Assessment of Factors Moderating Community Attitudes Towards Wildlife Tourism and Conservation: A Case of Ikona and Makao Wildlife Management Areas

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ABSTRACT

The purpose of this study was to assess community attitudes towards the impacts of wildlife tourism and conservation interventions in Wildlife Management Areas (WMAs) to community livelihoods. The study used Ikona and Makao Wildlife Management Areas as a case study. A cross-sectional study was conducted from October to November 2018 using a semi-structured questionnaire. A total of 559 randomly sampled respondents were interviewed. Data were analysed using SPSS General Linear Model-Univariate. The findings revealed that Social Economic Status (SES) of the respondents significantly influenced respondents' attitudes while gender and origin of the respondents marginally influenced their attitudes. Majority of the respondents accept WMA in their villages though are not satisfied with the benefits accrued from WMA. Most of the respondents mentioned crops damage and livestock depredation as major factors undermining their attitudes towards WMAs. The study provides empirical evidence that without local communities realizing direct and tangible benefits, it will be difficult to associate conservation and livelihood improvement, a condition that undermines wildlife conservation. The study recommends WMAs authorities to find sustainable solutions to crops damage and livestock depredation problem. The study also recommends introduction of wildlife conservation to schools to create and increase awareness among youths from childhood stage.

INTRODUCTION

Many rural communities living adjacent to protected Areas (PAs) in Tanzania, earn a large share of their living from natural resources due to their close proximity to such resources. Arguably, the dependency in natural resources is high because most rural communities have since in memorial times lived inside and around areas that are now called protected areas (Nepal and Spiteri 2011).

Well managed PAs provide conducive environment for wildlife conservation upon which multifaceted wildlife tourism activities take place (Stone and Nyaupane 2016). Tanzania has the wildest and most pristine PAs, making it one of the best nature-based tourism destinations in Africa. During the period from 1990 to 2019, the size of PAs in Tanzania increased from 14.4% (135, 956 km^2) to 38.2% (361, 000km^2) (Kideghesho and Msuya 2012, IUCN 2021, World Bank 2022). In the corresponding period, the number of international tourists visiting PAs in Tanzania increased from 153,000 to 1.5 million as a result the revenue generated from travel and tourism in Tanzania increased from USD 65.00 million in 1990 (Lwoga 2013), to USD 2.6 billion in 2019 (TTSS 2021, World Bank 2021). In 2019, the travel and tourism sector's contribution to GDP was US\$ 6,577.3 million, equivalent to 10.7% of the country's GDP (WTTC 2020). In terms of

employment, up to 2019 travel and tourism sector created 1,550,100 jobs corresponding to 11.1% of the country's total employment (Kyara *et al.* 2021). Due to its higher multiplier effects, the sector is fundamental in alleviating poverty particularly in rural areas where local community participate in various conservation and tourism activities i.e., through selling local agricultural/livestock products and artifacts (Malleo and Mtengwa 2018).

In order to enhance the linkages between local community, conservation and tourism, in 2003 Tanzania established Wildlife Management Areas (WMAs), with the aim of enhancing conservation and poverty alleviation through sustainable utilization of natural resources (Mwakaje 2008). WMAs were established as a Community Based Natural Resource Management (CBNRM) approach where several villages set aside their village land for wildlife conservation in return for the tourism revenues from the area (Lee 2021). The overarching goal of establishing WMAs was to decentralize conservation power to local communities while attempting to fulfill both human and ecological needs (USAID 2013). Currently there are 37 WMAs operating in Tanzania, encompassing approximately 3.28 % (31,000km^2) of Tanzania's land area (AWF 2013). WMAs account for approximately 8.6% of all PAs in Tanzania. Integration of WMAS into commonly known global conservation frameworks, is seen as a new type of governance and an attempt to acknowledge local social, political, economic, and environmental concerns (USAID 2013, UNEP-WCMC 2019)

Several extensive studies have been conducted since the inception of WMAs in 2003 (See e.g., Makupa 2013, Caro and Davenport 2016, Moyo *et al*. 2016, Lee 2018, Mangewa *et al*. 2019). An examination of most existing studies on WMA shows that nearly all research has been directed toward the conservation and ecological consequences of the WMAs. Relatively few researches have been conducted on the factors moderating community attitude towards WMAs as a tourism livelihood capital. It is important to address these factors so as to gain more insight on community sentiments towards WMAs.

Most of the WMAs research that does exist examine governance problems and concerns within WMA (see e.g. Benjaminsen *et al*. 2013, Moyo *et al.* 2016, Kicheleri *et al.* 2018), development, performance and legitimacy of WMAs (see e.g., Walsh 2000, Nelson 2007, Croucher 2008, Mawi and Mashenene 2020), and ecological success of WMA (see e.g., Lee, 2018, Lee and Bond, 2018, Wilfred, 2010). The studies that went beyond the issues of governance, development, performance, legitimacy and ecological success of WMA measured community wellbeing (see e.g., Homewood *et al.* 2022) and satisfaction with WMAs benefits (see e.g. Kiwango *et al.* 2018). However, these studies did not measure factors moderating community attitudes towards WMAs. As the demand for wildlife tourism, WMAs and other community managed areas continues to increase in Tanzania and in other countries, more informed management of WMAs will be required. More specifically, the information is needed about the factors that influence community attitudes towards WMAs. This paper therefore, describes a study that seeks to assess factors moderating community attitudes towards WMA as tourism livelihood capitals.

