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Original Article

## Factors Influencing the Attitudes of Local Community towards Protected Areas, Case Study on Ambatara Protected Area Forest Conservation, Northwest Ethiopia

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Local Community.*

Protected areas (PAs) are crucial for natural resources and biodiversity conservation. However, they also hurt local communities by limiting access to farmland, forest product resources, and imposing fees. In some cases, local communities may view PAs as a risk to their livelihood or appreciate benefits of having PAs at other times. Hence, improving the positive attitudes of the local community toward PAs is important for the success of PAs preservation. This paper examined factors influencing the attitudes of the local community towards protected areas, a Case Study on Ambatara Protected Area (APA) forest Conservation, Northwest Ethiopia. Data was collected through household surveys. Econometric model were used for further analysis. The result identified influential factors and revealed that higher levels of age, education, family size, farmland size, livestock size, benefits, and awareness were all significantly associated with a more positive attitude of the local community towards PAs but having severe problems with a negative attitude. These were the key factors influencing the attitudes of the local community and should be a consideration when designing conservation initiatives and policy decisions. In general, most respondents had a positive attitude (supportive) towards PA and believed the conservation of APA is essential for them. However, they had some concerns about the management and lack of access to appropriate resources; this needs to be addressed to ensure their long-term sustainability. This study concludes that understanding the attitudes of local communities toward protected areas is essential to provide a successful conservation strategy and tangible benefits to local communities and PAs. These will help to ensure and preserve PAs for generations to come.

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## INTRODUCTION

Protected Areas (PAs) play an essential role in preventing biodiversity loss and contributing to global conservation initiatives that emphasize PA expansion (Watson et al., 2019). Though stricter PAs might conserve more biodiversity, they still need government support and investments (Gray et al., 2016). In addition, strict protection is often costly for local communities, increases antagonism, and prevents conservation efforts from becoming involved.

A review of conservation research indicates that human-induced threats in PAs may be a result of shortcomings in traditional conservation models; they prioritize biological values over social values (Oldekop et al., 2016; Schulze et al., 2018).

According to Glikman and Vaske (2012), knowledge about PA objectives, actions, rules, and regulations moderates residents' compliance with the Conservation policy. Knowledge and social norms have been revealed to have major insinuations for individuals' participation in nature and wildlife conservation (Atuo et al., 2020).

Experiences, benefit-sharing in PAs, and conflicts with PAs are considered essential to understanding conservation perceptions (Bennett, 2016), given the goal of ensuring conservation policy from people's perspectives. Similarly, socioeconomic characteristics (gender, ethnicity, education, occupation, land ownership, household income) are the most common influential factors in attitudinal studies (Bragagnolo et al., 2016).

In Ethiopia, protected areas cover 17.1% of the nation, however; these are at present deteriorating and confronting various challenges due to

population, growth and settlements, illicit agricultural expansion, habitat damage and destruction, grazing, deforestation, soil degradation, and wastage of natural resources within the nation (Mulualem & Tesfahunegny, 2016). APA forest conservation study area is among local protected areas experiencing serious challenges and critical needs to strengthen and develop a positive relationship with the local community.

Through the increase of human activities and their negative impact on land resources, biodiversity, and the environment of the country, there is a need for careful research and examination on how to enhance the implementation of protected areas.

Therefore, the objective of the study was to identify potential and determine factors influencing the attitudes of the local community towards protected areas, Case Study on APA forest Conservation, Northwest Ethiopia.

## RESEARCH METHOD

### Description of the Study Area

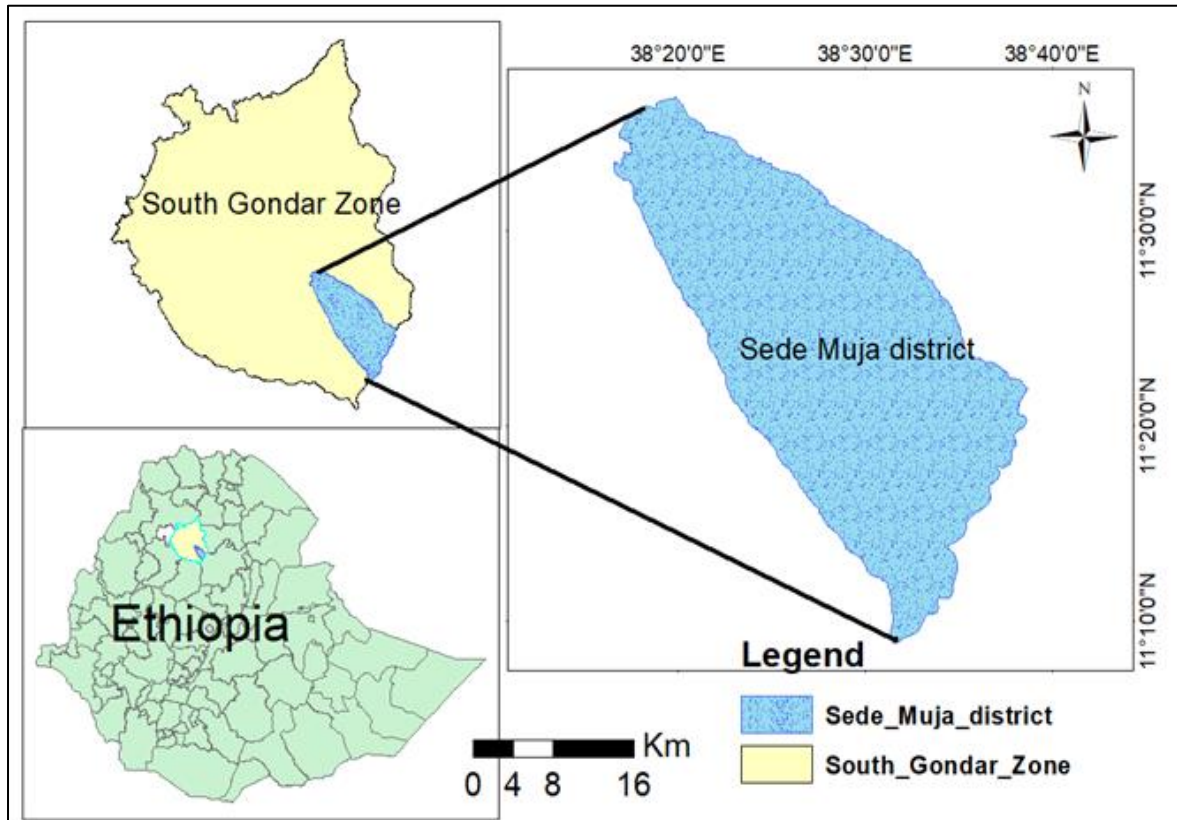
The study was conducted in Ambatara Protected Area Forest Conservation, Sede Muja district, northwest Ethiopia, which is known for its small local Protected Area Forest conservation, which was chosen purposefully. Sede Muja district is located 707 km from Addis Ababa and lies within 11°08'46"–11°36'40"N latitude and 38°17'30"–38°38'40"E longitude. It is bordered by Amhara Saint, Mekdela, Tachi Gayint, Lay Gayint, and Simada; in the South, southeast, east, northeast, and west respectively.

