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Households' Assets Dynamics and Ecotourism Choices in the Western Highlands of Cameroon

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Abstract: Ecotourism is increasingly accepted as a suitable alternative for sustaining rural livelihoods. In spite of this trend, quantitative assessments of relationships between household assets and ecotourism choices, and the policy implications thereof, currently account for only a negligible number of studies in sub-Saharan Africa. This paper contributes to this evidence gap by analyzing the extent to which households' assets drive ecotourism choices on a representative sample of 200 households in Cameroon. The Principal Component Analysis (PCA) and the Human Development Index (HDI) were used to construct indices for ecotourism choices. The ordinary least square and logit models were also employed to estimate the effect of various household assets on ecotourism choices. A high preference was observed for the production and sale of arts and crafts items and the promotion of cultural heritage sites as key ecotourism choices. More women are found to participate in conservation education, as opposed to culture-related activities such as arts and crafts. Access to education and training were inversely related to cultural festival promotion. The results suggest the need to: (i) stem the overdependence on conservation sites for wood supply to the arts and crafts sector, (ii) enforce endogenous cultural institutional regulations, including those that increase female participation in guiding future ecotourism choices. This paper contributes to ecotourism development and conservation theory, with regards to unbundling household level predictors of ecotourism choices, and has implications on the design of policies to implement environmentally less-demanding ecotourism activities.

Keywords: ecotourism choices; livelihoods assets; PCA; OLS; conservation; sustainable development; Cameroon

1. Introduction

According to World Travel and Tourism Council (WTTC) estimates, travel and tourism's direct contribution to the GDP of the sub-Saharan African region stood at US\$39.7 billion (or 3.1% of combined regional GDPs). The sector created 4,763,000 jobs—accounting for 2.3% of total employment in 2011. A significant proportion of this was attributed to ecotourism [1]. By receiving more than 500,000 tourists in 2010, Cameroon was labeled as a tourist destination [2–4]. The country hosts

numerous ecotouristic attractions, including wildlife sanctuaries, national parks, and forest reserves that span across the country [5]. The Western Highlands of Cameroon has numerous ecotouristic attractions including the Kilum-Ijim Forest Landscape which contains unique flora and fauna [6,7], with over 300,000 people depending on the forest for their livelihoods [8,9]. Ecotourism significantly contributes to rural livelihoods especially through household capital accumulation and overall rural poverty reduction [10–12].

1.1. Ecotourism and Rural Livelihoods

Sub-Saharan Africa (SSA) is one of the poorest regions in the world with a significant proportion (36%) of its population falling below the poverty line of \$1.25 per day [13,14]. The region depends largely on natural resources for survival [1,15]. Deteriorating welfare levels in this region are even more startling against a backdrop of significant worldwide poverty decline [16,17]. In fact, the Millennium Development Goal (MDG) of halving the proportion of people living below the poverty line was largely unmet in SSA [18]. At the close of the MDGs in 2015, the Sustainable Development Goals (SDGs) continue to emphasize the need to promote conservation and reduce poverty by enhancing livelihoods strategies. For instance, SDG 14 (Conserve and sustainably use the resources for sustainable development) and SDG 15 (Protect, restore, and sustainably manage forests ... and halt biodiversity loss) reiterate the nexus between sustainable livelihoods and natural resource conservation. Unfortunately, high poverty levels in SSA persist amidst significant ecotouristic attractions [1]. This has left scholars and development practitioners with a connection quagmire, given that for a long time now ecotourism development has been recognized as a tool for poverty reduction and sustainable development, since it enhances livelihood options and promotes nature conservation [10,19,20]. SSA is home to rich biodiversity and cultural landscapes which represent significant ecotourism assets. During the last decade, this region (SSA) consistently registered one of the highest tourism growth rates, averaging approximately 6% per annum between 2007 and 2010 [21]. The persistence of poverty in a region with such huge (eco)tourism potentials therefore calls for concern.

The concept of ecotourism cements an intricate relationship between conservation and livelihoods [10,22]. Definitions of this concept could range from passive to active positions, incorporating three interlinked concepts—natural-based, educational, and sustainable (which includes economic and social criteria). These components exhibit both benefits and costs, with an observed disequilibrium in some cases towards greater costs [22–24]. The central tenets of ecotourism were further extended to include components such as (i) nature-based, (ii) preservation/conservation, (iii) education, (iv) sustainability, (v) benefits distribution, and (vi) ethics/responsibility/awareness [22,24]. The popularity of ecotourism is therefore justified, as conservation and development organizations look for a means of generating income from protected areas, and tourist communities seek new ways of reaping maximum benefits [2,10]. Therefore, as a business activity, ecotourism represents a good example of direct monetary values provided by nature [1,10,21,25], making it one of the largest and fastest growing segments of the tourism industry in the last decade [22]. The proposition that (eco)tourism can effectively work as a poverty alleviation tool is alluring, given the significant growth of the sector in poor countries. This has led to may donors, governments, nongovernmental organizations, and conservation agencies to embrace the idea of using (eco)tourism as a poverty alleviation tool [25–27]. Despite this, scientific views on the link between poverty and tourism have varied widely; some viewed it as a modernization strategy, while others emphasize on the significant exclusion of poorer segments of the population in the benefit distribution process [27,28].

