Research Article

The Exploitation of Oysters and Welfare of the Mouanko Community in Cameroon

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Abstract: The aim of this study is to analyze the impact of the exploitation of oysters on the welfare of the population of Mouanko. The methodology, inspired by the Capabilities Approach of Sen consisted of the elaboration of a questionnaire administered on a sample of 215 inhabitants of the Mouanko Municipality. The vector of variables combined the functioning modes of the inhabitants and the components of their welfare. The results obtained from the effective analysis of 187 questionnaires showed that in addition to other activities and the aspirations of the inhabitants susceptible to contribute to their welfare, the exploitation of oysters which employ 55.6% of respondents as main activity is acknowledged by 88.2% of respondents to highly contribute to their welfare. Finally, welfare in Mouanko is determined by a combination of factors with the exploitation of oysters having a considerable impact. All the factors revealed by this study needs to be appropriately considered by competent authorities in view of improving the welfare of inhabitants of Mouanko.
Keywords: Exploitation of Oysters, Welfare, Capabilities Approach, Population.
JEL Codes: D31; D62; H23.

INTRODUCTION

The exploitation of oysters is an old economic activity regularly carried out from December to July of the following year. This activity occupies the majority of the population of Mouanko, a locality of twelve thousand inhabitants located 45.5 km from the town of Douala. It provides direct employment to more than a quarter of the population of the area, in a cyclical manner to more than 300 men and women who gather oysters along a more than one kilometre bank of river the Sanaga during the harvest period. The exploitation of oysters also generates approximately 2000 indirect jobs related to the processing of oysters, their wholesale and retail to retailers and consumers in the cities of the country, the production of empty shells or burnt shell powder, mediation for the sale of shells or burnt shell powder to truck-drivers from the cities, and the construction or repair of fishing machines (canoes, paddles…).

Being the main source of income for each worker, the exploitation of oysters is also an important source of tax revenue which brings between 135 and 230 CFA F per truck of oyster shells.

Other economic activities primarily based on the exploitation of the natural resources such as fishing practiced traditionally by indigenes and in a semi-industrial manner by West African nationals living in settlements beside the river, the exploitation of fibres and Indian bamboo for the manufacturing of small fishing materials, the exploitation of sand quarries, the cultivation of tubers, plantains, palm trees, cocoa…, hunting and poaching, are also the activities that occupy this population.

In addition to these activities, PNUD [1] identifies trade in maritime (70%) and agricultural (30%) products in the two periodic markets of Mouanko which are those of Yoyo and Epollo.

Though seasonal, we consider the exploitation of oysters as an activity above the other activities in this locality and in this study; we seek to reveal the impact of this exploitation on the welfare of the population. As an activity practiced by the population, to what extent does the exploitation of oysters contribute to the welfare of the individuals in the community?

Despite its complexity with many definitions that vary following the dictionary used, the concept of welfare generally includes those of health, prosperity, and happiness [2]. *"Welfare refers to a general feeling of satisfaction and fulfilment caused by the full satisfaction of the needs for the body and/or the spirit"*

[3]. Welfare cannot be the result of economic activities alone.

Although many schools of thought on welfare exist, the capabilities approach by Sen which considers that each individual makes a choice among several alternatives linking the objective and subjective components of welfare seems most convenient in this study.

Going from the hypothesis that each individual is the best judge of his preferences, a questionnaire is administered on 215 inhabitants of Mouanko, with 187 exploi Table questionnaires returned. This questionnaire included questions on the identification of the respondents and the physical and subjective components of welfare.

The method of analysis of the data collected is mainly descriptive and consists in the calculation of ratios and an evaluation of the extent to which the exploitation of oysters occupies the population of Mouanko and its effects on welfare. The sample being sufficiently large and the population considered as normal, the proportion of individuals in a class in the sample is an unbiased and convergent estimate of the proportion of individuals of the same class in the population.

The second section of this study relates to the theoretical and empirical review of the literature on welfare. The third section focuses on the methodology, and the fourth on the analysis of the results. In the last section, we present the conclusion and recommendations.

Theoretical and empirical literature on welfare
We first present the theoretical analysis of welfare, followed by a review of the empirical literature of this concept.

