individuals. The survey rate we have used is 5% of the population.

$$nf = N / t;$$

nf = sample size;

N = total number of carpentry workshop supervisors;

t = sampling rate;

So nf = 1000/5% = 50 foremen of carpentry workshops

For the sampling of sawmill managers, we applied the Fischer formula below, based on the total number of sawmills.

$$nf = n / (1 + n / N) \text{ with } n = 1 / d^2$$

nf = sample size;

d = degree of error = 10%; which corresponds to a 90% chance that the sample is representative;

N = total number of households

Application for sawmills:

$$n = 1 / (10\%)\ 2 = 100;\ nf = 100 / (1 + 100/32) = 25$$

In total, the overall sample to be investigated consists of 75, including 50 foremen of carpentry workshops and 25 managers of sawmills.

After determining the overall size of the sample, we determined, for the communes of Touba Mosque and Mbacke, the number of people to be surveyed, in proportion to the size of the target population, with the following formula:

X = sample size per municipality

Y = total workforce

$$X = (nf * y) / N$$

TABLE 1. Calculate the sample size per municipality

Communes	Total workforce		Sample size
Mbacke	Carpenter workshops	150	13
	Sawmills	2	2
Touba Mosque	Carpenter workshop	850	37
	Sawmills	30	23
Total	-	**1 032**	**75**

Data collection

The collection of socio-economic information combined two approaches: a qualitative approach and a quantitative approach.

Qualitative surveys

An individual interview was conducted with the Mbacke Water and Forests sector manager using an interview guide in order to collect information on the actors involved in exploitation and marketing of timber, their role and their respective place.

Quantitative surveys

The quantitative surveys were carried out with a representative sample, including 25 sawmill managers and 50 carpenters who derive their income from the marketing of timber in the communes of Touba Mosque and Mbacke.

Conduct of the investigation

The fieldwork was carried out in two phases:

- a prospecting phase carried out beforehand in the company of the head of the Water and Forestry sector to contact the respondents in order to inform them of the purpose of our presence and;
- an investigation phase using an interview guide for forest officers, loggers and a questionnaire for carpenters and sawmill owners.

Data processing

Collected data were proceeded in Excel.

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III. Results and Discussion

Results

Characterization of the actors in the sector

Distribution of respondents according to sex

Figure 2 shows, respectively, the distribution of respondents according to age. This figure reveals that all the people interviewed in the communes of Mbacke and Touba Mosque are men.

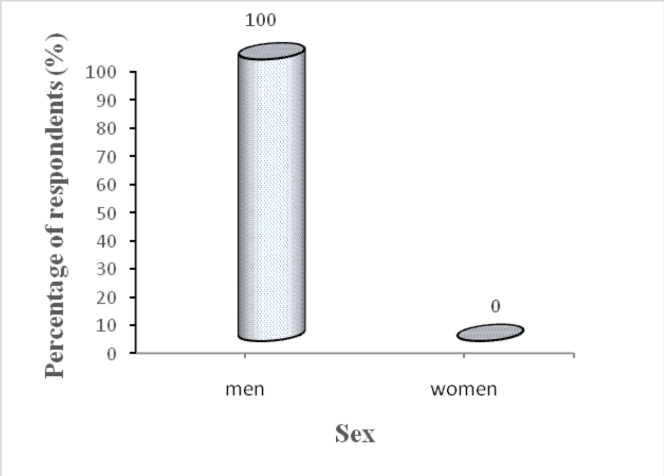

Fig. 2. Distribution of respondents according to sex

Distribution of respondents by age

Figure 3 shows the distribution of respondents according to their age

For sawmill managers, the age of sawmill managers ranges from 20 to 64 years old. According to our classification 2 (or 8%) are between 20 and 30 years old, 16 (or 64%) are between 30 and 40 years old, 4 (or 16%) are between 40 and 50 years old and 3 (or 12%) are aged 50 and over.