Ecotourists are particularly interested in visiting relatively untouched and pristine areas [2,29], with the goal to view, admire, enjoy, learn, and leave limited impact, while serving as a livelihood support or diversification strategy. The evolution of the concept of ecotourism could be traced from the 1980s, which coincides with the grounding of the concept of sustainable development [30,31].

This form of tourism was subscribed to because of the increasing environmental concern associated with mass tourism, and tourists' demand for nature-based experiences, which emphasized inequitable tourism benefit sharing, poor linkages, cultural degradation, and the disruption of biodiversity conservation [32–34]. Therefore, focus was slightly tilted away from the sustenance and viability of the tourism industry to the well-being of the local communities and the conservation of biodiversity, which constitute the core of ecotouristic attraction [34–37]. It is therefore a form of community-based tourism which, if well developed, could assist in alleviating poverty and improving quality-of-life elements for the poor [35,36]. The practice is further spurred by the desire to stem the activities of local communities that undermine conservation, such as forest degradation, expanding agricultural frontiers, illegal hunting, logging, firewood collection, and uncontrolled burning [37,38]. Through this practice, visitors would patronize local services and respect the customs of the local communities, while local communities have and exhibit the relevant traditional ecological knowledge that support ecotourism [38–41] and provide alternative livelihoods strategies [40–42].

The contribution of ecotourism to rural livelihoods and livelihood diversification has received significant research attention [25,27,28,41]. Several studies that employed quantitative approaches have emphasized the role of ecotourism activities as determinants of livelihood outcomes [39–42]. Some scholars have employed Structural Equation Models (SEM) and Choice Experiments (CE) to analyze tourist preferences around conservation sites [11,25,41]. In addition, the willingness to pay higher entry fees into ecotouristic sites has been analyzed fairly recently [43]. Irrespective of methodology, most scholars agree that ecotourism contributes to sustaining livelihoods in the recipient communities. However, quantitative assessments of the relationship between household capital- and conservation-related activities (including ecotourism) currently account for only a negligible number of studies [43,44], especially in the context of SSA, where poverty continues to be endemic [18,44,45]. This justifies the need for the intensive application of robust quantitative analytical tools to determine such linkages and their policy implications thereof [46–48]. This paper contributes to this evidence gap by analyzing household capital as predictors of ecotourism choices, in the Western Highlands of Cameroon. The term “ecotourism choices” refers to “ecotourism business choices”—denoting the activities in the ecotourism sector which are undertaken by households in the study area, as part of their livelihoods strategy. The research leans on previous research on livelihoods diversification and forest conservation choices in Cameroon, which recognized ecotourism as a tool to support conservation, and unraveled the potential for a quantitative investigation of ecotourism choices [44,49,50].

Recent trends in the Western Highlands of Cameroon indicate that the landscape has benefitted from successful community mobilization efforts to improve its conservation values—a potential asset for ecotourism. However, while studies have focused on qualitatively analyzing the ecotourism potentials and threats in the study area [7], there is a need to not only undertake a quantitative study, but to predict households' ecotourism choices as a function of their assets. This study seeks to contribute to this literature by analyzing the effects of household's livelihoods assets on the ecotourism choices around the Kilum Ijim Forest Landscape (KIFL). Knowledge production in this field has implications for future policies to enhance ecotourism in the study area, with the potential to upscale such efforts in other contexts. The objective of this paper was therefore to estimate the effect of household capital on ecotourism choices around the KIFL. While the sustainable livelihoods framework (SLF) presents five forms of capital, emphasis in this study was on two—financial and human capital. These forms of capital were derived based on preliminary investigations in the study area (see Section 2.2 for details). Therefore, household capital is mirrored through financial capital (income) (Although business types (e.g., ecotourism) affect household income, our focus in this study is to view household capital (e.g., income) and other forms of capital as predictors of ecotourism choices.) and human capital (e.g., education and training). Ecotourism choice variables were adapted from Fennel [24,30,36] to include arts and crafts sales/cultural heritage promotion, wilderness and museum visits, cultural festivals, and conservation education. Indices for ecotourism choices were constructed using Principal Component

Analysis (PCA) and the Human Development Index (HDI). Further, the ordinary least square and logit models were employed to estimate the effect of various household capital types on ecotourism choices.

1.2. Ecotourism Dynamics in Cameroon

Found within SSA and christened as Africa in miniature, Cameroon demonstrates significant potential for ecotourism development. Due to Cameroon's rich biodiversity, it represents almost all ecotones found in Africa including a very wide variety of landscape patterns [51–53]. With a largely intact flora and high fauna diversity, the country is an ecotouristic haven par excellence. In addition, Cameroon presents a good picture of sub-Saharan Africa (SSA) with respect to cultural diversity—having over 250 cultural groups [54,55]. In terms of ethnic diversity, Cameroon's ethnic fractionalization score (0.89) exceeds the SSA average of 0.64 [56]. While the tourism industry and ecotourism, in particular, attracted the attention of the Cameroon government, the industry witnessed a significant decline due to the oil boom. Recent efforts have been introduced to promote ecotourism despite the significant constraints that hinder the growth of the sector [21,51,52].