Theoretical Foundations
The concept of welfare finds its origins in the philosophical writings of Bentham. Being an integral part of economic analysis since the beginning, it cannot be separated from welfare economics which seeks to identify social welfare going from individual preferences [4]. Although it is part of several disciplines with a divergence of points of view even among economists, a review of the analysis of this concept is necessary. Chronologically, the theoretical foundations of welfare can be analysed using the utilitarian approach, the economic approaches of welfare observed through time, and the capabilities approache.

Bentham, the pioneer of the utilitarian approach defines the notion of utility as that consisting in approving or disapproving "*any action that tends to increase or decrease the happiness of the person or persons involved*" Bentham [5]. Based on the availability of a large information database on individual preferences, this approach holds that a social alternative is at least as good as another when the sum of the individual utilities of the first is at least equal to that of the latter. Even if this normative utilitarian theory is not the foundation microeconomic consumer theory, it is "*an egoistic descriptive theory*" that has disciples in the history of economic thought like James Mill and John Stuart Mill who introduced the concept of negative utility in economic analysis. According to Mills [6], two ends form the basis of this doctrine: the maximization of welfare and the minimisation of suffering. Negative utility is based only on the minimisation of suffering.

Even if utilitarianism and economic rationality can be incompatible according to economists like Marshall, Pigou and Harsanyi draw inspiration from utilitarianism in their analysis of welfare or the theory of collective choice. Moreover, the dynamics of the economic analysis of welfare shows that "*the utilitarian heritage weighs heavily welfare economics which studies social welfare going from the evaluation of individual utilities. The problem of the interpersonal comparison addressed by the utilitarian approach remains open in welfare economics*" [7].

What do economists understand by welfare?
The first approach of welfare economics represented by Pigou [8] and with roots going back to Marshall [9] consists in the analysis of the conditions of welfare in an market economy in terms of the pareto-optimum [7]. In *The economics of welfare* published in 1908, Pigou "*seeks to study the main principles of a science which would not degenerate into income but would be primarily centred on the major social problems like that of the existence of the rich and poor*" [10]. The term *welfarism* represents for economists, the policy of the providential State, and it refers to "*the interventions of the public authorities in market economies in order to regulate or support production activities and ensure a social protection against disease, unemployment, old age or other factors responsible for an insufficient income and non-satisfaction of the basic needs of a fraction of the population*" [11]. Based on the cardinal nature of the individual utility functions and using interpersonal comparisons, this approach evaluates the individual welfare of the various agents and "*arbitrates between the gains in welfare of some and losses in welfare of others*" [7].

With the birth of the new welfare economics, evaluating welfare based on the interpersonal comparison of utility is unaccep Table. This school of thought pioneered by Burk [12], Lange [13] and Bergson [14] distinguishes between the determination of the social optimum and the operation of the market: the normative and cardinal determination based on the Pareto criterion ignores all redistributive aspects.

Moreover, the assumption of the cardinal utility does not identify an objective scale of measurement of utility. This school of thought while rejecting the possibility of interpersonal comparison of utility, bases its analysis on the ordinal theory of demand.

During this same period, Arrow [15] stands up against this new school by holding that it is impossible to conceive a function of social choice based on individual preferences without passing through interpersonal comparisons. Thus, two main trends emerge: normative economics which includes theories of social choice and voting, equity and justice, and contemporary welfare economics which is in line with the new economics of welfare and includes public economics and agency economics as well as followers of the cost-benefit analysis [7]. The debate on the interpersonal comparison of individual utilities thus constitutes the focus of economic welfare theory, the epistemological choice being a fundamental explanatory variable in the analysis of this concept [16, 17, 7].

Recently, while formulating criticisms against utilitarianism and rejecting an instrumental design other than exclusively formal rights and freedoms [18], Amartya Sen recommends an approach by capabilities in order to improve the welfare of the society. This new theory is based on two key concepts: on the one hand, it reveals processes that highlight what an individual can achieve based on the assets he has. On the other hand, it highlights capabilities, capability being *"a set of vectors of operations, which indicates that an individual is free to carry out this or that type of life"* [19]. Even if we do not believe, as advanced by this school that "the *"thing" which is lacking is neither utility nor the satisfaction of basic needs*" [20], we agree that it is essential to take into account the capabilities of individuals and leave each one the freedom to express his choice in the face of multiple operating processes which include political freedom, economic facilities, social opportunities, guarantees of transparency, and safety and protection [21, 22].