LITERATURE REVIEW

Theoretical framework

From theoretical perspectives, this study draws on DFID (1999) Sustainable Livelihood Framework (SLF), which essentially is an approach that tries to capture, and provide a means of understanding, the fundamental causes and dimensions of rural livelihoods without collapsing the focus onto just a few factors such as economic, food security issues, etc. (Majale 2001). The framework seeks to

improve lives of local people building on what they have i.e., their assets (UNDP 1999) such as wildlife resources. The modified framework has seven capitals/assets that are considered fundamental in enhancing community livelihood (McLeod 2001). Such capitals include: (1) Natural (Environmental) capital such as natural resources (land, water, wildlife, biodiversity, environmental resources). (2) Physical capital which include basic infrastructure (e.g. water, sanitation, energy, transport, communications), housing and the means and equipment of production. (3) Human capital which includes health, knowledge, skills, information, ability to labour. (4) Social capital which includes social resources (e.g. relationships of trust, membership of groups, networks, access to wider institutions). (5) Financial capital which entails financial resources available (regular remittances or pensions, savings, supplies of credit). (6) Institutional/knowledge capital (intellectual capital) which refers to the value of an organization made up of its knowledge, relationships, learned techniques, procedures, and innovations. The knowledge capital provides great value for individuals, and gives them a competitive edge over rivals (Kenton, 2019) and (7) institutional or political capital which refers to the ability of an individual to influence political decisions (Gratton *et al*. 2019). The SLF is a very useful tool in understanding various dimensions of a person's livelihood, the strategies and means pursued, and associated opportunities and constraints (DFID/FAO 2000, Ellis 2000, Harper *et al*. 2013).

Within wildlife tourism contexts, natural capital may include assets such as WMA land and its associated products (e.g., hunting and photographic tourism activities), water and aquatic resources, trees and forest products, wildlife, wild foods and fibers, biodiversity and environmental services. While, physical capital may refer to assets such as WMA infrastructure (transport, roads, vehicles, secure shelter and buildings, water supply and sanitation, energy, communications), tools, equipment and technology used for hunting and photographic tourism (Serrat 2017).

Within SLF, livelihood is conceptualized as a way of securing the basic necessities of life such as food, water, shelter and clothing (Oxford Dictionary of English 2010). Livelihood capital comprises the capabilities, assets and activities required for a means of living (Ellis 2000). A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Ashley and Carney 1999).

Empirical literature

Wildlife tourism and WMA as a livelihood capital

Wildlife tourism is defined as a "form of nature-based tourism that includes the consumptive
and non-consumptive use of wild animals in natural areas" (Roe *et al*. 1997, P.12). Non-consumptive wildlife tourism (photographic tourism) takes place through guided or non-guided tours in vehicles, or through guided walks, where wildlife is not physically killed. On the other hand, consumptive wildlife tourism occurs when wildlife is killed and normally takes place during hunting tourism (Spenceley 2012). Apart from natural areas, wildlife tourism can also take place in captive and semi-captive environments, and it encompasses a variety of interactions from passive observation to feeding and/or touching wildlife (Newsome *et al*. 2005). One of the main activities in WMAs is photographic and hunting tourism (trophy hunting and resident hunting). Besides generating revenues from investors operating in WMA, tourism activities in WMAs provide local employment (as tour guides, hunters, drivers, lodge employees, etc.) and market for local goods such as foods, souvenirs, and handicrafts (Shoo *et al*. 2021). Therefore, wildlife tourism is a good

example of livelihood capital and it can provide local communities with means of sustaining their life if properly managed.

Community attitudes towards conservation within WMA

Over the past four decades the importance of understanding local communities' attitudes has received increasing attention among conservation stakeholders. This importance corresponds with the change in conservation models where the local communities are now acknowledged as the key focus for success of the conservation efforts (Baldus *et al*. 2003, Kideghesho *et al*. 2007, Cetas and Yasué 2017). Community attitudes towards conservation refer to the way community think and feel about WMA and conservation in general. Studies show that attitudes towards wildlife conservation are influenced by fundamental life values, experiences as well as knowledge (Kaltenborn and Bjerke 2002, Gadd 2005). For instance, community members with higher education levels tend to have more knowledge about wildlife conservation issues than people with lower education levels (Gadd 2005). That is, increasing knowledge is associated with more positive attitudes toward conservation, in other words their knowledge influences their attitude towards wildlife conservation efforts (Manfredo 2008).

Many conservation studies indicate that support to conservation is often compromised in situations where people's interests and livelihoods are threatened (Kideghesho *et al*. 2007). A plethora of studies has reported negative attitudes of local people toward conservation because of loss of access to resources, unemployment, crop raiding by wildlife, and lack of compensation following crops raiding and or livestock depredation (see e.g., Gadd 2005, Makupa 2013, Cobbinah *et al*. 2015). Other factors culminating in negative attitudes towards conservation among local people include, alienation of local people from their ancestral land (Mascia and Claus 2009).

Further, studies show that the socio-economic impacts of wildlife tourism have a significant influence in shaping community attitudes, which suggests the necessity of linking conservation and wildlife tourism to community livelihoods. For instance, Makupa (2013) found that increased socio-economic and livelihood benefits from wildlife conservation influenced more positive perceptions and attitudes of community members towards wildlife conservation in Ikona WMA. The benefits obtained from wildlife tourism, supports the health, education, and social life of the local people, thereby stimulating local support for the conservation of wildlife. Many studies show that provision of conservation incentives to local communities such creating job opportunities related to wildlife (e.g. village game scouts and local tour guides), and providing financial incentives to support village infrastructures development (e.g. construction of schools, water dams, teachers' houses, dispensaries, roads, bridges, milling machines), significantly account for positive attitudes toward conservation (Nelson 2007, Appiah-Opoku 2011, Nyuapane and Poudel 2011).