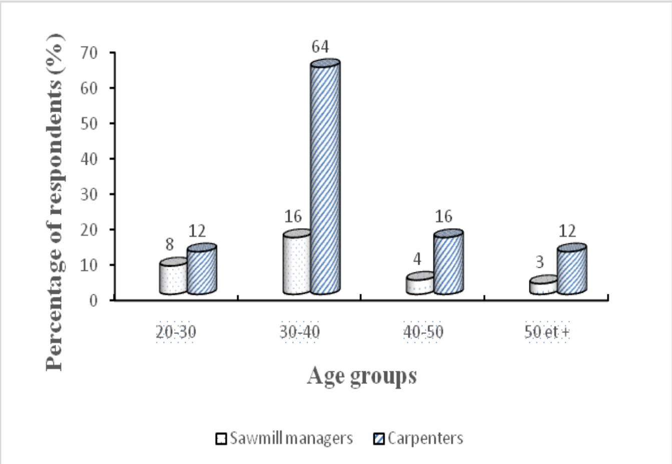

Fig. 3. Distribution of respondents according to age

For carpenters, the age of sawmill managers varies between 20 and 65 years. According to our classification 6 (or 12%) are between 20 and 30 years old, 23 (or 46%) are between 30 and 40 years old, 15 (or 30%) are between 40 and 50 years old and 6 (or 12%) are aged 50 and over.

Distribution of respondents according to the size of their household

Figure 4 shows the distribution of respondents according to the size of their household.

For sawmill managers

The analysis of Figure 4 shows that 52% of sawmill managers belong to a household with between 2 and 5 people and 48% are members of a household of 5 to 11 individuals.

For carpenters

According to our classification 20% of carpenters belong to a household of between 2 and 5 people and 80% are members of a household of 5 to 11 individuals.

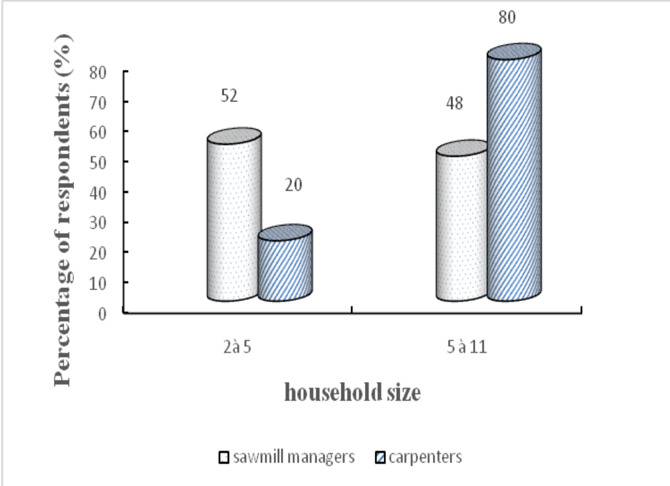

Fig. 4. Distribution of respondents according to the size of their household

Type of lumber used by sawmill managers and carpenters

Figure 5 shows the distribution of types of lumber used by sawmills and carpenters according to their frequency. The analysis of this figure reveals that, among the people surveyed in the communes of Mbacke and Touba Mosque, the local woods of the Dimb and Vene type are more used with a rate of respectively 26, 67% and 26.3% then follow the wood. Dibetou (imported wood), Frake (imported wood) and Linke (local wood) with respectively 13.33% 11.11% and 10.74%.
The least used woods are Sipo (imported wood), Caïlcedrat and Samba (imported wood).