This study being based on a survey, it is also important to review the empirical literature on welfare.

Empirical literature on welfare
The practice of using the GDP per capita and other economic indicators as a measure of welfare is no longer common today since social welfare includes subjective and objective variables. Also, economic growth does not imply sustainable development and has become "*the subject of useless quest...*" [23]. The GDP does not include "*the internal household production, the education of children within the family sphere, voluntary and associative activities*" [24].

Empirical studies on welfare exist and are generally within the scope of poverty reduction, particularly in Africa. Although these studies have included the participative aspect of the population for some time now, the majority still use economic growth or monetary income as main criterion of evaluation.

In its 2017 economic report on Africa, the UNO states that "*the average consumption of the poor in sub-Saharan Africa is of 1,16 dollars per day (at the 2011 purchasing power parity), that is to say 0,74 dollars below the international poverty threshold*" [25].

According to the African Development Bank, "the *analysis of the evolution of poverty in Africa can be done using the poverty threshold established at 1,25 dollars per day and the three "FGT" indices of poverty defined by Foster, Greer and Thorbecke:"incidence of poverty", "the poverty gap" and the "poverty gap squared", which respectively evaluate the proportion of the poor, the intensity of poverty and its severity*" [26].

Given the "*role of growth in poverty reduction, Cameroon set as target within the framework of implementation of its development policy contained in the Growth an Employment Strategy Paper (GESP) to achieve annual growth rates of 5,5% over the 2010-2020 period. This growth, which intends to be inclusive, should enable a drop in the monetary incidence of poverty to 28,7% by 2020*" [27]. We thus deduce that the analytical tool for reduction of the poverty of the households and thus the measurement of welfare used by the National Institute of Statistics is economic growth. Moreover, this institute uses the monetary poverty threshold whose amount is estimated in 2014 at 931 CFAF per day and considers it as the "*level of income below which it is impossible to afford a minimum basket of consumption goods*" [27].

Although in 2009, the government recognised the need "*to go beyond the policies of growth and employment and intensify and generalise the availability and quality of health services, education, training and infrastructures (energy, roads, drinking water, etc)*" and that 6 years earlier, the Poverty Reduction Strategy Paper (PRSP) was elaborated based on the participation of the population, there are still questions on the effective participation of the population and the real level of representativeness of the population in these exercises. We can thus understand the contradiction between the negative feelings of the population on the evolution of their standard of living and official statistics. Thus, in spite of the reduction of the incidence of poverty by more than 13 points between 1996 and 2001, "*going from more than 53,3% to 40,2%*", "*the majority of the population continues to think that the reduction in living standards persists*" [28].

The study by Biloa and Chameni [29] on inequalities of poverty in Cameroon which uses the approach of capabilities of Sen amongst others is different from this study because it focuses in the analysis of differences in poverty between regions. This study also differs from that of Parrot [30] on poverty, capabilities, and local development in Muea, a city in the South-West region in Cameroon which highlights a paradox between monetary poverty and the capabilities approach because we do not oppose income to other indicators since welfare simultaneously combines elements of a material and subjective nature.

METHODOLOGY

Our methodology includes a survey and a statistical analysis of the data from the survey.

The Survey

This survey includes interview with communal agents and the administration of a questionnaire addressed to a sample of the inhabitants in order to collect specific elements on their lifestyle as well as the potential determinants of their welfare.

Interviews with Communal Agents

In September 2018 and September 2019, four visits to Mouanko enabled us to have information from the council.

The exploitation of oysters generates income for the council, provides jobs to a majority of the population, and leads to the development of a trade of oyster shells sold to truck-drivers who in turn resell them to companies that produce animal feed in Douala, Bafoussam, and Yaoundé. Three categories of trucks with "six wheels", "ten wheels" and semi-trailer trucks ensure the transportation of these empty shells or shell powder from Mouanko to the destination. With a communal rate of taxation of 1000 CFAF per bag of shell, it is approximately 135000 CFAF, 195000 CFAF and 230000 CFAF respectively that the council takes on each "six wheels", "ten wheels" and semi-trailer truck since it is established that on average, the number of bags transported by trucks of 6 wheels, 10 wheels and semi-trailers are respectively 135, 195 and 230.