The current potential of ecotourism in Cameroon, its challenges, and prospects to serve the dual purpose of conservation and livelihood support for local communities have been sufficiently documented [50,51,57,58]. Equally, using indicators of resilience, social capital, and collective action, the role of informal microfinance institutions in supporting development led tourism entrepreneurship in Cameroon have equally received scientific attention [59], including through participatory action research [57]. While ecotourism might have not effectively supported livelihoods, scholars have equally been interested in identifying potential alternative livelihood strategies in this regard [60,61]. Recent studies have focused on analyzing the alternative livelihood strategies that local community members utilize to insulate themselves against the fragmented nature of the ecotourism industry [2,62–64]. These studies all indicated the umbilical relationship between ecotourism, livelihoods, and livelihoods diversification, justifying the need for a transposition of the variables, with forms of livelihood capital serving as predictors of ecotourism choices. In this study, we modified the analytical variables of the livelihoods framework employed by Kimengsi et al. [44] to focus on financial capital (household per capita income) and human capital (education and training), including household socioeconomic characteristics (age and gender) as predictor variables. The effect of these variables on the outcome variables—ecotourism business choices—considered, in this case, as arts and craft sales/cultural heritage promotion, wilderness and museum visits, cultural festivals, and conservation education, were determined.

2. Materials and Methods

2.1. Study Area

The Kilum Ijim Forest Landscape (KIFL) (Figure 1) forms one of the over 30 protected areas in Cameroon [5,44]. Totalling ~20,000 ha, it contains unique flora and fauna [6,7] with over 300,000 people depending on the forests for their livelihoods [8,9]. It is one of the largest remaining West African montane forests and exhibits a high level of endemism in biodiversity, with numerous forest-dependent adjacent communities. Conservation efforts in the landscape began in 1931 (see [6]). Communities around the KIFL have a long history of cultural institutions, and they largely operate on the basis of a traditional centralized political system. Dominant cultural groups here include the Oku, Nso, and Kom [6,7,44]. Apart from serving as habitat for endemic biodiversity species, the forests and Lake Oku are attached to endogenous cultural institutions, which further shape their interactions with the forest in their quest for livelihood support. It is on the basis of these potentials that the KIFL is purposively chosen for this study.

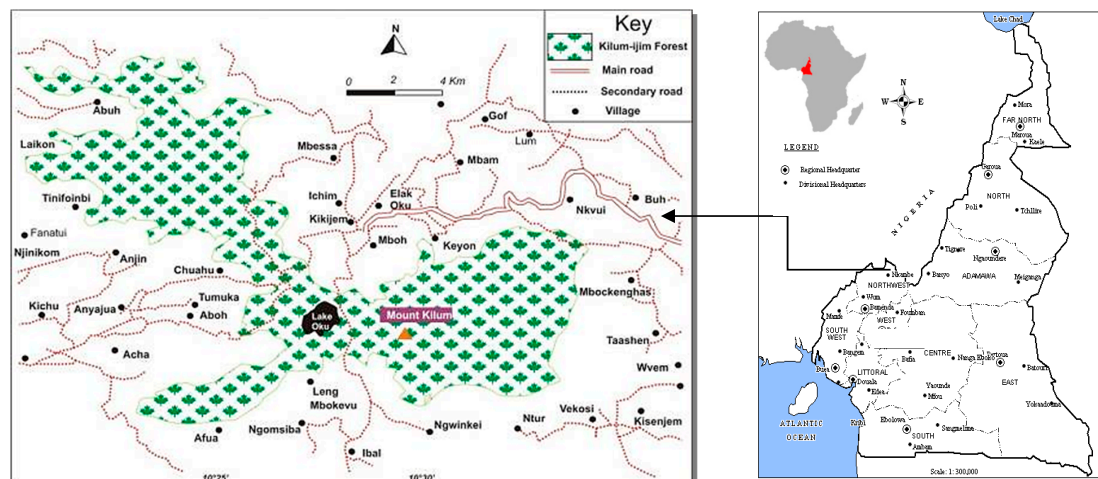


Figure 1. Kilum-Ijim Forest Landscape and adjacent communities (Kilum Project, 2010).