Ambatara protected area (APA) is the study area, which has a forest product potential for the local

community and covers their most requirement. Ambatara Protected Area offers different benefits such as farming land, pastureland, rooftop grass for local houses and churches to maintain and

keep air balance, the foremost source of fuelwood and construction timber, wild fruit, and honeybee production.

**Figure 1: The studies area map of the Sede Muja district**



**Sampling Method and Size Determination**

A critical step in understanding the attitudes of the local community is to determine the sample size and method of sampling. Out of 1286 targeted head households who were aged over 18 years, living within 10 km of the APA, often expected to have regular interaction, and were affected by the PA (Oldekop et al., 2016); 305 participants were randomly selected at 95% confidence level, and precision of 0.05(5%) according to (Israel, 2012) sample size determination formula.

$$Sample\ size\ formula\ n = \frac{N}{(1 + N(e)^2)}$$

Where ‘n’ is the number of selected respondents, ‘N’ is the total targeted household population size and ‘e’ is the level of precision.

**Data Collection and Analysis**

A series of data collection was undertaken using household interviews and focus group discussions with local community leaders and district experts about APA Forest conservation. Household interviews were conducted in July-September/2019 using a semi-structured questionnaire. Respondents were interviewed face-to-face. Before the interview, questionnaires were translated into the local language, and training was given to data collectors. The information solicited included sex, age, education, family size, farmland size, etc. Both descriptive statistics and econometric models were employed to analyze the collected data.

**Econometric Model Specification**

The data were further analyzed using an econometric model to determine potential factors

influencing the local communities' attitudes toward the protected area.

**Variable Selection for the Attitudes of the Local Community towards PA Analysis**

Both dependent and independent variables were coded based on (Table 1). Based on the existing theoretic research and practical analysis, this paper takes the attitudes of local community as the

dependent variable. The logistic regression model was a suitable statistical tool when determining the influence of explanatory variables on the dichotomous dependent variables (only two categories) (Coulibaly-Lingani et al., 2009). The explanatory variables of importance in the study were those supposed to influence community attitudes.

**Table 1: Description of Variables**

Dependent variable	Description	Type of measure	Expected Outcome
Attitudes of local Community	(1 if positive, 0 negative)	Dummy	±
Explanatory variables			
Sex	1 if male 0 female	Dummy	±
Age	In Years	Continuous	-
Education	In the number of years achieved	Continuous	+
Family size	number family member	Continuous	+
Farmland size	measured in hectare	continuous	+
Livestock	Number of Livestock	continuous	±
Distance	measured in kilometre	continuous	+
Benefits	1 if good; 0 Poor	Dummy	+
Problems	1 if severe; 0 slight	Dummy	-
Awareness	1 if good; Poor	Dummy	+

**Model Specification**

To empirically analyse factors influencing local community attitudes towards APA Forest conservation, this paper builds the following basic econometric model:

$$odd Y = \frac{p(y=1)}{(1-P(Y=1))} = \frac{\text{probability of } Y \text{ to be "positive attitude"}}{\text{probability of } Y \text{ to be "negative attitude"}}$$

The logit (Y) is given by the natural log of Odds;

$$\ln\left(\frac{p(y = 1)}{(1 - P(Y = 1))}\right) = \text{logOdds} = \text{Logit}(Y)$$

$$E\text{Logit}(Y) = \alpha + \sum\beta_1X_1 + \sum\beta_2X_2 + \dots + \sum\beta_nX_n + \epsilon_i$$

Where Y = dependent variable, with 1 = positive attitudes and 0 = negative attitudes; α = intercept; ε<sub>i</sub>=error term, β<sub>1</sub>, ..., β<sub>n</sub>= coefficients of the

independent variables; X<sub>1</sub>, X<sub>2</sub>, ..., X<sub>10</sub> = the independent variables (such as sex, age, etc...); P (p) =1, probability of positive attitudes PA; 1 - P = probability that a local community did not have positive attitudes; and ln = natural log. The criterion used to assess the overall significance of the binary logit model was the log-likelihood ratio following (Greene, 2003).