Unlike the seasonal collection of oysters, the sale of shells is a permanent activity.

The Questionnaire

A questionnaire is administered on a sample of 215 inhabitants of the council chosen according to the method of random routes. Although this is a non-probabilistic method, it has the advantage of being of a high geographical dispersion which improves the precision of the sample.

Besides the section which identifies the questioned person with variables relating to gender, age, level of education, main activity, marital status, level of personal welfare, personal opinion on the contribution of the exploitation of oysters to global welfare, four other sections are included in this questionnaire.

The first dwells on material welfare with variables like the total annual income, housing, and the first two economic activities whose better follow-up is likely to improve welfare.

The second dwells on the subjective aspects of welfare of the population and has as variables: the level of contribution of the existence of oysters to personal welfare, the first two cultural activities which if well followed-up are likely to improve welfare, the traditional and spiritual activities whose better follow-up is likely to improve welfare.

The third section is related to health and education and has as variables: the frequency of diseases, the nature of the disease, the level of satisfaction with respect to the services rendered by health and school institutions, and the contribution of the exploitation of oysters to health and education.

The last section is related to the safety of the population and its relationship with the public authority. Here, the variables include the level of satisfaction with these public services.

Codification of the questionnaire

Before carrying out the statistical analysis, it is essential to perform a coding of the questionnaire. The sections correspond to the various parts of the questionnaire described above.

Coding of the classes and identification variables

Table-1 shows the codes retained.

Table-1: Table of codes of identification variables

N°	Variables	Class	Code of class	Nature of the variable
1	Gender	Female	1	Nominal
		Male	2	
2	Age (years)	15 - 25	20	Quantitative continuous
		25 - 35	30	
		35 - 45	40	
		45 - 55	50	
		55 - 60	57,5	
3	Level of Education	Primary education	1	Ordinal
		Secondary	2	
		Higher	3	
4	Main activity	Oyster exploiter	1	Nominal
		Hunter and fisherman	2	
		Farmer	3	
		Trader	4	
		Dressmaker	5	
		Health personnel	6	
		Teacher	7	
		Other state agents	8	
		Others	9	
5	Matrimonial situation	Single	1	Nominal
		Married	2	
		Widowed	3	
9	Level of welfare	Not very satisfactory	1	Ordinal
		Satisfactory	2	
		Very satisfactory	3	
10	Your personal opinion on the contribution of the exploitation of oysters to the welfare of the inhabitants	not significant	1	Ordinal
		Significant	2	
		Very significant	3	

Source: Authors.

For the continuous quantitative variables, the classes are closed on the left and opened on the right. For example: for age, the class 15-25 means "from 15 to less than 25 years". The code of the class of these variables is the class centre.

Codification of material welfare variables

The variables and classes of material welfare are listed in the following Table.

Table-2: Table of codes of the classes of the variables of material welfare

N°	Variable	Classes	Class code	Type of variable
1	Income (in CFA Frs)	Less than 500 thousands	250 (in thousands)	Quantitative
		500 thousands - 1 million	750	
		1 million - 1,5 million	1.250	
		1,5 million - 2 million	1.750	
		2 million - 2,5 million	2.250	
		2,5 million - 3 million	2.750	
		3 million - 5 million	4.000	
		5 million - 8 million	6.500	
2	Place of residence	In my house	1	Nominal
		In parents house	2	
		Tenant	3	
3	Economic activities	The first job whose better follow-up is likely to improve welfare	3	Ordinal
		The second job whose better follow-up is likely to improve welfare	2	

Source: Authors.

Coding of the classes of variables on subjective welfare

Table-3: Table of codes of classes of variables on the subjective welfare of the population.

N°	variable	Classes	Class code	Type of variable
1	Level of contribution of the existence of oysters to welfare	Low	1	Ordinal
		Average	2	
		High	3	
2	Cultural activities	The first activity whose better follow-up is likely to improve welfare	3	Ordinal
		Second activity whose better follow-up is likely to improve welfare	2	
3	Traditional activities	First activity whose better follow-up is likely to improve welfare	3	Ordinal
		Second activity whose better follow-up is likely to improve welfare	2	
4	Spiritual activities	First spiritual activity whose better follow-up is likely to improve welfare	3	Ordinal
		Second spiritual activity whose better follow-up is likely to improve welfare	2	

Source: Author.