2.2. Data Collection

Household's ecotourism choices are a reflection of their assets. The assumption here is that people engage in a range of ecotourism activities for their survival by drawing from a range of livelihood capital types. Livelihood capital is therefore an important determinant of ecotourism choices. In this paper, we focus on analyzing the effect of household capital on ecotourism choices in selected rural communities around the KIFR in Cameroon, with similar forms of capital. The sustainable livelihoods framework (SLF) presents five forms of capital, including natural capital (the quality and quantity of natural resources—ecotouristic attractions), physical capital (e.g., infrastructure—roads and communication channels), social capital (social resources, including networks for cooperation, mutual trust, and support), financial capital (e.g., income and savings), and human capital—education, skills, and available labor [47,51,65]. Based on a pretest of research instruments (December 2017), the key forms of capital and ecotourism activities were identified. For instance, the key ecotouristic attraction (natural capital) in the area—the Kilum Ijim Forest Reserve (KIFR)—is accessed by target communities in the pursuit of their ecotourism activities such as wilderness visits and conservation education. The KIFR equally provides material for cultural festivals and arts and crafts [7]. This capital was therefore not considered critical in defining the ecotourism choices of target households. With a similar infrastructural and communication system (physical capital), and social organization (social capital), most social groups in the study sites demonstrate strong adherence to endogenous cultural institutions. These livelihood capitals were also not crucial in defining ecotourism choices. However, household income levels (financial capital), education, training (human capital), and other household socioeconomic characteristics (age and gender) were judged to have implications for ecotourism choices. We therefore focused on financial and human capital. Also, in the case of ecotourism activities, the four ecotourism choices, adapted from Fennel [24], include arts and crafts, sales/cultural heritage promotion, wilderness and museum visits, cultural festivals, and conservation education. Our unit of analysis is the household where decision making considerations arise based on the asset base.

2.2.1. Empirical Model

The nature of the dependent variable in this study allows the use of several estimation techniques to establish and check for the robust effect of livelihood capital on ecotourism choices. The use of different estimation techniques stems from the fact that the multinomial logit (MNL) model deemed appropriate for this study, works well when its key assumption (Independence Irrelevant Alternative (IIA)) is satisfied. In this paper, the IIA is not satisfied. Hence alternative methods (the logit model and the ordinary least square) are employed. The assumption behind this analysis is that households

choose ecotourism activities to maximize utility given the nature of their capital. The utility function is specified as

$$U_{ij} = (X_{ij}a_i + \varepsilon_{ij}) > U_{in} = (X_{in}a_i + \varepsilon_{in}) \quad \forall j \neq n \quad (1)$$

where U_{ij} is the utility to household i for ecotourism choice j , X_{ij} is a vector of household socioeconomic characteristics, a_i is a vector of parameters to be estimated, and ε_{ij} is the random error term. U_{in} represents the household utility for any other alternative ecotourism choices other than j . The reduced form multinomial logit (MNL) is specified as

$$P_{ij} = \Pr(y_i = j) = \frac{\exp(X_{ij}a_j)}{\sum_{n=1}^J \exp(X_{in}a_n)}, j = 1, 2, 3, \dots, J \quad (2)$$

where y_i represents the ecotourism choice available to household i . Ecotourism choices are summarized under four (4) categories in this paper—arts and crafts sales/cultural heritage promotion, wilderness and museum visits, cultural festivals, and conservation education. These four categories were judged to be highly visible in the context of the study area. Under the IIA assumption, one would not expect a significant change in the results if one category of the outcome variable is excluded. However, the Hausman test results indicate that the difference between the full and reduced equation is significant, representing a violation of the IIA assumption. To address this limitation, we created an index from the different ecotourism activities following the approach by the UNDP [66] in calculating human development indices. We also employed the Principal Component Analysis (PCA) approach to derive an alternative index. This allowed for the use of the ordinary least square (OLS) to compare the results from the different indices. The Human Development Index (HDI) approach is obtained as follows

$$IndexA_i = \frac{A_i - A_{min}}{A_{max} - A_{min}} \quad (3)$$

where A_i is the actual value of an indicator for household i , and A_{min} and A_{max} are the minimum and maximum values of the indicator for the whole data set (one for arts and crafts sales/cultural heritage promotion and four for conservation education). Based on literature, the ecotourism activities are ranked from the minimum to the maximum. In the data, people were asked to list their most preferred ecotourism choice. The decision of choosing a specific ecotourism activity was further analyzed using the logit model. However, the analysis began with a simple t -test, to test for differences in the mean of ecotourism choices and household livelihood capital.

2.2.2. Data, Sample, and Variables

Data for this research were generated as part of an ongoing interdisciplinary, mixed-methods research on institutions and livelihood sustenance around forest communities in Cameroon. Earlier studies in this regard applied qualitative approaches to establish the link between participatory forest management and community livelihoods (Kimengsi and Moteka [63]), and recently, a quantitative analysis of livelihood diversification and forest conservation choices [44]. This opened up a research avenue to investigate the effect of household capital (assets) and ecotourism choices. A structured questionnaire, which was developed based on an adapted Poverty Environment Network (PEN) questionnaire [67–69], was designed, with a focus on household financial (e.g., income) and human capital (e.g., education and training). The questionnaire (50 items) took into consideration household socioeconomic status, livelihood capital, and ecotourism choices. The unit of analysis was household, and the respondents were household heads (male and female household heads). Sociodemographic information of the respondents (age, gender, training, income, household size, and education of respondents) was considered in the study. The proposed ecotourism choices include arts and crafts sales/cultural heritage promotion, wilderness and museum visits, cultural festivals, and conservation education. A pretest was conducted during qualitative surveys (December 2017). Eight villages, judged to mirror the key diversification components and located within a 3km range from the KIFL,