Socioeconomic status (SES): A tool for measuring community attitudes

A plethora of studies has used demographic variables and socioeconomic status (SES) to measure community attitudes (see e.g., Harrill 2004, Pollack *et al*. 2007, Park *et al*.2022). Socioeconomic status (SES) is a multifaceted concept which is commonly conceptualized as a combination of income/wealth, education and occupation of an individual. Policy makers and researchers use demographic variables and SES to assess how individuals or community access resources (Pollack *et al*. 2007). Based on the literature reviewed above, the study puts forward the following hypotheses:

H1: Moderation effects of gender on SES significantly influence community attitudes towards WMA as a livelihood capital

H2: Moderation effects of age on SES significantly influence community attitudes towards WMA as a livelihood capital

H3: Moderation effects of family size on SES significantly influence community attitudes towards WMA as a livelihood capital

H4: Moderation effects of the WMA location on SES significantly influence community attitudes towards WMA as a livelihood capital

H5: Moderation effects of migration status on SES significantly influence community attitudes towards WMA as a livelihood capital

RESEARCH METHOD

Description of the study area and data collection

Data for the study were collected in October 2018 from Ikona (34° 40' 1" E and 1° 50' 53" S) and Makao (34° 49' 40.692" E and 3° 23'

8.52" S) WMA both located in the northern part of Tanzania (Figure 1). The two WMAs were purposefully selected because they are among the top five highly successful WMAs in the country (Makupa 2013, Moyo *et al.* 2016). However, comparatively, Ikona WMA is more successful economically than Makao WMA because it borders Serengeti national park and thus almost all species found in Serengeti national park are also found in Ikona WMA. Makao WMA on the other hand, borders Maswa game reserve and has less wildlife compared to Ikona WMA.

Data for the study were collected using questionnaire where 559 respondents were selected by using random numbers. The study population consisted of all Village household heads as registered in village registers using 2012 national census. The survey method was chosen because the researchers asked only general information. Similarly, this method allowed researchers to collect a large amount of data in a relatively short period..
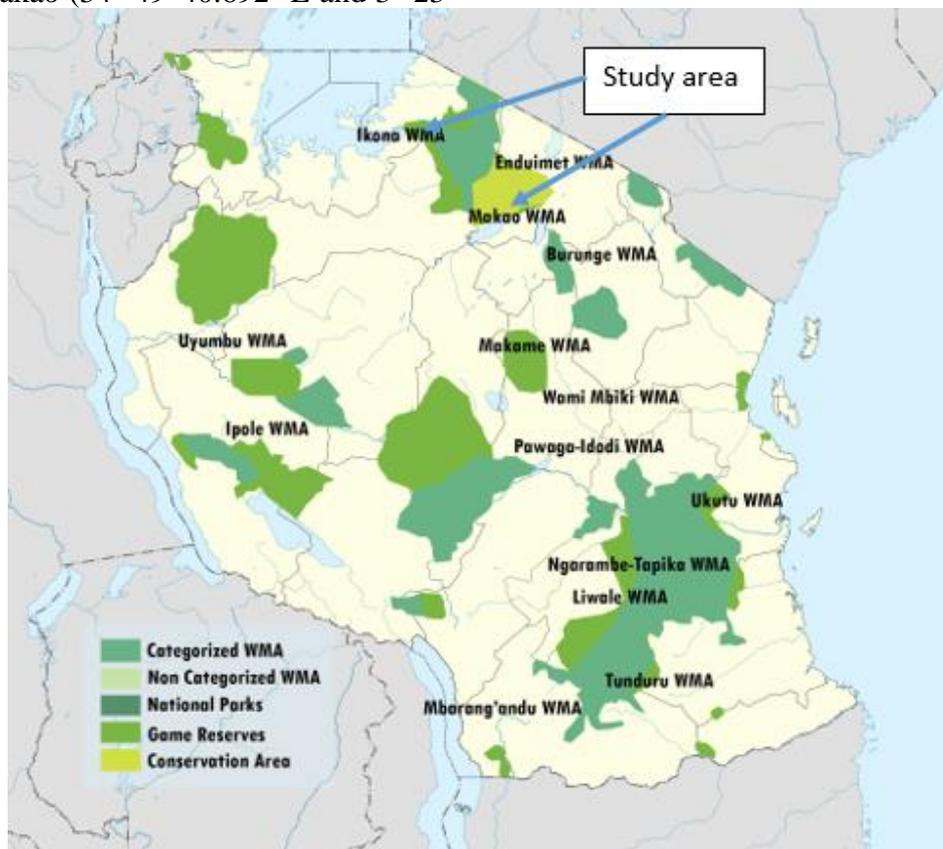

Figure 1. Map of Tanzania presenting the study area (Ikona and Makao WMAs)
Source: TTB (2022)

The questionnaire was constructed by researchers following extensive literature reviews on the topic. Before going to the field for data collection, the initial questionnaire was subjected to a number of reviews to test its relevance, validity and reliability. All questions were made in Kiswahili which is the official language for both researchers and respondents. A verbal consent was given to researchers before starting data collection. The collected data were then analysed using SPSS General Linear Model-Univariate after checking normality of the data. The study employed Socioeconomic status (SES) to assess how individuals perceive tourism livelihood capital as provided by WMAs.

In this study, SES was measured using composite measures approach (see e.g. Oakes and Rossi 2003, Smith *et al*. 2011) and was measured by a computed composite scale of 1 to 3, where 1 = Low SES (an individual with 0 to 10 cows, 0 to 10 goats/sheep and 0 to 5 acres of land), 2 = Middle SES (an individual with 11 to 20 cows, 11 to 20 goats/sheep and 6 to 10 acres of land) and 3 = Upper SES (an individual with more than 20 cows, more than 20 goats/sheep and more than 10 acres of land). These figures were computed following participants' response to the question that asked how do they measure wealth in their community.

Similar to SES, community attitude towards WMAs was measured using a composite variable approach where, three variables (i.e., WMA increases options for livelihood activities, I am satisfied with WMA benefits and I accept the presence of WMA in my village) were composed to one variable labeled "Attitude towards WMA" using the average method approach. The composite variable was measured using a 5 Likert scale (1 = Highly dislike to 5 = Highly like). The researchers used composite variable in moderation analysis to reduce the length of the manuscript.