Coding of the classes of variables on health and education

Table-4: Table of coding of the classes of the variables on health and education

N°	Variable	Classes	Class codes	Nature of the variable
1	Frequency of disease	Seldom ill	1	Ordinal
		Sometimes ill	2	
		Frequently ill	3	
2	Nature of the disease	Disease related to your main economic activity	1	Nominal
		Others to name	2	
3	Level of satisfaction with the services rendered by the health services	Low	1	Ordinal
		Average	2	
		High	3	
4	Level of satisfaction with the services rendered by schools	Low	1	Ordinal
		Average	2	
		High	3	
5	Contribution of the exploitation of oysters to health and education	Not significant	1	Ordinal
		Significant	2	
		Very significant	3	

Source: Author.

Coding of classes of variables on safety, public administration

Table-5: Table of codes of the classes of variables on safety and administrative services

N°	Variable	Methods	Code methods	Nature of the variable
1	Level of satisfaction with the services rendered by the security forces	Low	1	Ordinal
		Average	2	
		High	3	
2	Level of satisfaction with the services rendered by the council	Low	1	Ordinal
		Average	2	
		High	3	
3	Level of satisfaction with the services rendered by the district-office	Low	1	Ordinal
		Average	2	
		High	3	

Source: Author.

RESULTS

Of the 215 questionnaires administered, 28 were non-exploitable because of very insufficient information.

The analysis of the data from the 187 exploited questionnaires is done following the different sections. All calculations are done using the SPSS 18 software.

Analysis of the data on the identification of the respondents

The results on the characteristics of the respondents are contained in appendix 1.

43,9% of the respondents are women (see Table 1.1 in appendix 1) and the modal age group is from 35 to less than 45 years with 61% of the respondents (Table 1.2). The majority of the respondents (44,4%) are of a secondary level of education; 23,5% have a higher level of education (Table 1.3). 55,6% declare that the exploitation of oysters is their main activity, followed by 12,3% for agricultural activities (Table 1.4). 59,4% of the individuals are married (Table 1.5).

Also, 78,6% of the respondents are not very satisfied with their level of welfare at Mouanko (Table 1.6). But as a whole, 88,2% think that the exploitation of oysters greatly contributes to the welfare of the population (Table 1.7).

Analysis of the data on material welfare

The Tables in appendix 2 contain the results of this analysis.

The majority of respondents (34,2%) have a total annual income ranging from 2 million to less than 2,5 million CFAF (Table 2.1). Calculations on the variable "income" done with SPSS also show an average annual income of approximately 1,567 million CFAF with a standard deviation of incomes greater than 741 thousand CFAF showing a high dispersion of incomes around the mean and a median income of 750 thousand CFAF.

The majority of the individuals (42,8%) live in their own houses (Table 2.2) and although 80,7% of the houses are built with concrete (Table 2.3), these houses do not have sanitary facilities because of a lack of water infrastructures in the locality.

138 or 73,8% of the respondents consider the exploitation of oysters as the first economic activity whose better follow-up is likely to improve their welfare and 101 respondents (54%) consider agriculture as the second economic activity whose better follow-up can improve the welfare of the population.

Analysis of the data on subjective welfare

The results of this analysis are contained in the Tables in appendix 3 and are respectively related to the value of the existence of oysters in the locality which is considered high by 97,3% of the respondents (Table 3.1) in terms of cultural, traditional and spiritual aspects. To improve their cultural welfare, the majority of respondents (28,9%) make their first choice on cinema and theatre, while the second cultural activity selected is dance (Tables 3.2 and 3.3).

In the same manner, Tables 3.4 and 3.5 show that the first and second choices concerning the traditional activities to improve welfare are respectively related to the importance of the traditional chieftaincies (35,8% of the respondents) and of the traditional healers (75,9%).

Lastly, as a first choice, prayer (89,3% of the respondents) can make it possible to improve spiritual welfare and as a second choice (74,9% of respondents) religious choral music can improve spiritual welfare.

Analysis of data on health and education

The Tables in appendix 4 show that 21,9% of respondents are often ill and 45,5% declare that these diseases are related to their main activity (Tables 4.1 and 4.2).