were purposively selected for this study. Data were collected from 200 representative households using a systematic sampling design between July and September 2018, targeting every third household in that order, for the villages. Surveys were administered by the first and last author, with the aid of research assistants. To check filled in questionnaires and clarify doubts, daily follow-up was conducted. The contextual knowledge of the research assistants who all originate from this area facilitated trustful communication with the respondents. The data were then coded and entered into a spreadsheet and analyzed using the STATA statistical software version 14.

3. Results

3.1. Household Socioeconomic Characteristics and the Pattern of Ecotourism Participation

Generally, a majority of the respondents chose arts and crafts sales/cultural heritage promotion (42%) and conservation education (26%) as their most preferred ecotourism choice. The proportion is relatively small for those who chose cultural festival (13%) and prefer wilderness/museum visit (19%). The results suggest a high preference and dependence on the production and sale of arts and craft items, and the promotion of cultural heritage sites for ecotourism practices (See Row 1 of Table 1). Overall, males significantly constitute the majority in most of the ecotourism activities than females. However, the proportion of women in conservation education activities (50%) is significantly higher than for men (14%). This suggests a low level of participation in wood-related arts and craftsmanship for women—since it is muscular labor-demanding. Some craft items are not to be seen or held by women, based on cultural taboos. Over 55% of respondents with at most primary education compared to 18% of those with at least secondary education choose arts and craft and the promotion of cultural heritage as their preferred ecotourism choice. Educated household heads were less likely to choose cultural festival promotion and wilderness visits and museums, than the less educated ones. It is surprising that more educated individuals are significantly less likely to choose conservation education, however educated household heads are more likely to choose this activity. A large proportion of respondents who participated in training preferred arts and craft sales and cultural heritage promotion (61%) and conservation education (39%) as their ecotourism choice than those who did not. This suggests the significant role training plays in developing the arts and craft skills of the local population.

Table 1. Descriptive statistics of socioeconomic characteristics according to ecotourism choices.

		Choice 1	Choice 2	Choice 3	Choice 4
All		0.42 (0.49)	0.19 (0.39)	0.13 (0.34)	0.26 (0.44)
Gender	Male	0.477	0.215	0.169	0.138
	Female	0.323	0.118	0.059	0.500
	Differences	0.153 **	0.08 *	0.110 **	−0.362 **
Education	At most primary	0.554	0.031	0.046	0.369
	At least Secondary	0.176	0.471	0.294	0.059
	Differences	−0.377 ***	0.440 ***	0.248 ***	−0.310 ***
Education of HH	At most primary	0.243	0.081	0.210	0.177
	At least Secondary	0.532	0.351	0.000	0.405
	Differences	0.289 ***	0.271 ***	−0.210 ***	0.263 ***
Training participation	Did not participate	0.323	0.274	0.210	0.194
	Participated	0.611	0.000	0.000	0.389
	Differences	0.289 ***	−0.274 ***	−0.210 ***	0.195 ***

Choice 1 represents arts and crafts/cultural heritage, Choice 2 is wilderness and museum visits, Choice 3 is cultural festivals, and Choice 4 is conservation education. Differences refers to differences in mean of the various factors for a given choice. Standard deviation in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

3.2. Determinants of Ecotourism Choices (MNL Estimates)

While the multinomial logit (MNL) model is theoretically appropriate in analyzing the determinants of ecotourism choices, it can only be applied in situations when the Independence of Irrelevant Alternatives (IIA) assumption is satisfied. The IIA assumption of the model presents an expectation of a significant change in the results if one of the categories of the outcome variable is excluded from the model. We ran the full and reduced form models by excluding one of the activities (arts and crafts/cultural heritage), and the results were compared using the Hausman test. The difference in the coefficient between the two models is systemically large. The MNL estimates are presented in Table 3. Our discussion focuses on the estimates presented in Tables 2 and 3. Logit estimates are presented in Table 2, while the OLS and the MNL are presented in Table 3.

Table 2. Logit estimation approach.