Data analysis

Testing for the moderation effects

The researchers were interested in gaining insights on the moderation effects of demographic variables on SES and participants' attitudes towards WMA. This is due to the fact that relations between independent and dependent variables are often more complex than simple bivariate relations between a predictor and a criterion. Therefore, to obtain meaningful interpretations of the analysis, these relations need to be modified by, or informed by, the addition of a third variable (i.e., moderator) in the research design (Fairchild and MacKinnon 2009). The term moderating variable refers to a third variable in the relation that can alter (strengthen, diminish, negate, or otherwise) the association between independent and dependent variables (Henseler and Fassott 2010). Moderating variables provide additional information regarding the association between two variables in quantitative research by explaining what features can make that association stronger, weaker, or even disappear. Moderating variables (in this case "SES") are useful because they help explain the links between the independent (in this case "demographic") and dependent variables (in this case "attitude"). The moderation model tests whether the prediction of a dependent variable, Y, from an independent variable, X, differs across levels of a third variable, Z (Cohen *et al.* 2003). The effect of a moderating variable is characterized statistically as an interaction. Thus, the relation between a response Y and two variables X_1 and moderating variable X_2 can be expressed as;

$$Y = b_0 + b_1 x_1 + b_2 x_2 + b_3(x_1 * x_2) + \varepsilon$$

Where Y, is a dependent variable, b_0 is an intercept, b_1, b_2 and b_3 are regression coefficients of x_1, x_2 and $(x_1 * x_2)$ respectively, x_1 is an independent variable, x_2 is a mediating variable and $(x_1 * x_2)$ is an interaction.

The researchers used SPSS General Linear Model (GLM) univariate to analyze the moderation effects. All variables were coded as categorical variables so further re-coding or centering was not necessary.

RESULTS

Participant characteristics

The findings in Table 1 show that male participants were slightly more (59%, n = 330) than female (40.2%, n = 222). The results in Table 1 also show that participants were more or less evenly distributed between the two WMAs. Generally, most of the study participants (79.3%, n = 441) were younger with age ranging between 18 to 50 years.

Majority of the participants (72.2%, n = 402) attained primary school education while 19.4% (n = 108) had no access to formal education. The findings in Table 1 also show that most participants migrated to the study area from other villages (56.5%, n = 313). Majority, 61.7%, (n = 179) of those who migrated to the study area, mentioned searching land for farming and livestock keeping being the dominant reason for their migration. According to the reported Social Economic Status (SES), about half (49.6%, n = 276) of the participants had low SES (i.e., individual with 0 to 10 cows, 0 to 10 goats/sheep and 0 to 5 acres of land). The survey findings also show that majority of the participants (73.6%, n = 410) live in medium to large family size.

Table 1: Demographic profile of participants

Respondent Characteristics		Frequency (N)	%
Gender	Male	330	59.8
	Female	222	40.2
WMA location	Ikona	283	50.8
	Makao	274	49.2
Age	18-35 years	214	38.5
	36-50 years	227	40.8
	51-65 years	78	14.0
	66 -80 years	34	6.1
	81 years and above	3	0.5
Education	No formal education	108	19.4
	Primary education	402	72.2
	Secondary education	42	7.5
	Tertiary education	5	0.9
Originality	Born in this area	241	43.5
	Migrated from other villages	313	56.5
Reasons for migration	Got married	47	16.2
	Moved here to find more land	179	61.7
	My parents moved while I way young	59	20.3
	I moved after Ikorongo became a game reserve	5	1.7
SES	Low	276	49.6
	Medium	248	44.5
	High	33	5.9
Family size	Small family size (1-4 people)	147	26.4
	Medium to large family size (5 people and above)	410	73.6

Participants attitude towards WMAs benefits

Table 2 shows participants' attitudes towards WMAs benefits. The findings in Table 2 show that majority of the participants (43%, n = 234) agreed and highly agreed that WMAs increases options for livelihood

opportunities. Similarly, (41.1%, n = 224) agreed and highly agreed that they are satisfied with WMA benefits. Majority of the participants (70.2%, n = 384) also responded that they accept and highly accept presence of WMA in their villages while 42.7% (n = 234) showed neutral attitude towards WMA. Participants were also asked about some

challenges of WMA and responded that they experience wildlife roaming in their village lands (92.4%, n = 513), crops damage (82.8%, n = 456) and livestock loss (43.1%, n = 234).

Table 2: Participants attitudes towards WMAs benefits

Attitude towards WMA		Frequency (N)	%	Mean	SD
WMA increases options for livelihood activities (WMA as a livelihood capital)	Highly disagree	87	16.0		
	Disagree	91	16.7		
	Neutral	132	24.3	3.04	0.052
	Agree	**183**	**33.6**		
	Highly agree	51	9.4		
I am satisfied with WMA benefits	Highly disagree	93	17.1		
	Disagree	117	21.5		
	Neutral	110	20.2	2.97	0.055
	Agree	**159**	**29.2**		
	Highly agree	65	11.9		
I accept the presence of WMA in my village	Highly unaccepted	33	6.0		
	Unaccepted	35	6.4		
	Neutral	90	16.5	3.82	0.050
	Accepted	**204**	**37.3**		
	Highly accepted	180	32.9		
General attitudes	Highly negative	9	1.6		
	Negative	92	16.8		
	Neutral	**234**	**42.7**	3.24	0.040
	Positive	181	33.0		
	Highly positive	32	5.8		
Reasons for negative attitudes					
Wildlife roaming in the village area	Yes	513	92.4		
	No	24	4.3	1.11	0.017
	I don't know	18	3.2		
Crops damage caused by wildlife in the past five years?	Yes	456	82.8		
	No	75	13.6	1.21	0.020
	I don't know	20	3.6		
Livestock loss due to wildlife in the past five years?	Yes	234	43.1		
	No	286	52.7	1.61	0.024
	I don't know	23	4.2		

1 = Yes, 2 = No, 3 = I Don't know

H1: Moderation effects of gender on SES significantly influence community attitudes towards WMA as a livelihood capital

The ANOVA results in Table 3 indicated that SES has significant main effects (p = 0.003) while gender has no significant main effects (p = 0.440). Similarly, the interaction (SES*gender) has no significant main effects (p = 0.077). Since ANOVA indicated that SES has a significant main effect, the researchers opted to do the post hoc tests (based on LSD) to decompose the main effect.