78,6% of the respondents declare having an average level of satisfaction with the services rendered by the health personnel and 76,5% make a similar statement for services rendered by schools (Tables 4.3 and 4.4).

72,2% of the respondents consider the exploitation of oysters very important for health and education (Table 4.5).

Analysis of data on safety and the public administration

In appendix 5, we see that 83,4% of the respondents are just averagely satisfied with the level services related to their safety (Table 5.1) and that for 94,7% of the people, the level of satisfaction with the services of the council is low. Finally, 93,6% of the population consider the level of satisfaction with the services rendered by the district office as low (Tables 5.2 and 5.3).

CONCLUSION AND RECOMMENDATIONS

Globally, the exploitation of oysters occupies a majority (55,6%) of the respondents. Using the 5% confidence interval and considering a normal population, between 48,47% and 62,72% of the active population is concerned by this exploitation. Also, for more than 88% of the individuals who exploit oysters or not, this activity very significantly contributes to the economic welfare of the population.

With a high value attached to the existence of oysters by more than 97% of the population, oysters

also constitute a first choice for the improvement of subjective welfare, and necessary component of total welfare since as a whole, more than 72% of the individuals consider the exploitation of oysters very important for health and education. It indeed offers a means of taking care of and paying the schooling of children in the locality.

However, 78,6% of the individuals are not satisfied with their level of welfare, particularly because of poor governance. The decision makers can facilitate the improvement of the welfare through a good follow-up of economic activities, especially the exploitation of oysters and agricultural activities, the promotion of cultural activities especially the construction of theatre halls and training in traditional and foreign dances, and the improvement of areas of meditation and reinforcement of the traditional authority.

The commune that receives income from the transportation of shells rather leaves the road leading to Mouanko in a very bad state.

In order to fight against certain diseases related to the gathering of oysters (sight, respiratory, skin, and hearing problems), the council can find it advantageous to promote the use of certain diving equipments. The council can also develop partnerships with councils in foreign countries in which the exploitation of oysters is more advanced for a good training of the local population in the exploitation of this resource.

Lastly, the accessibility of the council which is essential for improving the welfare of the population and the nation's economy and which would facilitate tourism in the beautiful sandy Yoyo beach should not be ignored.

Appendix 1 Results on the identification of the respondents

Table 1.1: Gender of the respondent

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Female	82	43,9	43,9	43,9
	Male	105	56,1	56,1	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 1.2: Age of the respondent

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	15 - 25 years	22	11,8	11,8	11,8
	25 - 35 years	92	49,2	49,2	61,0
	35 - 45 years	52	27,8	27,8	88,8
	45 - 55 years	12	6,4	6,4	95,2
	55 - 60 years	9	4,8	4,8	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 1.3: Level of education

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Primary education	60	32,1	32,1	32,1
	secondary	83	44,4	44,4	76,5
	Higher	44	23,5	23,5	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 1.4: Main activity

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	oyster exploiter	104	55,6	55,6	55,6
	hunters and other fishermen	8	4,3	4,3	59,9
	Farmers	23	12,3	12,3	72,2
	Trader	10	5,3	5,3	77,5
	Dressmaker	6	3,2	3,2	80,7
	health personnel	6	3,2	3,2	84,0
	teacher	9	4,8	4,8	88,8
	other public agents	10	5,3	5,3	94,1
	Others	11	5,9	5,9	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 1.5: Marital status

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	single	71	38,0	38,0	38,0
	married	111	59,4	59,4	97,3
	widowed	5	2,7	2,7	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 1.6: Level of welfare of the respondent in Mouanko

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	not very satisfactory	147	78,6	78,6	78,6
	Satisfactory	37	19,8	19,8	98,4
	very satisfactory	3	1,6	1,6	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 1.7: Personal Opinion on the contribution of the exploitation of oysters to welfare

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Low	1	, 5	, 5	, 5
	Average	21	11,2	11,2	11,8
	High	165	88,2	88,2	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Appendix 2 Results relating to material welfare

Table 2.1: Income of the person (in thousands of CFAF)

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	less than 500	9	4,8	4,8	4,8
	500 - 1000	42	22,5	22,5	27,3
	1000 - 1500	31	16,6	16,6	43,9
	1500 - 2000	40	21,4	21,4	65,2
	2000 - 2500	64	34,2	34,2	99,5
	5000 - 8000	1	, 5	, 5	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 2.2: Place of residence of the respondent