	(1)	(2)	(3)	(4)
Variables	Arts/Heritage	Wilder/Museum	Festival	Education
Household per capita income	0.09 ** (0.04)	0.01 (0.03)	−0.12 *** (0.01)	−0.01 (0.03)
Household size	−0.03 * (0.02)	−0.02 * (0.01)	0.06 (0.05)	0.04 *** (0.02)
Number of dependents	0.19 *** (0.03)	0.06 * (0.03)	−0.14 ** (0.05)	−0.15 *** (0.04)
Individual is aged 16–25	−0.19 * (0.10)	−1.27 (87.72)		0.61 *** (0.07)
Individual is aged 26–55	−0.24 ** (0.10)	0.13 * (0.07)	−1.03 ** (0.50)	0.69 *** (0.11)
Individual is aged 55+	−0.07 (0.11)	−0.03 (0.09)	−0.68 (0.50)	
At least secondary education	−0.31 *** (0.07)	0.28 *** (0.05)	0.89 * (0.52)	−0.35 *** (0.09)
Individual is female	0.19 ** (0.08)	1.26 (87.72)	−0.05 (0.07)	−0.44 *** (0.07)
Education of household head	−0.08 (0.08)	1.33 (87.72)		0.14 * (0.08)
Participated in formal training	0.08 (0.08)			0.33 *** (0.09)
Observations	196	124	64	158

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The results in Table 2 indicate that older individuals have a high probability of choosing conservation education and a low probability of choosing arts and craft/cultural heritage. For example, the probability of choosing conservation education as an ecotourism choice increases by 61% among individuals aged between 16 and 25, and 69% for those aged between 26 and 55 than those less than 16 years. The probability of choosing arts and craft/cultural heritage decreases by 19% and 24%, respectively (see Column 1 and 4 of Table 2). Having at least some secondary education reduces the probability of choosing arts and craft/cultural heritage by 31% and conservation education by 35%. However, the probability of engaging in wilderness/museum visits and cultural festivals increase by 28% and 89%, respectively. The results contrast with the case of educated household heads, whose probability of depending on conservation education weakly increased by 14%, and is insignificant for other ecotourism activities. Being female significantly reduces the probability of choosing conservation education for an ecotourism activity by 44%, but increases the probability of choosing arts and craft/cultural heritage by 19%. The probability of choosing arts and craft/cultural heritage significantly increases with household per capita income (9%) and the number of dependents (19%). This decreases

with household size. Participation in training significantly increases the probability of choosing conservation education (33%).

Table 3. Ordinary least square (OLS) regression analysis for principal component analysis (PCA) and Human Development Index (HDI) and multinomial logit (MNL).

Variables	Principal Component Analysis		Human Development Index		Multinomial Logit Estimates		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Household per capita income		−0.25 ** (0.11)		−0.02 (0.03)	−0.06 (0.05)	−0.05 *** (0.01)	0.00 (0.03)
Household size		0.07 * (0.04)		0.01 (0.01)	−0.02 (0.01)	0.02 (0.01)	0.05 *** (0.01)
Number of dependents		−0.51 *** (0.09)		−0.09 *** (0.02)	0.01 (0.02)	−0.04 ** (0.02)	−0.16 *** (0.04)
Individual is aged 16–25	0.16 (0.27)	0.77 *** (0.27)	−0.30 *** (0.06)	−0.21 *** (0.07)	−0.51 (122.61)	−0.13 (147.73)	0.64 (16.89)
Individual is aged 26–55	0.63 ** (0.27)	0.82 *** (0.25)	−0.33 *** (0.06)	−0.30 *** (0.06)	0.21 (4.72)	−0.32 (18.52)	0.78 *** (0.15)
Individual is aged 55+	−0.13 (0.30)	0.37 (0.28)	−0.61 *** (0.07)	−0.53 *** (0.07)	0.30 (41.22)	−0.21 (18.52)	−0.73 (594.97)
At least secondary education	0.60 *** (0.20)	0.59 *** (0.19)	0.10 ** (0.05)	0.08 * (0.05)	0.10 (4.72)	0.27 (18.52)	−0.17 *** (0.06)
Individual is female	−0.42 * (0.22)	−0.72 *** (0.21)	−0.33 *** (0.05)	−0.38 *** (0.05)	0.58 (116.71)	−0.04 (7.20)	−0.47 (16.89)
Education of household head	0.36 (0.23)	0.24 (0.21)	−0.06 (0.05)	−0.08 (0.05)	0.81 (117.35)	−0.51 (48.57)	0.10 (16.89)
Participated in formal training	0.06 (0.22)	−0.14 (0.22)	0.07 (0.05)	0.04 (0.05)	−0.48 (120.99)	−0.19 (144.07)	0.47 (16.68)
Constant	−0.31 (0.26)	2.50 ** (1.16)	0.98 *** (0.06)	1.32 *** (0.28)			
Observations	196	196	196	196	196	196	196
R-Squared	0.20	0.35	0.55	0.60			

Note that results in Columns (1) and (2) are estimates of the effects of socioeconomic characteristics on ecotourism choices. The index is created using the principal component analysis (PCA) and estimated using Ordinary Least Square (OLS). Columns (3) and (4) are estimates of the effects of socioeconomic characteristics on the ecotourism choices. The index is created using the Human Development Index (HDI) approach and estimated using Ordinary Least Square (OLS). Columns (5) to (7) are marginal effect estimates with arts/heritage as base category. Column (5) is wilder/museum, (6) is festival, and (7) is education. The base category for age is less than 16 years, at most primary education for education, female for gender, and nonparticipation for formal training. Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

3.3. Determinants of Ecotourism Choices (the PCA and HDI Indices)

The ordinary least square (OLS) results are presented in Columns 1 to 4 of Table 3. The Table shows some great deviation in the results obtained from the Principal Component Analysis (Columns 1 and 2 of Table 3) and the Human Development (HDI) index (Columns 3 and 4 of Table 3). However, some of the results are similar. For instance, having many household dependents and being female contribute significantly and negatively to the variation in the ecotourism choice index in both cases (see Columns 2 and 4 of Table 3). Being more educated contributes positively to variations in the ecotourism choice index in both cases (see Column 2 of Table 3). In contrast, being older increases the variation in ecotourism activities when the PCA is considered, but this reduces with the HDI. Household income is significant under the PCA but not HDI.