**RESULTS AND DISCUSSIONS**

**Socioeconomic Characteristics**

The collected data were sorted, organized, and summarized to observe socioeconomic characteristics. The result of continuous variables data is displayed in Table 2, and categorical data are in (Figure 2). The majority interviewed were males, accounting for 93% of respondents, while 7% were female. Most respondents were males and usually household heads in patriarchal African societies (George et al., 2016).

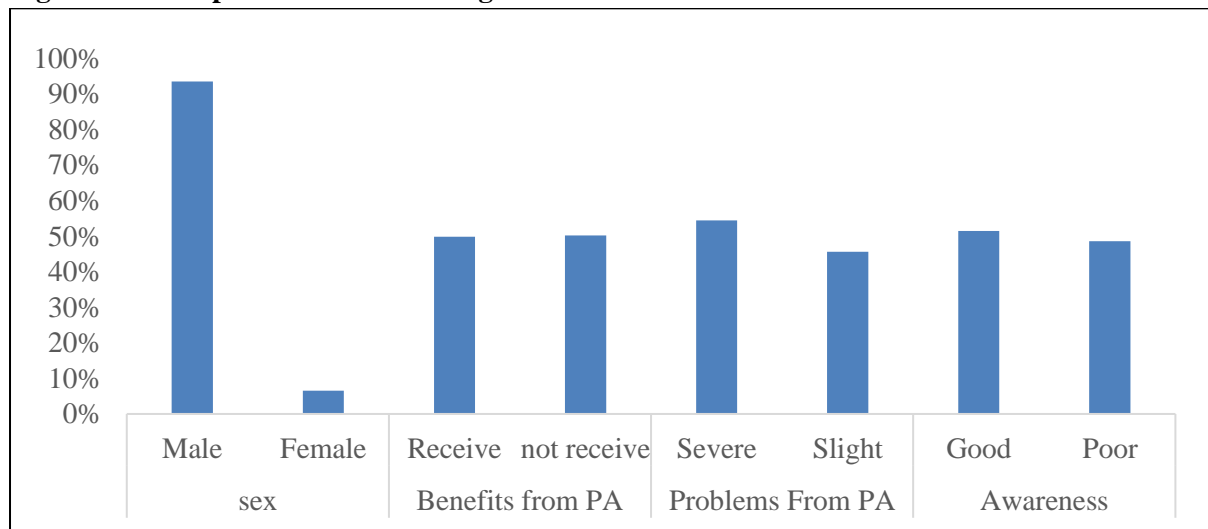
**Table 2: Descriptive Statistics of Continuous Variables**

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	305	33.97	9.16	18	78
Family size	305	4.66	2.37	2	12
Educational level	305	4.42	2.31	0	9
Farmland size	305	2.11	1.18	0.5	5
Livestock size	305	13	6.78	2	43
Distance from PA	305	2.67	1.36	1	5

In *Table 2*, the mean age of respondents was 33.97 years, while the standard deviation was 9.16. Their age varied within the range of 18 to 78 years. Their family size, education level, and livestock size were 4.66 and 4.42, and 13, respectively. In addition, they walked a mean distance of 1.36 km from the APA and 2.11 hectares of mean farmland size.

And also based on *Figure 2*, an equal number of respondents received and not taken in benefits from APA Forest Conservation. In addition, 54% of participants faced severe problems, while 46% had a slight problem. Furthermore, 51.48% of respondents had good awareness, whereas the 48.52% had Poor.

**Figure 2: Descriptive statistics of categorical variables**



**Regression Results**

Before regression, descriptive and correlation analysis was conducted to observe multicollinearity problems in variables. And also, for the econometric model, variable selection is critical because all socioeconomic variables might not be equally important (Allendorf, 2010).

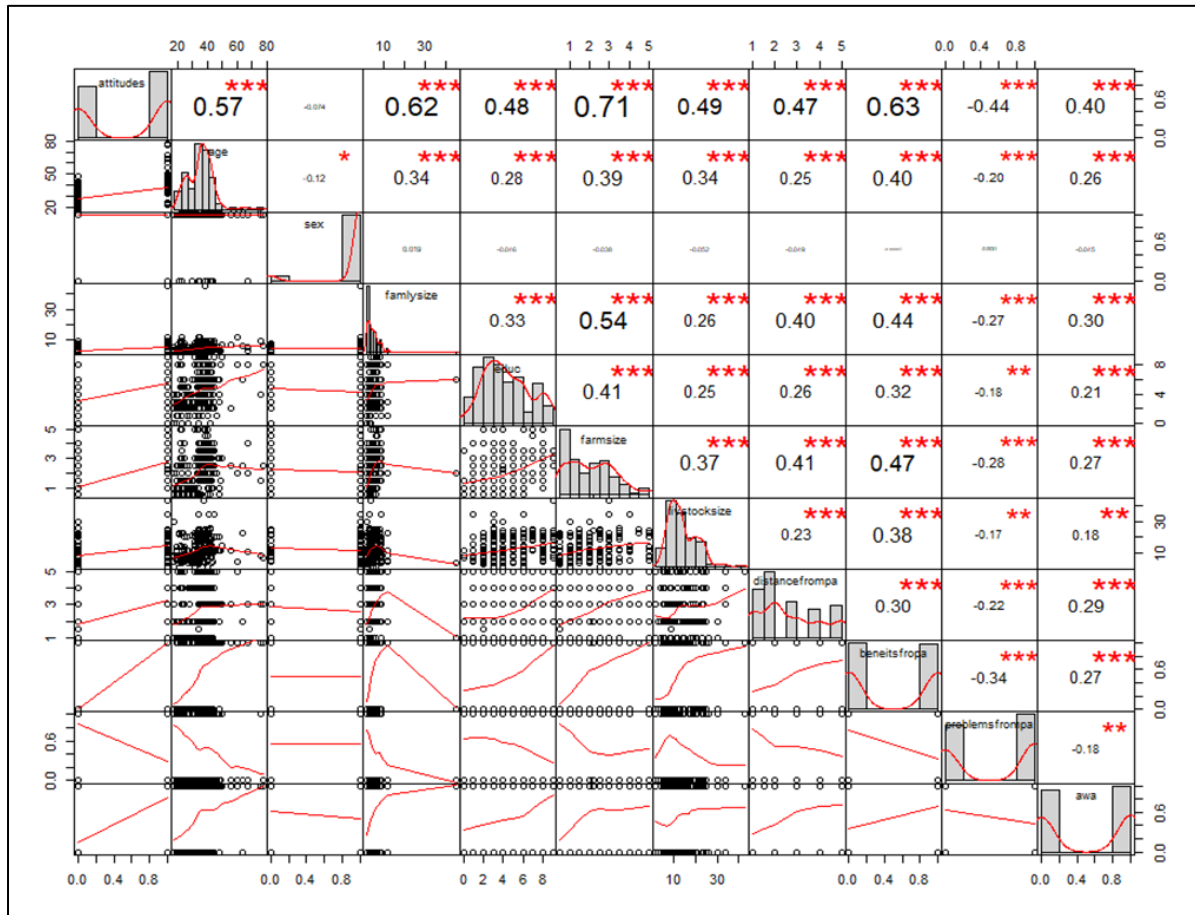
Hence, initial correlation tests were performed to select which variable (s) should be included in the final model and examined to satisfy multicollinearity among the potential predictors ( $r < 0.7$ ) (Harrison et al., 2018). The variance inflation factor (VIF) test was also conducted to