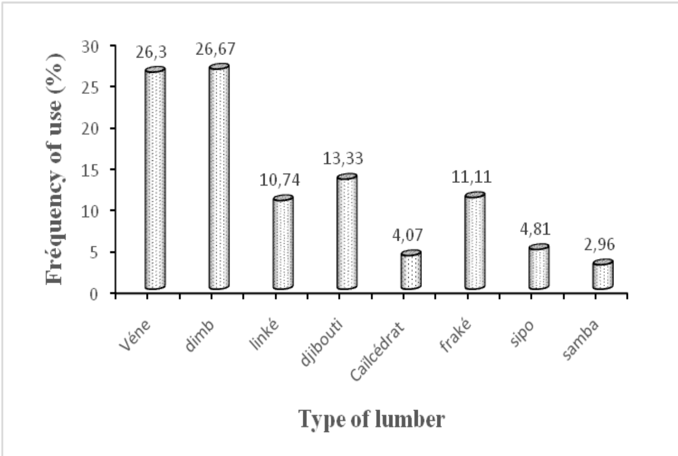

Fig. 5. Distribution of types of lumber according to their frequency of use

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Origin of lumber

Table 2 shows the distribution of timber types by region of origin. Analysis of this table reveals that Vene and Dimb woods are more marketed in the study area and come from the Tambacounda region with a rate of 54.17% and 62.50% respectively, followed by the region. from Kolda.

As for imported timber (Dibétou, Linké, Frake and Sipo), they generally come from the Ivory Coast.

TABLE 2. Origin of lumbers

Type of lumber	Tambacounda	Kolda	Côte d'Ivoire	Total
Véne	62,5%	37,5%		100%
Dimb	68,75%	31,25%		100%
Linké	37,5%	62,5%		100%
Caïlcédrat	50%	50%		100%
Dibétou	-	-	100%	
Fraké	-	-		
Sipo	-	-		
Samba	-	-		

Part of local and imported timber volumes in timber marketing

Figure 6 represents part of local and imported timber volumes from Côte d'Ivoire. The analysis of this figure shows that 6511.04 m^3 (or 92.07%) of timber comes from Senegal and 560.94 m^3 (or 7.93%) is wood imported to Côte d'Ivoire which is poorly represented in marketing.

Volumes of lumber ordered and delivered annually for sawmill managers

Table 3 shows the distribution of the volumes ordered and delivered annually in lumber according to the type of wood. It reveals that the volume of Vene wood ordered is greater than that delivered. On the other hand, for Dimb wood, the volume delivered is much greater than that ordered with 3228 m^3. For other types of wood, the volume ordered is identical to that delivered.

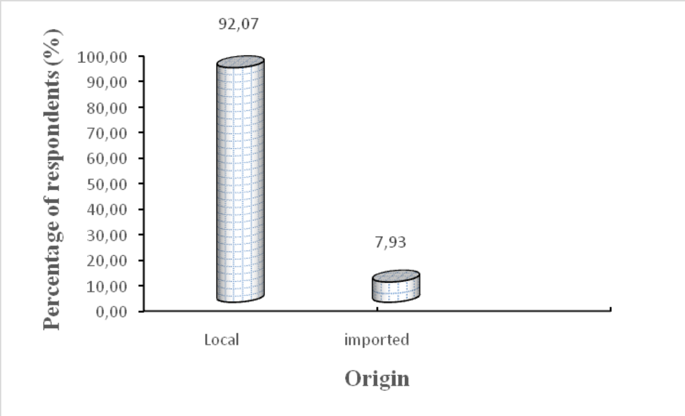

Fig. 6. Part of local and imported timber volumes in timber marketing

For carpenters

Table 4 shows the distribution of the volumes ordered and delivered annually to the woodworking workshops according to the type of wood. Analysis of this reveals that the volume of Vene wood ordered is also more significant than that delivered with 973 m^3

On the other hand, for Dimb wood, the reverse situation occurs. For other types of wood, only the ordered volume is delivered.

Comparison of volumes (m^3) of lumber delivered to sawmills from 2017 to 2019

Table 5 represents the distribution of the volumes of lumber delivered, between 2017 and 2019 in the sawmills surveyed in the two municipalities and according to the type of wood. Based on the analysis of this table, sawmills received more lumber in 2019 than in 2017, 2018.