For results in Columns 3 and 4 of Table 3, high values of the index imply highly valued ecotourism activities. The results indicate household size is a negative contributor to the choice of high valued ecotourism activities. Holding other factors constant, a unit increase in household size, significantly reduced the choice of highly valued ecotourism activities by 9%. Being older contributes negatively to the choice of high valued ecotourism activities. For instance, individuals aged 16–25 are 21 to 30% less likely to choose highly valued ecotourism activities than those of age less than 16 years. Individuals aged 26–55 are 30 to 33% less likely to choose highly valued ecotourism activities than those of age less than 16 years. The age group of fifty-five and above shows a 53 to 61% lower likelihood of choosing high valued ecotourism (see Columns 3 and 4 of Table 3 for comparisons). Females are

33–38% less likely to sue for high valued ecotourism activities. The level of education of the individual increases the variation in the index. Having at least secondary education increases the choice of high valued ecotourism activities between 8 and 10%. Household size and household per capita income had no significant influence on the HDI index, but the reverse is true when the PCA index is considered. Participating in formal training and the level of education of the household head was not significant on both indices. Under ecotourism activities, the Independence of Irrelevant Alternatives (IIA) assumption is not satisfied. Hence, the MNL results were not interpreted (Columns 5 to 7 of Table 3).

4. Discussion

This paper sought to estimate the effect of household capital (assets) on ecotourism choices. In this regard, we captured household livelihood capital, using financial (income) and human capital (education and training). Ecotourism choices were defined as including arts and crafts sales/cultural heritage promotion, wilderness/museum visits, cultural festivals, and conservation education. We systematically drew a representative sample of 200 households from eight villages around the Western Highlands of Cameroon. We employed the Principal Component Analysis (PCA) and the Human Development Index (HDI) to construct indices (measures) for ecotourism choices. The ordinary least square and the logit model were used to estimate ecotourism choice as a function of household capital. The results suggest a high preference and dependence on the production and sale of arts and crafts items and the promotion of cultural heritage sites for ecotourism practices. This preference and dependence has been observed in different parts of the world where objects of historical and cultural heritage serve as important forms of capital for income and employment generation [70–74]. In the context of the Western Highlands of Cameroon, arts and crafts have been reported to be the most important touristic attraction and employment generator [71]. The region demonstrates significant potentials for arts and craftsmanship. This has led to the extensive development of arts and craft items, which are linked to the history and culture of the people. Such items are usually exhibited around palaces, cultural centers and museums in the communities, while others of limited cultural attachments are sold to tourists [62,71,75,76]. Most of these items however are carved out of wood, suggesting a high dependence on timber for the promotion of arts and crafts. This argument aligns with previous contentions that although the practice of ecotourism may contribute to income generation and improved well-being, we should not lose sight of its negative impact on conservation through unintended or overlooked side effects [73,76,77]. A policy shift towards the promotion of forest plantation-friendly arts and craftsmanship should be a way forward. As this practice is linked to endogenous cultural institutions, there is a need to investigate the role of institutions in shaping the dependence on conservation sites to acquire raw materials for the arts and the craft sector.

The participation of women in conservation education (50%) is higher than for the men (14%), while very few women engage in arts and crafts/cultural heritage promotion. However, the logit estimates suggest that being female increases the probability of choosing arts and craft/cultural heritage promotion and reduces the probability of choosing conservation education. This result shows limited female participation in other ecotourism activities, and could be linked to a number of issues: (i) wood-related arts and craftsmanship is muscular labor-demanding—very few women have the strength to engage in such activities—(ii) endogenous cultural institutions (norms and taboos) linked to cultural festivals generally limit the participation of women, especially when it has to do with display of certain masquerades which are considered harmful to women. Multiple cases across tropical Africa [76,78–80], Asia, and Latin America have established significant gender differences in the collection and utilization of forest products, supporting the claim that there are distinctive “male” and “female” roles associated with the collection and use of forest products, especially in its use to produce arts and crafts items [77,80]. Based on endogenous cultural institutional consideration and perception, women are not supposed to set eyes on particular cultural items and masquerades that can have severe

repercussions for them (including failure to conceive). Such strong endogenous cultural institutions hinder the effective participation of women in a wide range of ecotourism promotion activities [71]. Community-specific cultural institutional reforms that consider increasing women representation and participation in guiding future ecotourism activities are necessary to optimize the benefits derived from ecotourism, and to promote the sustainable management of already affected conservation sites.