identify whether variables had a multi-collinearity or not. Its value was satisfied without compromising the model accuracy, which was good and selected since a VIF value was above the threshold of 5 (Harrison et al., 2018) or at a maximum of 10 (Ringle., 2015).

The actual maximum VIF value was 2.0171, registered for the age variable. Model selection and statistical analysis were carried out in R Studio Version 4.1.1 (Team, 2021), and descriptive statistics were carried out in Stata SE 15 (64-bit).



**Figure 3: Performance analytic chart to observe correlation among variables**



In Figure 3, the distribution of each variable names, the histogram with kernel density estimation and rug plot displayed along the diagonal, the bivariate scatter plots with a fitted line are displayed below the diagonal, and the value of the correlation plus the significance level as stars are put above the diagonal. In addition, each significance level is associated with a symbol: p-values (0, 0.001, 0.01, 0.05, 0.1, 1) => symbols (“\*\*\*”, “\*\*”, “\*”, “.”, “”) respectively.

**Factors Influencing the Attitudes of Local Community Towards PAs**

The result (Table 3) indicated that benefits from the APA had a largely positive influence on the attitudes of the local community, whereas the Awareness had most influenced negatively. In addition, livestock had been the least positively influential factor.

Except for sex and distance, all predictors had a significant influence on attitudes of local community attitudes towards APA. Similarly,

among the significantly influenced independent variables, all were positive except for the problem variable, which was negative.

In general, the econometric model analysis result revealed that higher levels of age, education, family size, farmland size, livestock, benefits, and awareness were all significant predictors of positive attitudes towards protected areas. However, a severe problem was a significant predictor of negative attitudes.

This finding suggests that socioeconomic factors influence the attitudes of a local community towards protected areas. These results show that understanding socioeconomic factors is essential to implement the best conservation initiatives.

The estimate is given in the log-odds form. When each independent variable increased by one unit, the expected change in the estimated coefficient value was given, respectively. Therefore, the estimate helps to identify the effect predictors whether positive or negative. In addition, it is also

important to identify the largest, moderate, or least influential variables.

The Odds ratio value is never negative. The value "1" expressed that the variable had no influence or impact. When the odds ratio value is less than "1", read as (1 - value) as a decrease in odds. Similarly, a value greater than "1" indicated increased odds. Odds ratios greater than "1" will increase the likelihood of occurrence of the more positive community attitudes, and odds ratios less than 1 increase the likelihood of occurrence of the negative attitudes (Tabchnick & Fidell, 2006).

The marginal effect indicated the change in probability when each independent variable increased by one unit or element. (For continuous variables age, family size, education level, farmland size, livestock, and distance from the APA), which represented the instantaneous, change given that the 'unit' may be very small,

considering each variable's self-measurement units).

Whereas for the dummy variables (sex, benefits from the APA, problems from the APA, and awareness), the change performed from 1 to 0 or vice versa, so a single or one element. It was limited to categorical changes (df/dx is for discrete or distinct change for sex, benefits, problems, and awareness independent variables).

The probability plot (Figure 4-11) for each significant independent variable is placed on the x-axis, whereas probabilities of being positive attitudes (dependent variable) are on the y-axis. The vertical rug lines have shown the density of observation along the x-axis. The plot is also very important to visualise and easily understand the positive or negative attitudes of the local community.