TABLE 3. Ordered and delivered volumes for each type of lumber in sawmills

Lumbers	Vene	Dimb	Linke	Caïlcedrat	Dibetou	Frake	Sipo	Samba
Ordered volumes (m^3)	2100	3228	140,4	441	208,8	100,8	36	48,6
Delivered volumes (m^3)	1720,8	3228	140,4	441	208,8	100,8	36	48,6

TABLE 4. Ordered and delivered volumes for each type of lumber in carpentry workshops

Lumber	Vene	Dimb	Linke	Caïlcedrat	Dibouti	Frake	Sipo	Samba
Ordered volumes (m^3)	973,8	1419	273	18	224,88	203,7	67,5	24
Delivered volumes (m^3)	892,8	1419	273	18	224,88	203,7	67,5	24

TABLE 5. Volumes (m^3) of lumber delivered from 2017 to 2019

Lumber / Year	Vene	Dimb	Linke	Caïlcedrat	Dibetou	Frake	Sipo	Samba	Total (m^3)
2017	1026	1524	300,5	19,5	220	203	60	27	3380
2018	726	1320	280	18,5	223,5	200,5	65	30	2863,5
2019	1720.8	3228	140.4	441	208.8	100.8	36	48.6	5924.4

TABLE 6. Volumes of wood leaving the two municipalities during the last three years

Wood (m^3) / Year	Vene	Dimb	Caïlcedrat	Linke	Dibetou	Frake	Sipo	Samba	Total
2017	39	40,5	17	16	1,9	0	0	0	**114,4**
2018	320,38	575,5	41,6	242,34	4	1	0	39,5	**1224,32**
2019	142,6	447,48	102,1	245,54	23,9	38,36	0	435,2	**1435,18**
Total	**501,98**	**1063,48**	**160,7**	**503,88**	**29,8**	**39,36**	**0**	**474,7**	**2773,9**

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Volumes of timber leaving the study area from 2017 to 2019

Table 6 represents the volumes of timber leaving the study area during the past three years. Analysis of this table reveals that local timber is much more sold outside the Mbacke department to other regions of the country, more particularly Dimb with 1063.48 m^3, Link^é with 503.88 m^3 and Bois de Vene. with 501.98 m^3. However, it is in 2019 that the total volume of wood leaving is the highest with 1,435.18 m^3.

With an outgoing volume of Caïlcedrat wood of 160.7 m^3 in 2019, the sawmill managers surveyed stressed that the majority of this wood is bought by carpenters in Dakar because it is the timber preferred by the people of Dakar.

Local timber supply circuits

In the department of Mbacke there are two types of timber on the market, local timber and imported timber.

Local lumber

This is the wood that generally comes from the southern regions of Senegal in the logging areas, particularly the managed forests, and transported to Touba by trucks. It is the loggers who supply the timber to the sawmills in Touba who, in turn, sell the logs to the carpenters which transform them into planks.

Sawmill operators and managers only have a buy and sell relationship. Thus, the loading of timber of 30 tons comes to the sawmill manager at 3 million FCFA. Payment is made after delivery of the logs.

But the price may vary depending on the amount of wood purchased. Carpenters buy a ton of lumber from sawmills at 130,000 FCFA for any type of local timber.

Imported lumber

This is the wood that comes from other countries in general from West Africa particularly from the Ivory Coast. It is transported by sea and then transported by trucks to Touba. The timber arrives at the port in the form of planks. This means that the imported timber is already sawn in the countries of origin before being sold abroad. The major suppliers of this wood are foreign companies such as SIBA and SAB which supply users with white and red wood.

When the wood arrives in Dakar, it is transported within the country to poles of attraction such as Touba, more precisely to the sawmills which ordered it.

Imported wood is sold by cubage and the price per m^3 is set according to the type of wood. Payment is made after delivery of the boards. Then it is around the carpenters to place their orders with the sawmills in order to transform them into household, office or other furniture.

Timber supply method

For sawmill managers

Sawmills source their lumber through purchase. Their managers pay their invoices after the logs are delivered to the destination. The full load of the rented truck weighs 30 tons and costs CFAF 2.5 to 3 million for local timber. On the other hand, for imported wood, the price per m3 varies according to the type of wood purchased. For example, the m3 of Dibetou wood is more expensive and costs 550,000 FCFA.