The results also suggest that as the educational attainment of household heads increase, these members were less likely to promote cultural festival and wilderness/museum visits. This suggests less adherence to cultural attachments with increasing levels of educational attainment. The relationship between education and cultural practices have been largely inverse [76,81], with more educated and/or younger persons having a greater tendency to view the ecological resources from a practical perspective, rather than from a spiritual perspective [81]. This position, which agrees with the dominance of exogenous institutions, led to the virtual suppression, systematic breakdown, and/or transformation of endogenous cultural institutions, and has been blamed for failed natural resource management outcomes in most parts of sub-Saharan Africa [76,82–84], including Cameroon [78,80]. In rural African communities, both educated and less educated people do not only perceive natural resources as sources of food and other domestic products, but they also form the basis for cultural beliefs [85–87]. This suggests a careful consideration of the potentials for endogenous cultural institutions to shape conservation-related activities (such as ecotourism). As ecotourists continue to admire such natural and cultural features, their investments should also target the promotion of strong institutions and their coexistence with formal ones to guarantee the sustainability of ecotouristic sites.

Members who receive training are more likely to choose arts and crafts sales/cultural heritage promotion (61%) and conservation education (39%) than those who did not. This suggests the significant role training plays in developing the arts and craftsmanship skills of the local population. Previous studies have indicated unclear relationships between training and education on the one hand, and the level of participation in arts and craft promotion on the other hand, although the role of the latter on employment and income generation has been significantly highlighted [88,89]. However, it can be concluded that their capacities and capabilities were enhanced through education, and training contributes to enhance the survival practices (including ecotourism) for the rural poor [88,89]. This positive influence of education and training on rural livelihoods and conservation strategies are well documented in different sub-Saharan African contexts [90,91]. Policy considerations to promote effective training on methods to optimize forest products in the arts and crafts sector, including the development of forest plantation schemes to supply wood for the sector, are relevant to stem the dependence on conservation sites for wood.

The probability of choosing arts and crafts/cultural heritage significantly increase with household per capita income (9%) and number of dependents (19%), but decreases with household size. The practice of arts and crafts is usually linked to the exploitation of timber from forest reserves and or plantation forests. This process is demanding in terms of time, energy, and financial resources. Therefore, apart from the endogenous cultural institutional barriers linked to participation (especially female participation), the financial capability of households equally defined their pattern of involvement in ecotourism. It follows that households with lower income tend to avoid such financially demanding practices, while they become more inclined to it as their income levels increase. It should however be noted that income alone is not sufficient to encourage conservation practices such as ecotourism; other factors, such as age, education, well-being, religion, and cultural norms, influence behavior and tend to significantly influence ecotourism participation [64,92]. This too is linked to national and international policy perspectives which tend to brand particular activities as economically viable, feasible, and environmentally friendly. While training significantly increases the probability of choosing conservation education (33%), the PCA and HDI results indicate that household size and household per capita income have no significant influence on ecotourism choices, while being older and being more educated contributes positively to variations in ecotourism choices.

5. Conclusions

This paper explored the effects of households' livelihood capital (assets) on ecotourism choices in the Western Highlands of Cameroon. Based on the results discussed, the following conclusions are drawn. First, there is a high preference and dependence on the production and sale of arts and craft items, and the promotion of cultural heritage sites as key ecotourism choices in the study sites. Therefore, interventions that promote the introduction of forest plantations to ensure a steady supply of raw materials for the arts and crafts sector, while stemming the high dependence on conservation sites should be explored. This should be further backed by the enforcement of endogenous cultural institutions, to regulate this practice. Second, women are more likely to participate in conservation education, as opposed to culture-related activities such as arts and crafts/cultural heritage promotion. Culture-related activities are either implicitly or explicitly restricted for women by cultural norms. Third, access to education and training showed an inverse relationship with the promotion of cultural festivals and wilderness/museum visits. A careful consideration of the potentials of endogenous cultural institutions (objects, values, and beliefs) in shaping ecotourism in the Western Highlands of Cameroon is required. Policy considerations are needed along the following areas. Firstly, to stem the high dependence on conservation sites for wood supply to the arts and craft sector, by promoting the expansion of forest plantations. Secondly, to promote effective training on the optimization of forest products in the arts and crafts sector. The third intervention should focus on enforcing endogenous cultural institutions, to regulate this practice, while the fourth should be geared towards establishing endogenous cultural institutional reforms that consider increasing women representation and participation in guiding future ecotourism activities in a bid to optimize ecotourism benefits, and to promote the sustainable management of conservation sites. While the concept and context of ecotourism continues to evolve under contestation, theories of ecotourism development hold that this practice has been sufficiently used to predict household and community well-being (development)—not the other way round [32,33,93–95]. The conclusion from this paper does not only contribute to theories of ecotourism development, by unbundling household level predictors of ecotourism choices, but has implications on the design of policies to sustainably manage conservation sites.

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