**Table 3: model output showing influential factors**

Predictors	Estimate (β)	OR (eβ)	df/dx	SE (β)	Z value	PR (> z )	[95% CI]	
							Lower	Upper
(Intercept)	-21.104	0.809	0	4.2182	-5.003	5.64e-07***	-30.96	-14.05
Age	0.323	1.381	0.055	0.078	4.136	3.54e-05***	0.19	0.5
Sex	-1.81	0.163	-0.189	1.226	-1.477	0.139681	-4.31	0.56
Family size	0.618	1.856	0.104	0.19	3.262	0.001106**	0.28	1.04
Education	0.755	2.128	0.127	0.245	3.079	0.002076**	0.32	1.3
Farmland size	1.185	3.271	0.2	0.369	3.217	0.001296**	0.52	2
Livestock size	0.173	1.189	0.03	0.066	2.615	0.008924**	0.05	0.31
Distance	0.488	1.628	0.082	0.259	1.879	0.060232	0	1.03
Benefits	2.489	12.054	0.414	0.74	3.362	0.000773***	1.14	4.11
Problems	-2.787	0.062	-0.437	0.843	-3.305	0.000949***	-4.63	-1.27
Awareness	2.045	7.732	0.348	0.779	2.625	0.008667**	0.62	3.74

Signif. Codes : 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 '' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 418.320 on 304 degrees of freedom

Residual deviance: 63.632 on 294 degrees of freedom

AIC: 85.632

Number of Fisher Scoring iterations: 9

**Age:** When respondents' age increased in years, the attitudes of the local community being had a positive attitude toward APA increased by 0.323. It suggested that the elder community members were more likely to have a positive attitude to support the conservations of APA. On the other hand, the age of respondents increased by a year, then the odds of being a positive attitude increased by 38.1% or (1.381-1) \*100. The odds ratio of

being positive attitudes was 1.381 times higher when age increased by one year (when all other variables were fixed).

The marginal effect revealed the change in probability when the respondents' ages increased by a year. Since age was a continuous variable measured with year, this represented the instantaneous change given that the year may be

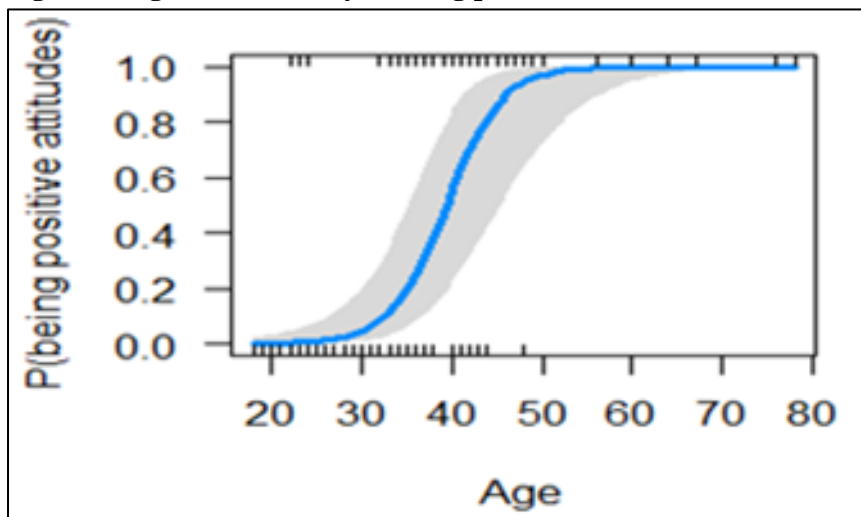
little. The change in probability for one instant change in respondents' age was 5.5%. The probability plot illustrated the relationship between respondents' age and attitudes.

This shows a significant association between age and local community attitudes. It expected that elders' indigenous knowledge and experience made them more easily understand the importance of the conservation of PAs than the youths.

Study shows that elders in rural areas nearby four PAs in Ethiopia held more positive attitudes

toward the parks than youth, possibly because their personal experiences on the impacts of environmental degradation permitted them to describe the essential role of the PAs in wildlife conservation, (Tessema et al., 2010). However, in contrast, because of the lack of exposure to historical injustices and abundant opportunities for local children to engage in educational excursions organized by the park, younger people living near the Kruger National Park in South Africa have more favourable attitudes towards the park (Antony, 2007).

**Figure 4: Age vs Probability of being positive attitudes**



**Family Size:** Kept all the other predictors constant, the family increased by a family member. It was 1.856 times more likely to be a positive attitude. In other words, the odds of being in the positive attitudes (as opposed to the negative attitudes) are 85.6% higher when the family size is increased by one family member (1.856-1).

On the other hand, when the number of family sizes decreased, the odds of being a negative attitude also reduced by 14.6%. Hence, as family members increased by one member, the more likely to be positive attitudes held by the local community.

The study found much family size has more positive attitudes than smaller family size.

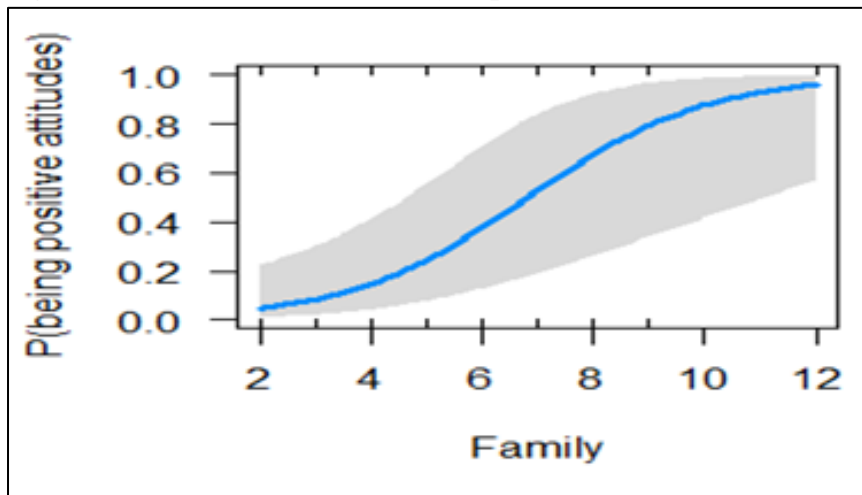
According to (Xu et al., 2006), individuals from high families held positive attitudes toward PAs; however, (Allendorf et al., 2006) found that individuals from broader families had negative attitudes toward PAs.