For carpenters

Carpenters source their lumber from sawmills. They buy a ton of local lumber at 130,000 FCFA.

To transport the boards from the sawmill to the carpentry workshop, the foreman in Mbacke, for example, hires a vehicle to transport the product at an average price of 4,500FCFA.

For the carpenters of Touba, they generally rent a cart to transport the boards from the sawmill to their workshop at an average price of 2300 FCFA.

Number of orders and deliveries of lumber per year

For sawmill managers

Figure 7 shows the distribution of the number of orders and annual deliveries of lumber according to the type of lumber. Analysis of this figure reveals that Vene and Dimb antlers are more ordered in the two study municipalities. But, the quantity ordered in Vene is more important than that delivered. On the other hand, for Dimb wood, the quantity delivered is greater than that ordered. For other types of wood, the quantity ordered is fully delivered.

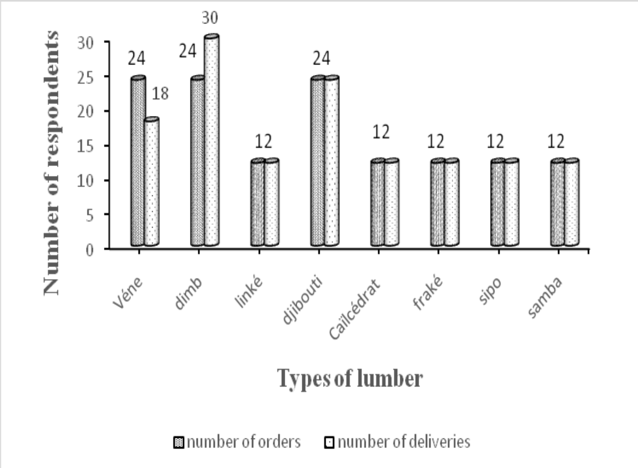

Fig. 7. Lumber orders and deliveries for sawmill managers

Thus, according to the sawmill managers surveyed, the transporter delivers the timber on average once a month. However, it can sometimes happen that there are two months left without delivery due to wood shortages.

For carpenters

Table 7 shows the distribution of the number of orders and annual deliveries of lumber according to the type of lumber. Analysis of the table shows that Vene wood is much more in demand by carpenters. But of the 24 orders, only half are delivered per year. But the Vene is replaced by the Dimb. Regarding other types of wood, the 3119.5 m^3 of wood ordered are delivered in full.

Economic calculations

Charges related to the sale of lumber in sawmills and carpentry workshops

For sawmill managers

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To carry out their work properly, sawmill owners are obliged to manage the costs associated with
The salaries of their electricity workers;
From rent to municipal taxes;

Table No 8 summarizes the distribution of average sawmill loads carried out by its sawmill manager. The results of this table show that workers' wages and the purchase of a truckload of lumber are the heaviest charges for the owner of the sawmill.

For carpenters

The distribution of the average loads of carpenters workshops carried out by its manager is presented in the table below. The results of this table show that the wages of the workers and the purchase of wood from the owners of the sawmills constitute the heaviest expenses for the latter.

TABLE 7. Lumber orders and deliveries for carpenters

Lumber	Véne	Dimb	Linke	Caïlcedrat	Dibetou	Frake	Sipo	Samba
Orders number	24	12	12	12	12	12	12	12
Deliveries u	12	24	12	12	12	12	12	12

TABLE 7. Charges inherent in the sale of this lumber

Charges (FCFA)	Salary of employees	Electricity	Rental	Truck	Municipal tax	Total
Month	286 000	115 780	37 200	1995200	4 500	**2438 680**
Year	3 432 000	1 389 360	446 400	23942400	54 000	**29264160**

TABLE 8. Average loads for carpentry workshop owner

Charges (CFAF)	Salary	Electricity	Tax	Volume (t)	Transportation	Working material	Total
Month	132900	37159,6	3810	620200	3230	15800	**813099,6**
Year	1594800	445915,2	45720	7442400	38760	189600	**9757195,2**