The post hoc test (Table 4) indicated that there was significant mean difference between lower SES and middle SES (p = 0.008) but there was no significant mean difference between lower SES and upper SES (p = 0.518) and between middle SES and upper SES (p = 0.543).

After splitting the file by gender, the simple effect results (Table 5) indicated that the effect of SES is significant for both male and females.

Table 3: Moderation effects of gender on SES and attitude towards WMA

Tests of Between-Subjects Effects

DV: Attitude towards WMA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10.835[a]	5	2.167	3.262	.007
Intercept	1348.762	1	1348.762	2030.125	.000
SES	**7.907**	**2**	**3.954**	**5.951**	**.003**
Gender	.397	1	.397	.598	.440
SES * Gender	3.427	2	1.713	2.579	.077
Error	357.433	538	.664		
Total	6129.444	544			
Corrected Total	368.268	543			

a. R Squared = .029 (Adjusted R Squared = .020)

Table 4: Post hoc test of gender on SES and attitude towards WMA

Multiple Comparisons Based on observed means

Attitude towards WMA. LSD

(I) SES	(J) SES	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Lower	**Middle**	-.1920*	.07210	**.008**	-.3336	-.0504
	Upper	-.0988	.15251	.518	-.3984	.2008
Middle	Lower	.1920*	.07210	.008	.0504	.3336
	Upper	.0932	.15317	.543	-.2077	.3941
Upper	Lower	.0988	.15251	.518	-.2008	.3984
	Middle	-.0932	.15317	.543	-.3941	.2077

*. The mean difference is significant at the .05 level. The error term is Mean Square (Error) = .664.

Multiple Comparisons based on observed means

Attitude towards WMA. LSD

Gender	(I) SES	(J) SES	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Male	**Lower**	**Middle**	-.2008*	.09794	**.041**	-.3935	-.0082
		Upper	-.2831	.17819	.113	-.6336	.0675
	Middle	Lower	.2008*	.09794	.041	.0082	.3935
		Upper	-.0822	.17360	.636	-.4237	.2593
	Upper	Lower	.2831	.17819	.113	-.0675	.6336
		Middle	.0822	.17360	.636	-.2593	.4237
Female	**Lower**	**Middle**	-.2932*	.11392	**.011**	-.5177	-.0686
		Upper	.5619	.35250	.112	-.1330	1.2568
	Middle	Lower	.2932*	.11392	.011	.0686	.5177
		Upper	.8551*	.35870	**.018**	.1480	1.5622
	Upper	Lower	-.5619	.35250	.112	-1.2568	.1330
		Middle	-.8551*	.35870	.018	-1.5622	-.1480

*. The mean difference is significant at the .05 level. The error term is Mean Square(Error) = .600.

Further findings (Table 5) indicated that within male, the only significant mean difference was between lower SES and middle SES (p = 0.041). While within females, the significant mean difference was between lower SES and Middle SES (p = 0.011) as well as between middle SES and upper SES (p = 0.018).

The findings in Figure 1 show that for both male and female, the attitude towards WMA is influenced by their SES. For male respondents, the attitude towards WMA improves as their SES increases while for female respondents the attitudes improve marginally from low SES to middle SES but decreases significantly from middle SES to upper SES.
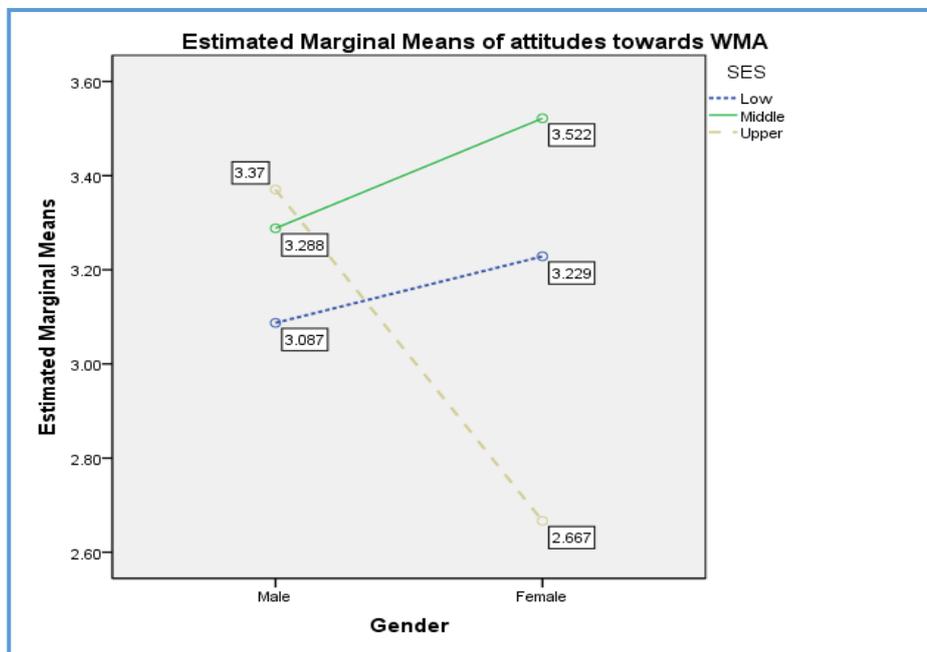

Figure 1: Effects of gender on SES and attitude towards WMA

H2: **Moderation effects of age on SES significantly influence community attitudes towards WMA as a livelihood capital**

The ANOVA results in Table 6 indicated that SES has significant main effects (p = 0.028) while age has no significant main effects (p = 0.233). Similarly, the interaction (SES*age) has no significant main effects (p = 0.603).