**Education:** The coefficient estimate of education was 0.755, which was positive. That means the increased education level of the local community in a year was associated with an increase in the probability of being positive attitudes toward the protected area.

It explained that the more educated community members tend to be better at recognizing risks associated with protected area destruction and hence favour viewing the conservation of protected areas as an opportunity.



**Figure 5: Family size vs Probability of positive attitudes**

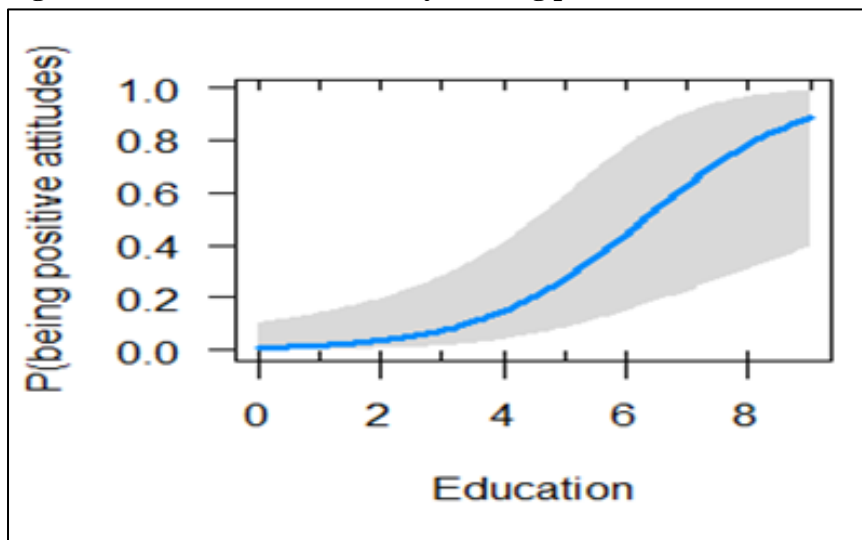


The local communities were rich in traditional knowledge and experience, making them more positive towards the PA. Similar to this result, rough studies have shown that education is a strong predictor of attitude (Allendorf et al., 2006; Shibia, 2010; Xu et al., 2006), whereas others have found no association between educational

levels and attitudes of people (Baral & Heinen, 2007).

Therefore, as the education level increased, the local community members gained a sense of being more likely to be positive attitudes.

**Figure 6: Education vs Probability of being positive attitudes**



**Farmland size:** Each farmland changes in hectare increased the log odds of getting positive attitudes by 1.185. The corresponding p-value revealed that it had a significant effect and positively determined the attitudes of the community toward PA. The local community members who had good farmland increased are likely to have more positive attitudes towards APA.

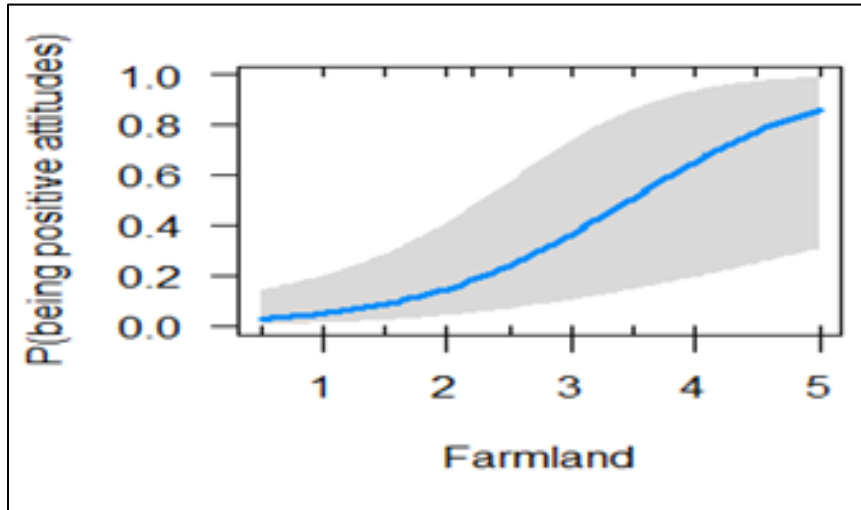
would not be highly dependent on APA. On the other hand, community members who did not have good farmland were ploughing inside the boundary of the protected area. As a result, they would face penalties, imprisonment, and crop destruction by wild animals may bring in the community members likely to develop negative attitudes.

Community members who had enough farmland could cover their living expenses, as a result,

The study found similar to farmland relates to locals' attitudes concerning the availability of

hunting and cattle grazing, land utilization for agriculture, and land grab for the PA (Thondhlana et al., 2016).

**Figure 7: Farmland size vs Probability of positive attitudes**



**Livestock size:** The estimated value of 0.173 represented the coefficient value of livestock size, which explained the change in log odds of attitudes of the local community for one number of livestock changes in livestock.

This result shows that, as the size of livestock increased, the communities were less dependent on the protected area. However, their activities for pastureland and animal food increased. But on the ground, there are controversies and uncertain choices in the local area.

The first view was who had many livestock sizes raised problems such as pastureland, shortage of animal food, and predator challenges associated with the home animal. In this scenario, these community members may develop a sense of negative attitudes toward APA.

The second view was protected area was overexploited because its resources were extracted illegally by a few community members before its official establishment, and getting sufficient food for animals without the rainy season was difficult. However, its official establishment limited illegal activities and brought multi-benefits to many community members.