Volumes traded

For sawmill managers

Turnover obtained from the sale of lumber

Turnover is the sum of a company's sales of goods or services. It is equal to the amount (excluding taxes) of all transactions carried out by the company with third parties as part of its normal and current activity. Its formula is:

Turnover = sale price x quantity sold

TABLE 9 : Turnover from the sale of lumber from

Lumber	Quantity sold (tonne)	Average unit price (FCFA)	Recipes (FCFA)
Véne	1720,8	120000	**206496000**
Dimb	3228	120000	**387360000**
Linke	140,4	120000	**16848000**
Djibouti	208	550000	**114400000**
Cailcedrat	441	120000	**52920000**
Frake	100,8	350000	**35280000**
Sipo	36	400000	**14400000**
Samba	48,6	300000	**14580000**
Total	-	-	**842284000**

Turnover = 842,284,000 FCFA

The monthly income from the sale of lumber in the surveyed sawmills of Touba and Mbacke is:

TABLE 10. Monthly income from the sale of lumber

Lumber	Quantity sold (ton)	Average unit price (FCFA)	Recipe (FCFA)
Véne	143,4	120000	**17208000**
Dimb	269	120000	**32280000**
Linke	11,7	120000	**1404000**
Djibouti	17,4	550000	**9570000**
Cailcedrat	36,75	120000	**4410000**
Frake	8,4	350000	**2940000**
Sipo	3	400000	**1200000**
Samba	4,05	300000	**1215000**
Total	-		**70227000**

Average monthly gross margin = 9,265,000 FCFA

For Carpenters, we have:

TABLE 11. Carpenter's lumber sales turnover

Types of furnitures	Number sold/month	Average unit price (FCFA)	Recipes (FCFA)
Bed s	1116	150000	**167 400 000**
Dressing tables	1032	115000	**118 680 000**
Doors	1068	35000	**37 380 000**
Chairs	1140	25000	**28 500 000**
Tables	1116	50000	**55 800 000**
Corner cabinet	636	75000	**47 700 000**
Cupboards	864	350000	**302 400 000**
Total	-	-	**757 860 000**

Turnover = 757,860,000 FCFA

Monthly, incomz from the sale of lumber to carpenters in Touba and Mbacke is shown in the table below.

TABLE 12. Income from furniture sales

Types of furnitures	Number sold monthly	Average unit price (FCFA)	Recipe (FCFA)
Bed	93	150000	**13950000**
Dressing table	86	115000	**9890000**
Door	89	35000	**3115000**
Chair	95	25000	**2375000**
Table	93	50000	**4650000**
Corner cabinet	53	75000	**3975000**
Cupboard	72	350000	**25200000**
Total	-	-	**63155000**

Monthly average gross margin of carpenters
Gross margin (GM) = Income - Expenses
Average monthly gross margin = 63155000 - (50 * 813 099.6) = 22,500,020 FCFA

Comparison between the average gross margin of a carpenter and a sawmill manager

For a sawmill manager
Gross margin (MB) = Revenue - Expenses
GM = (70227000/25) - 2438 680 = 370, 400 FCFA

Average monthly gross margin of a sawmill manager = 370,400 FCFA

For a carpenter
Gross margin (MB) = Revenue - Expenses
GM = (63155000/50) - 813,099.6 = 450,000.4 FCFA

Average monthly gross margin of a carpenter = 450,000.4 FCFA

Then, we see that the average gross margin of a carpenter is greater than the one of a sawmill manager.

Turnover of sawmill managers for the past three years

Table 14 shows the comparison of the turnover of the last three previous years. The analysis of this table reveals an increase from 120,000 to 130,000 FCFA in the purchase price of a truck load from 2017 to 2019. So it was noted through this analysis an increase in the purchase price of the load during of recent years. This inevitably leads to an increase in turnover. Indeed, since local wood is becoming increasingly scarce, the selling price increases more and more. As a result, the turnover continues to increase.