Since ANOVA indicated that SES has a significant main effect, the researchers decomposed the main effects through post hoc tests (based on LSD). Likewise, the results (Table 7) indicated that there was only one significant mean difference i.e., between lower SES and Middle SES (p = 0.009). Since the interaction (SES *age) was highly insignificant (p = 0.603), the researchers decided not to proceed with testing the simple effects.

Table 6: Moderation effects of age on SES and attitude towards WMA

Tests of Between-Subjects Effects

DV: Attitude towards WMA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6.269ᵃ	5	1.254	1.850	.101
Intercept	1407.205	1	1407.205	2076.465	.000
SES	**4.885**	**2**	**2.442**	**3.604**	**.028**
Age	.965	1	.965	1.424	.233
SES * Age	.686	2	.343	.506	.603
Error	367.309	542	.678		
Total	6172.667	548			
Corrected Total	373.578	547			

a. R Squared = .017 (Adjusted R Squared = .008)

Table 7: Post hoc test of age on SES and attitudes towards WMA

Multiple Comparisons based on observed means

Attitudes towards WMA. LSD

(I) SES	(J) SES	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Lower	Middle	-.1910[*]	.07262	**.009**	-.3336	-.0483
	Upper	-.1444	.15184	.342	-.4427	.1538
Middle	Lower	.1910[*]	.07262	.009	.0483	.3336
	Upper	.0466	.15261	.760	-.2532	.3464
Upper	Lower	.1444	.15184	.342	-.1538	.4427
	Middle	-.0466	.15261	.760	-.3464	.2532

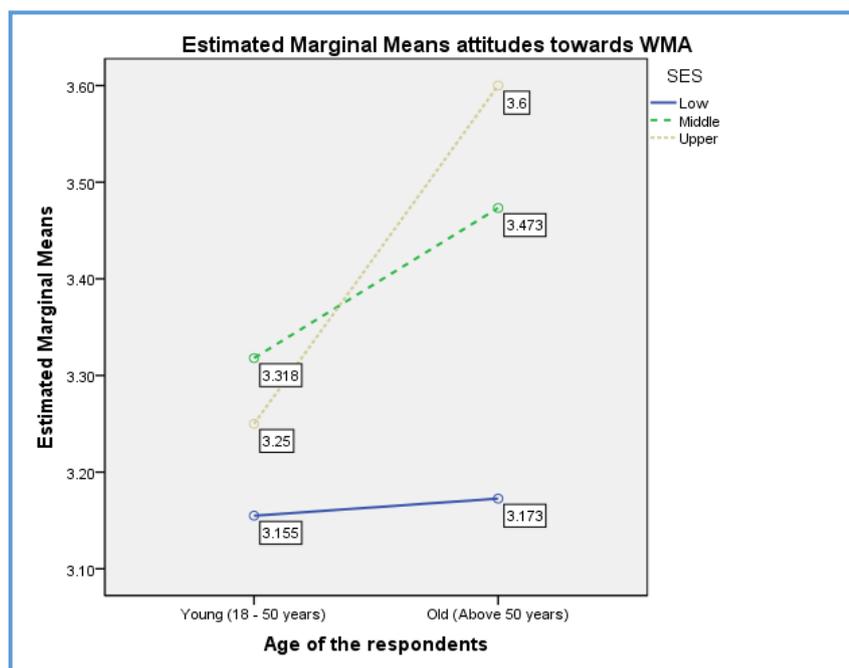[*]. The mean difference is significant at the .05 level. The error term is Mean Square(Error) = .678.

Figure 2: Effects of age on SES and attitude towards WMA

The findings in Figure 2 show further that for both male and female, the attitude towards WMA is influenced by their SES. As age increases, the attitude towards WMA improves for middle and upper SES but not for lower SES (Figure 2). Thus, age of the respondents marginally moderates the relationship between respondents' SES and attitudes towards WMA as a livelihood capital.

H3: **Moderation effects of family size on SES significantly influence community attitudes towards WMA as a livelihood capital**

The ANOVA results in Table 8 indicates that SES, family size and the interaction between SES and family size have no significant main effects, so no further analysis was conducted on these variables. These results show that family size of the respondents does not moderate the relationship between respondents' SES and their attitudes towards WMA as a livelihood capital. That is, the effect of respondents' SES on WMA as a livelihood capital does not depends on whether an individual is from a small or large family size.

H4: Moderation effects of the WMA location on SES significantly influence community attitudes towards WMA as a livelihood capital

The ANOVA results in Table 9 indicates that SES, WMA location and the interaction between SES and WMA location have no significant main effects, so no further analysis was conducted on these variables.

These findings imply that WMA location does not moderate the relationship between respondents' SES and their attitudes towards WMA as a livelihood capital. That is, the effect of respondents' SES on attitudes towards WMA as a livelihood capital does not depends on whether the respondent is resource rich or poor WMA.

Table 8: Moderation effects of family size

Tests of Between-Subjects Effects
DV: Attitude towards WMA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6.456[a]	5	1.291	1.909	.091
Intercept	1709.518	1	1709.518	2527.324	.000
SES	3.733	2	1.867	2.760	.064
Family size	.309	1	.309	.457	.499
SES * Family size	.119	2	.060	.088	.916
Error	367.293	543	.676		
Total	6186.111	549			
Corrected Total	373.749	548			

a. R Squared = .017 (Adjusted R Squared = .008) on SES and attitude towards WMA

Table 9: Moderation effects of WMA location on SES and attitude towards WMA
Tests of Between-Subjects Effects
DV: Attitude towards WMA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	14.558[a]	5	2.912	4.401	.001
Intercept	2298.790	1	2298.790	3475.149	.000
SES	3.093	2	1.546	2.338	.098
WMA location	.775	1	.775	1.171	.280
SES * WMA location	1.760	2	.880	1.330	.265
Error	359.191	543	.661		
Total	6186.111	549			
Corrected Total	373.749	548			

a. R Squared = .039 (Adjusted R Squared = .030)

H5: Moderation effects of migration status on SES significantly influence community attitudes towards WMA as a livelihood capital

The ANOVA results in Table 10 showed that SES has significant main effects (p = 0.022) while migration status has no significant main effects (p = 0.267). Likewise, the interaction (SES*migration status) did not show significant main effects (p = 0.462). The researchers opted to do the post hoc tests (based on LSD) to decompose the main

effect since ANOVA indicated that SES has a significant main effect.