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	In my house	80	42,8	42,8	42,8
	in parents house	30	16,0	16,0	58,8
	Tenant	77	41,2	41,2	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 2.3: Quality of housing of the respondent

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	not of concrete	36	19,3	19,3	19,3
	of concrete	151	80,7	80,7	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 2.4: First economic activity whose better follow-up is likely to improve my welfare

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	exploitation of oysters	138	73,8	73,8	73,8
	other fishing	2	1,1	1,1	74,9
	Agriculture	18	9,6	9,6	84,5
	Dressmaker	5	2,7	2,7	87,2
	Hunting	1	, 5	, 5	87,7
	other to cite	23	12,3	12,3	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 2.5: Second economic activity whose better follow-up is likely to improve my welfare

		Manpower	Percentage	Valid percentage	Cumulated percentage
Valid	exploitation of oysters	29	15,5	15,5	15,5
	fishing	24	12,8	12,8	28,3
	Agriculture	101	54,0	54,0	82,4
	Dressmaker	21	11,2	11,2	93,6
	Hunting	1	, 5	, 5	94,1
	other to cite	11	5,9	5,9	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Appendix 3 Results relating to subjective welfare

Table 3.1: Level of contribution of the existence of oysters to welfare

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Average	5	2,7	2,7	2,7
	high	182	97,3	97,3	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 3.2: First cultural activity likely to improve my welfare

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Dance	47	25,1	25,1	25,1
	Music	50	26,7	26,7	51,9
	cinema and theatre	54	28,9	28,9	80,7
	Reading	27	14,4	14,4	95,2
	other to cite	9	4,8	4,8	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 3.3: Second cultural activity likely to improve my welfare

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Dance	85	45,5	45,5	45,5
	local music	44	23,5	23,5	69,0
	Canoe race	39	20,9	20,9	89,8
	Reading	15	8,0	8,0	97,9
	other to cite	4	2,1	2,1	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 3.4: First traditional activity likely to improve my welfare

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Chieftaincy	67	35,8	35,8	35,8
	Council of elders	10	5,3	5,3	41,2
	Traditional healer	12	6,4	6,4	47,6
	veneration of the marine gods	8	4,3	4,3	51,9
	other to cite	90	48,1	48,1	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 3.5: Second traditional activity likely to improve my welfare

		Manpower	Percentage	Valid percentage	Cumulated percentage
Valid	Chieftaincy	13	7,0	7,0	7,0
	Council of elders	27	14,4	14,4	21,4
	Traditional healer	142	75,9	75,9	97,3
	other to cite	5	2,7	2,7	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Appendix 4 Results relating to health and education

Table 4.1: Frequency of diseases of the respondent

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	seldom	146	78,1	78,1	78,1
	often	41	21,9	21,9	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 4.2: Nature of diseases

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	diseases related to the profession	85	45,5	45,5	45,5
	others to cite	102	54,5	54,5	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 4.3: Level of satisfaction with the services of health employees

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Low	21	11,2	11,2	11,2
	Average	147	78,6	78,6	89,8
	High	19	10,2	10,2	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 4.4: Level of satisfaction with the services rendered by schools

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Low	12	6,4	6,4	6,4
	Average	143	76,5	76,5	82,9
	High	32	17,1	17,1	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 4.5: Opinion on the contribution of the exploitation of oysters to health and education

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	not important	6	3,2	3,2	3,2
	Significant	46	24,6	24,6	27,8
	very Significant	135	72,2	72,2	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Appendix 5 Results on safety and public administration

Table 5.1: Level of satisfaction with the services rendered by the security forces

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Low	23	12,3	12,3	12,3
	Average	156	83,4	83,4	95,7
	High	8	4,3	4,3	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 5.2: Level of satisfaction with the services of the council

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Low	177	94,7	94,7	94,7
	Average	6	3,2	3,2	97,9
	High	4	2,1	2,1	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

Table 5.3: Level of satisfaction with the services of the district office

		Frequency	Percentage	Valid percentage	Cumulated percentage
Valid	Low	175	93,6	93,6	93,6
	Average	6	3,2	3,2	96,8
	High	6	3,2	3,2	100,0
	Total	187	100,0	100,0	

Source: Data collected by the authors

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