TABLE 14. The turnover of the last there years

Year	Local timber volumes (m^3)	Unit selling price	Turnover (CFAF)	Imported wood volume (m^3)	Average unit selling price	Turnover (FCFA)
2017	2870	120 000	**344 400 000**	510	380 000	**193 800 000**
2018	2344,5	125 000	**293 062 500**	519	380 000	**197 220 000**
2019	2612	130 000	**339 560 000**	507	400 000	**202 800 000**

Comparison of the average turnover of respondents according to age groups

For sawmill managers

Figure 8 represents the average turnover of sawmill managers according to their age group. This figure reveals that the age group of 40 to 50 years the highest turnover with 15.44 million FCFA (32.56%), followed by the age group of 50 years and over. with 11 million FCFA (23.17%).

The age groups of 20 to 30 years and 30 to 40 years are less represented with respectively 10.87 million FCFA (or 22.92%) and 10.12 million FCFA (or 21.34%).

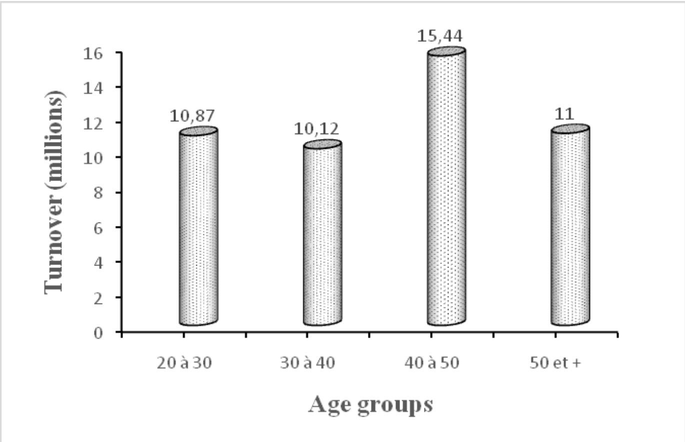

Fig. 8. Representation of the average turnover of sawmill managers according to their age group.

Thus, carpenters of the average age of 30 to 50 generate much more income than those who are younger or older.

For carpenters

Figure 9 represents the average turnover of carpenters according to their age group. This figure reveals that the age group of 30 to 40 years old has the highest turnover with 14.74 million FCFA (or 26.18%), followed by the age group of 40 to 50 years with 14.44 million FCFA (25.65%).

The ages of 20 to 30 and 50 years are less represented with respectively 13.21 million FCFA (or 23.47%) and 13.91 million FCFA (or 24.71%).

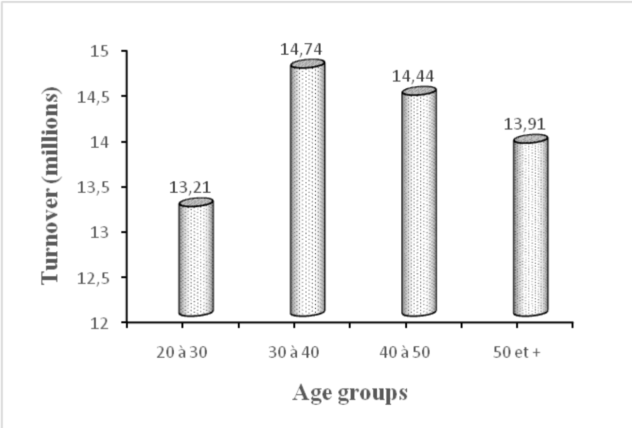

Fig. 9. Representation of the average turnover of carpenters according to their age group

Middle-aged carpenters, from 30 to 50, generate much more income than younger and older carpenters.

Constraints encountered in timber supply

Type of wood and constraints encountered

Imported timber is more difficult to obtain because of the taxes paid at the port. They are also the most expensive woods, especially Dibetu wood because it is more beautiful and easier to finish. Thus, 80% of the actors propose that the State reduce customs taxes in order to facilitate access to imported wood. The downside is that these types of wood are all attacked by termites, according to everyone.