After decomposing the main effect, the post hoc test (Table 11) indicated that the only significant difference was between lower and middle SES (p = 0.010).

After splitting the file, the simple effect results indicated that effect of SES is only significant for respondents born in the study area but not for those migrated from other villages.

Table 10: Moderation effects of migration status on SES and attitudes toward WMA

Tests of Between-Subjects Effects

DV: Attitude towards WMA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6.454[a]	5	1.291	1.911	.091
Intercept	2390.661	1	2390.661	3539.777	.000
SES	**5.223**	**2**	**2.611**	**3.867**	**.022**
Migration status	.832	1	.832	1.232	.267
SES * Migration status	1.046	2	.523	.774	.462
Error	364.700	540	.675		
Total	6163.222	546			
Corrected Total	371.154	545			

a. R Squared = .017 (Adjusted R Squared = .008)

Table 11: Post hoc test of migration status on SES and attitudes towards WMA

Multiple Comparisons based on observed means

Attitude towards WMA: LSD

(I) SES	(J) SES	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Lower	**Middle**	-.1882*	.07264	**.010**	-.3309	-.0455
	Upper	-.1389	.15161	.360	-.4367	.1590
Middle	Lower	.1882*	.07264	.010	.0455	.3309
	Upper	.0494	.15239	.746	-.2500	.3487
Upper	Lower	.1389	.15161	.360	-.1590	.4367
	Middle	-.0494	.15239	.746	-.3487	.2500

*. The mean difference is significant at the .05 level. The error term is Mean Square(Error) = .675.

Table 12: Multiple comparison of migration status on SES and attitudes towards WMA

Multiple Comparisons based on observed means

Attitude towards WMA. LSD

Where were you born?	(I) SES	(J) SES	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Born in this Area	**Low**	**Middle**	-.2838*	.10552	**.008**	-.4917	-.0760
		Upper	-.2860	.23919	.233	-.7572	.1853
	Middle	Low	.2838*	.10552	.008	.0760	.4917
		Upper	-.0021	.24103	.993	-.4770	.4727
	Upper	Low	.2860	.23919	.233	-.1853	.7572
		Middle	.0021	.24103	.993	-.4727	.4770
Migrated from other villages	Low	Middle	-.1171	.09978	.241	-.3134	.0792
		Upper	-.0533	.19723	.787	-.4414	.3348
	Middle	Low	.1171	.09978	.241	-.0792	.3134
		Upper	.0638	.19767	.747	-.3251	.4528
	Upper	Low	.0533	.19723	.787	-.3348	.4414
		Middle	-.0638	.19767	.747	-.4528	.3251

*. The mean difference is significant at the .05 level. The error term is Mean Square(Error) = .714.

Further results on Table 12 indicated that within those who were born in the study area, the significant mean difference was only between lower and middle SES (p = 0.008). Equally, the findings showed that within those who migrated from other villages, all mean differences were not significant.

The findings in Figure 3 show that for respondents born in the study area, their attitudes towards WMA is influenced by

their SES. That is, the attitudes towards WMA are more positive for respondents with upper and middle SES but less positive for respondents with lower, implying that for respondents born in the study area, their

attitudes towards WMA improves as their SES increases. However, for respondents who migrated from other villages, their attitudes towards WMA is not significantly influenced by their SES.
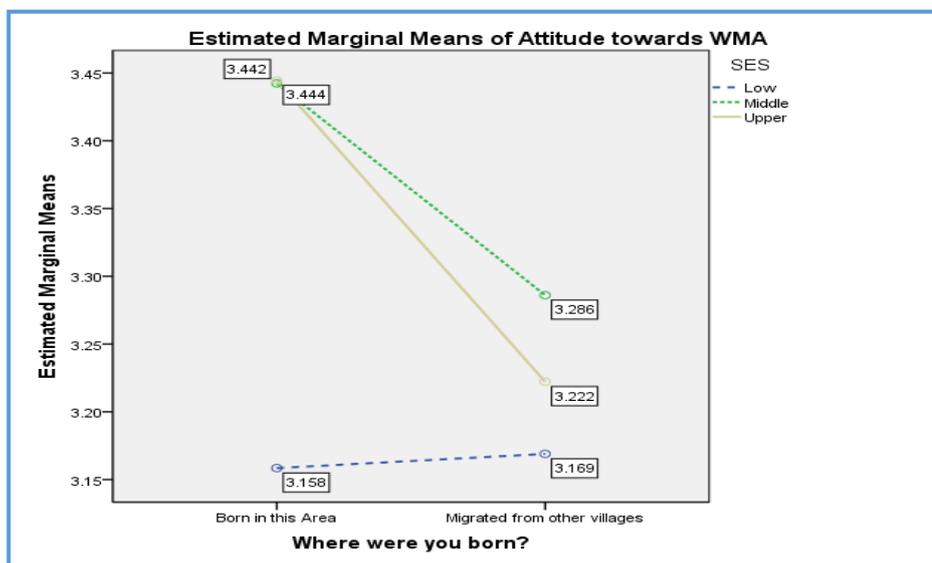

Figure 3: Effects of migration status on SES and attitude towards WMA

DISCUSSION

The findings of this study demonstrate that majority of the community members accept presence of WMA in their villages (mean = 3.8, SD = 0.050) although they are not satisfied with the benefits of WMA (mean = 2.97, SD = 0.005) and they don't agree or disagree that WMA increases opportunities for livelihood (mean = 3.04, SD = 0.052), because of this, they don't have neutral attitudes towards WMA (Mean = 3.24, SD = 0.04). Some of the main reasons for such attitude towards WMA as mentioned by participants include wildlife roaming in their village area particularly during night hours and or during dry seasons causing crops damage as well as livestock depredation and, in some cases, human attack.