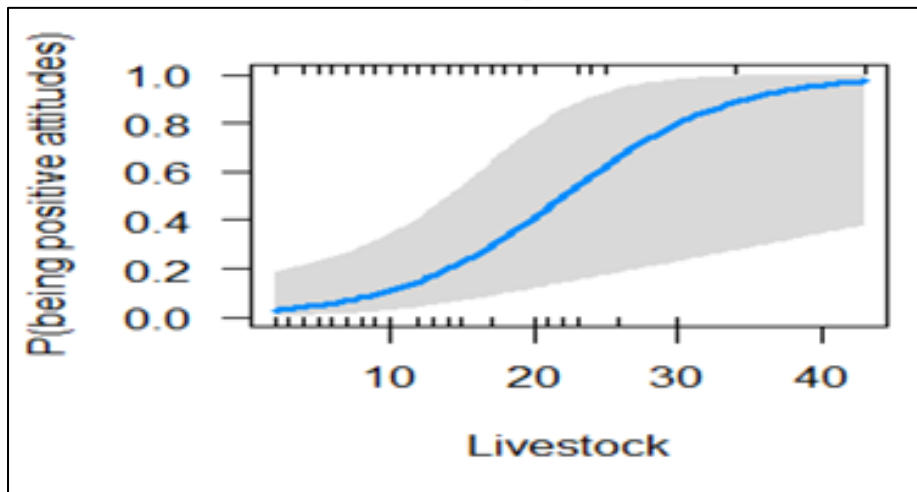
This conservation of the protected area brought a new chance to mitigate the common problem by maintaining animal foods throughout the year. Presently, the degraded part is recovering and has brought a common understanding among local community members about a common problem.

In the end, as most respondents mentioned, even if they have a problem with PA, they have a common understanding of positive attitudes toward APA. A going on and growing issue for Ethiopia's largely rural community is local access to pasturelands ((Ashenafi & Leader-Williams, 2005).

**Benefits:** When holding all other predictor variables at their mean (a fixed value), the odds of likely having positive attitudes towards APA for good benefits over the odds of being likely to have negative attitudes towards poor benefits was  $\exp(2.489) = 12.054$ . In terms of percentage, the odds of getting good benefits from APA were  $(12.054 - 1) * 100 = 1105.4\%$  higher than the odds for poorly benefited.

Community members getting good benefits are more likely to have a positive attitude toward APA, but poor benefits are more likely to have a negative attitude toward APA. According to Schmitt (2010) claims, the benefits from resource use might be higher than the costs.

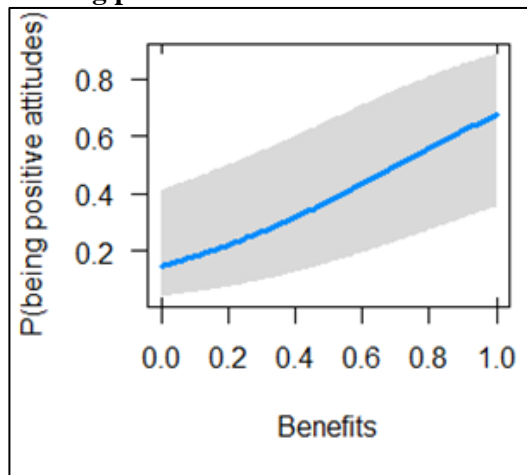
**Figure 8: Livestock size vs Probability of positive attitudes**



In addition, it is widely documented that rural community attitudes towards protected areas are positively linked to the equitable distribution of associated benefits and effective involvement, while negative attitudes tend to prevail in their absence (Chevallier & Milburn, 2015).

The study found a similar result to (Rohini et al., 2018) when a local community can ensure clear benefits from proximate PAs, they tend to recognize more about it and improve positive attitudes and support.

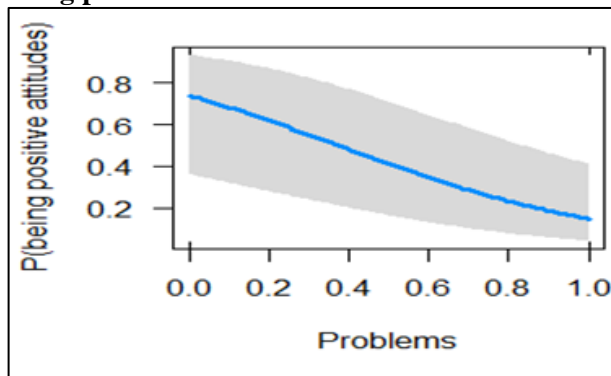
**Figure 9: Benefits from PA vs Probability of being positive attitudes**



**Problems:** It has been a significant effect and negatively determined community attitudes toward PAs. The local community, who had a severe problem, the more likely to develop a sense of negative attitudes. Holding other predictors at a constant value, when community members faced severe problems increased, it decreased by 2.787 times more likely to feel positive attitudes.

In other words, the odds of having positive attitudes (as opposed to negative attitudes) were (-93.8%) lower when the community members

**Figure 10: Problem from PA vs Probability of being positive attitudes**



faced severe problems increased. That means when the number of community members having problems increased, the probability of being likely having negative attitudes also increased by 93.8%.

As the number of community members having severe problems increased, the lower they were likely to develop positive attitudes and more likely to hate PAs and develop more likely to feel negative attitudes towards APA. The study found that severe problems were significantly inverse to the attitudes of a local community towards APA.

Many studies recognized issues with human-wildlife conflict influencing negative attitudes (Allendorf, 2007; Western et al., 2015) and restricting policies and admittance rules to collect non-timber forest products. In addition, livestock grazing (Mogende & Kolawole, 2016).

Therefore, local community members who have severe problems are more likely to feel a negative and poor relationship with APA. Whereas; tolerable slight problems are expected to develop positive attitudes and are more likely to have a positive relationship and support the existence of the APA.