Local wood supply is easier except for Vene wood which is becoming increasingly scarce. This is why the carpenters propose the importation of wood from Vene in order to meet the demand. Dimb and Vene woods are difficult to work because of their resistance to sawing and planning.

According to the carpenters surveyed, the major constraints encountered on this lumber are mainly due to the defect of the heartwood (internal part of the wood) due to their rotting inside some logs; which sometimes leads to a loss for some sawmill managers.

IV. Discussion

The results obtained highlighted the absence of women in the timber trade. This could be explained by the fact that woodworking is a hard activity and requires a lot of physical conditions. This agrees with the study by World Bank *et al*. (2009). This result corroborates that of World Bank et al. (2009) that in the absence of data on the participation of women in forestry activities, and in particular in large-scale logging, it is difficult to get a clear idea of their involvement. This perhaps indicates that the role of women in this sector is invisible and informal and that their working conditions are bad and wages low.

The predominance of the most traded types of lumber, Dimb and Vene wood, could be related to the fact that, for carpenters, Dimb wood is durable and resists termite attack and Vene wood does not warp upon drying, and its finishing work is excellent. This is why they are preferred by consumers.

For *Cordyla pinnata* wood, these statements are supported by the work of Samba *et al.* (2001) that *Cordyla pinnata* wood is durable because it is resistant to termites and moderately resistant to *Lyctus*, in contrast it is moderately susceptible to attack by marine borers.

For Vene wood, these comments are in agreement with the work of (CAB International, 2005) according to which Vene wood dries slowly, but the risks of deformation are low.

Regarding the origin of the local wood, the logs come mostly from the region of Tambacounda and Kolda.

Regarding imported timber, it usually comes from Côte d'Ivoire. This is in agreement with the work of Diankha et al (2015) who say that the imports of sawn timber come mainly from the Ivory Coast and Cameroon. White wood is mainly imported from Côte d'Ivoire.

According to the results obtained during the surveys, the quantity of lumber has dropped significantly in sawmills in the study area. This situation can be explained by the measures taken in 2018 aimed at the prohibition of logging by the Ministry of the Environment and Sustainable Development (MEDD) in the regions of Kolda, Sedhiou and Ziguinchor because of the killing of fourteen (14) operators in the forest of Boffa-Bayotte in Casamance on January 6, 2018 (The daily) .At this period, only the quantity of wood stored before this event was authorized to circulate in other regions of the country to supply sawmills and carpentry workshops. This explains the decrease in the quantity of wood during 2018, particularly Vene in the timber supply areas of Touba and Mbacke. On the other hand, for other types of wood, the variation in volume is not very large.

Compared to the representation of the average turnover of sawmill managers and carpenters according to their age group, the results of the survey showed that those aged 30 to 50 generate much more income than those aged 30 to 50 who are young and those older. These remarks are in agreement with the work of Shabani (2014) who says that 87.3% of respondents who generate much more income have an age group between 21 to 40 years old while the first and the last class present only 12.7%. This would be justified by the fact that this activity requires a lot of physical effort to perform the tasks relating to logging.

Over the years, we see that the wood of Vene becomes more and more rare and this is due to its abusive exploitation. This is why carpenters prefer to replace this wood with Dimb. This rarity of Vene is said to be linked to the situation of insecurity noted in the southern regions.

V. Conclusion

At the end of this study on the marketing of timber in the two communes of Touba and Mbacke, it emerges that carpentry is one of the dominant income-generating activities in the area.

The lumber trade in this zone involves many players, especially the direct consumers who are the carpenters. Lumber is well marketed in sawmills, with very significant turnover.

The towns of Touba and Mbacke constitute a major pole of attraction for the timber industry from the regions of Tambacounda, Kolda and Sedhiou. They in turn supply lumber to local sawmills and carpentry workshops and other parts of the country. The demand for timber continues to increase due to the significant change in the population of Touba and Mbacke.

The woods most used in sawmills and joinery workshops in Touba and Mbacke, according to the results of our study, are Dimb and Vene. However, it happens that the Vene is rare. This is the reason why consumers in both municipalities tend to replace it with Dimb.

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