The findings of this study are consistent with previous studies on residents' attitude towards conservation. For instance, a study by Agyeman *et al*. (2019) reported that presence of wildlife in village land engender negative attitudes towards wildlife as farmers retaliate by either injuring or killing wildlife. Similarly, a USAID (2013) report on evaluation of WMAs in Tanzania also

found that villagers in many WMAs agree that WMAs have contributed to increase in wildlife in WMAs which consequently has led to crop and livestock losses in some places more than in others. The USAID (2013) indicate clearly that villagers are quite happy to see wildlife increasing, if that does not mean household economic losses. This observation is also consistent with a study by Nyuapane and Poudel (2011) who reported that improved infrastructures in villages normally account for positive attitudes toward conservation. Another report by Severre (2000) shows that when local communities develop a sense of resource ownership and realize the tangible benefits that accrue from wildlife conservation, they develop a positive attitude towards conservation in their areas. However, further studies show that communities only show positive attitudes if the tangible benefits outweigh the individual costs of human–wildlife conflict and loss of access to resources (Shackelton 2000, Mackenzie 2012,). A more recent study on WMA shows that community members sometimes show resentments towards WMA because the

benefits from WMA are not always clear for the villagers (Hernold 2020).

From the moderation analysis, this study makes the case that gender of the respondents marginally moderates the relationship between respondents' SES and their attitudes towards WMAs as a livelihood capital. This implies that the effect of respondents' SES on attitudes towards WMAs depends on whether the respondent is a male or female and whether he/she is from lower, middle or upper SES. The moderation analysis also shows that migration status of respondents marginally moderates the relationship between respondents' SES and their attitudes towards WMA. This implies that the effect of respondents' SES on their attitudes towards WMA depends on whether the respondent was born in the study area or migrated from other villages. The moderation analysis also indicates that location of WMA and family size do not moderate the relationship between SES and community attitudes towards WMA. The moderation analysis findings are consistent with previous studies on residents' attitudes towards Community Based Natural Resources Management (CBNRM). For instance, Suich (2010) reported that the community attitudes towards CBNRC impacts on household livelihoods depends on a combination of various factors including the role of organisations implementing such conservation programmes, the duration and frequency of programmes, household circumstances (e.g. SES), preferences and their access to benefits. An earlier study by Igoe (2006) argued that differences exist because some households and communities are better able to take advantage of conservation benefits than others (i.e., younger, higher SES etc.). Studies by Mbaiwa (2004) and Mbaiwa and Stronza (2011) show further that poor distribution of financial and employment benefits, limited access to resources, and lack of devolution of power to local communities are conditions that undermine the success of CBNRM in enhancing local livelihoods.

CONCLUSIONS

Based on the findings of this study, it can be concluded that community members accept WMAs but are not satisfied with the benefits of WMAs as a result of this, their attitudes towards WMA is neither positive nor negative. The study also concludes that SES and gender of the participants have significant influence in shaping community attitudes, which suggests the need for forging a strong link between WMA activities such as wildlife tourism to community livelihoods so as to improve their SES. This will be important because, as noted in this study, community attitudes become more positive as SES improves. Enhancing community attitudes towards the socio-economic impacts of wildlife tourism is instrumental in fostering community participation in wildlife conservation. WMAs which place community needs and challenges central to their planning process can significantly enhance community livelihoods. This study has shown that the community attitudes towards WMA are neither positive nor negative, challenging the general assumptions from conservationists that WMA normally generates positive impacts to the local community livelihoods, which consequently stimulate local support for conservation.

RECOMMENDATIONS

On the basis of the findings of the present study, the researchers recommend the following: First, WMAs should endeavor to generate long term and equitable socio-economic benefits to enhance local community attitudes towards conservation. This is important because when the local community feel that socio-economic benefits derived from wildlife resources do not make a great impact in uplifting the standard of living, they develop negative attitudes towards WMA and conservation in general. A plethora of studies have suggested that proper distribution of financial and employment benefits, equitable access to

resources and appropriate devolution of power to local communities are significant conditions in enhancing positive attitudes towards WMA.

Second, local communities have been complaining about crop raiding, livestock depredation and lack of compensation for the destruction of farms by wildlife. Costs that communities incur from wildlife have negatively affected community members' attitudes towards wildlife conservation therefore, WMAs, should come up with proper mitigation measures to this problem so as to engender positive attitudes towards WMAs and support conservation at large among local communities. Lessons can be learned from some conservancies in Namibia and WMAs in Botswana which have managed to build positive community attitudes towards conservation through developing compensation schemes that pay members when they suffer harm from wildlife.

Third, WMAs have been providing some tangible and intangible benefits such as building schools, water points, health centers, construction of village roads and in some cases providing direct and indirect employment and education funds. However, these WMA have not done enough in raising awareness among community members to link these benefits with WMAs. Awareness raising should be done during childhood (e.g., as part of school programmes) so as to inculcate positive conservation attitudes from early childhood. Lastly, it is important to note some limitations of the present study, particularly the use of two WMAs which are more or less similar. The researchers suggest future research in community attitudes to consider making a comparison between a highly successful WMA and less successful WMA. Further, new research in WMA should consider evaluating community attitudes towards how human-wildlife conflict are mitigated across WMAs.

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