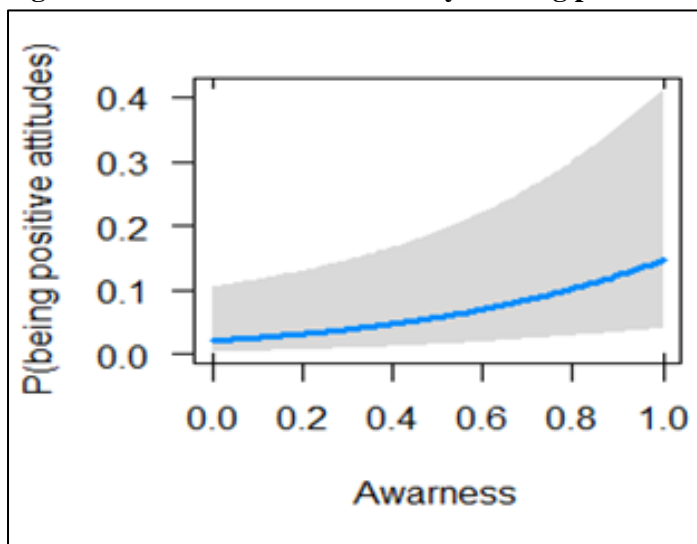
**Awareness:** Holding other predictors at average value, when one community member's awareness increased, it was 7.732 times more likely to sense positively. In other words, the odds of being

positive attitudes (as opposed to negative attitudes) were 673.2% higher when one member's local community awareness was increased by a factor of (7.732-1). The higher the community members' awareness level, the more likely to have positive attitudes towards APA.

A low level of awareness concerning conservation and protected area management rehearses can also be related to negative (Fiallo & Jacobson, 1995) or undecided attitudes (Ormsby & Kaplin, 2005) toward protected areas. However, a higher awareness level of regulations could be associated with negative conservation attitudes (Heinen & Shrivastava, 2009).

Therefore, community members who had good awareness were more likely to be positive attitudes to support the conservation of PAs.

**Figure 11: Awareness vs Probability of being positive attitudes**



**Prediction on Attitude of the Local Community**

The primary aim of developing any model is to predict response values at another location or time. Hence, the developed model is used to predict the attitude of the local community variable based on the probability of positive attitudes occurring, allowing us to calculate an odds ratio. It was calculated using the ratio of the odds of positive attitudes occurring to not positive attitudes.

Predicted model of positive attitudes of the local community

$$Pr(y_i = 1) = \text{Logit}^{-1}(X_i\beta_j)$$

$$Pr(y_i = 1) = \text{Logit}^{-1}[-21.104 + 0.323X_1 + 0.618X_2 + 0.755X_3 + 1.185X_4 + 0.173X_5 + 2.489X_6 + (-2.787)X_7 + 2.045X_8]$$

Where X1, X2... & X8 represented those statistically significant predictor variables such as age, education, etc. respectively. Getting predicted probabilities of local community attitudes, holding all explanatory variables to their means and the estimated probability at the mean

point of each predictor done by inverted the logit model (Torres-Reyna, 2014).

$$\text{invlogit} = \text{function}(x) \left\{ \frac{1}{1 + \exp(-x)} \right\}$$

$$\text{Pr}(y_i = 1) = 0.78489$$

Therefore, when all predictor values held to their means, the probability of  $y = 1$  or being positive attitudes was 78.49%. In other words, the probability of being negative attitudes was 21.51%.

## CONCLUSION AND RECOMMENDATIONS

### Conclusion

The study was conducted in Ambatara Protected Area Forest Conservation, Sede Muja district, northwest Ethiopia. PAs are becoming increasingly important globally to conserve biodiversity and protect species from threats of overexploitation. The local communities often play an essential role in successful PA conservation. However, in some cases, they may view these areas as an infringement on their rights to use a particular area or resource.

This study examined the study objective of identifying potential and determining factors influencing the attitudes of the local community towards PAs, the case of APA Forest conservation. In answer to the study objective, this paper further analyzed the data using an econometric model.

The result indicated that age, education, family size, farmland size, livestock, benefits from pa, problems from PA, and awareness had a statistically significant influence on attitudes toward PAs. Specifically, those with higher levels of age, education, family size, farmland size, livestock, benefit from pa, awareness, and slight problems from PA were more likely to have positive attitudes towards PAs.

However, those with lower levels of age, education, family size, farmland size, livestock, benefit from pa, awareness, and severe problems from PA were more likely to have negative

attitudes. These indicate that socioeconomic factors play an essential role in influencing local community attitudes toward protected areas.

In conclusion, the attitudes of local communities toward PAs are generally positive, but when they were facing severe problems felt negative. In ensuring the successful management and conservation of PA, it is essential to understand the attitudes of local communities and consider them in decision-making processes, as well as work together with stakeholders in a way beneficial to the local communities and Ecological system.

### Recommendations

Based on the study, the following optional recommendations can be suggested to advance the effective manage APA Forest Conservation.

- Consider education, family size, farmland size, livestock, offering benefits, existing problems, and awareness when designing conservation strategies.
- Construct livestock extension centres and wildlife conservation,
- Initiatives focus on forest business models by providing credits and training in line with sustainable conservation and continuous participation of the local community for those employment opportunities.
- Initiate entrepreneurs to create an environmentally acceptable business with banks and think-thank groups targeting short- and long-term goals.
- The government and private sectors should deliberately work with conservation works and identify innovative ideas from a local community perspective.
- The private sector should align with relevant policies and create profitable enterprises linked to APA Forest Conservation.
- Government should allocate funds and review legislation making it challenging for the private sector to do Forest Conservation.



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