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Community Perspective on State Forest Management Regime and its Implication on Forest Sustainability: A Case Study of Chobe Forest Reserve, Botswana

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ABSTRACT

Forest management regimes have evolved worldwide over time in a quest to protect and conserve forests. This paper analyzed local communities' perspectives on the existing management regime for the Chobe Forest Reserve, Botswana. The study draws from a combination of triangulated data sources comprising household survey and focus group discussions. A total of 183 respondents from three communities were randomly sampled for the household survey, complemented with focus group discussions. Descriptive and inferential statistics and thematic analyses were used for analyzing data. Communities' perspectives were expressed through three central aspects underpinning the management regime: (1) level of satisfaction on state forest management regime, (2) willingness to partake in conservation activities, and (3) consultation and involvement in decision-making. Generally, the satisfaction scores showed that communities were ambivalent on the performance of the Chobe Forest Reserve management regime. Moreover, focus group discussants argued for inclusiveness of management approaches. This manifests from the locals' exclusion in the management and conservation of the forest, resulting in the formulation of regulations which infringes on the locals' right to access and use of forest resources for livelihood sustenance. This calls for a swift shift away from the longstanding tradition of local community exclusion but to inclusive participatory approaches.

KEYWORDS

Forest management regime; sustainable forest management; Chobe Forest Reserve; Botswana

Introduction

For centuries, forest management approaches evolved worldwide and over time in a quest to protect and conserve forests. The approaches evolved through diverse forms, from the primitive state-centralized approaches to the contemporary ones of decentralized and participatory-oriented approaches (Guthiga, 2008; Robertson & Lawes, 2005; Wily, 2002). A plethora of studies extensively researched on the different forest management approaches, albeit with noted successes and failures across a range of socio-ecological environments (Charnley & Poe, 2007; Chinangwa, Pullin, & Hockley, 2017; Odera, 2009; Wily, 2002). However, a full review of these studies is beyond the scope of this paper. According to

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Horn (2002) as cited in Obiri and Lawes (2002), state forest management (SFM) is a "forestry practice that is characterized by a centralized, authoritarian structure, a top-down approach to management and decision-making that may exclude local people" (p. 520). The regime was solely anchored on state ownership and control of forest resources, which bestowed government agencies with the key role of management and conservation of forests (Dagm, Wubalem, & Abdella, 2016; Chinangwa et al., 2017).

The SFM regime was premised on the protectionist model, with the overarching goal being preservation of forest resources close to their pristine and natural form. This model was marked by land sparing for establishment of protected areas, exclusion of communities adjacent to forests and curtailed access to resources for subsistence (Guthiga, 2008). However, the widespread pitfall of the SFM regime was alienation of local communities in management and conservation of natural resources in their proximate environments (Guthiga, 2008; Khalyani, Namiranian, Heshmatol Vaezin, & Feghhi, 2014; Wells, Brandon, & Hannah, 1992). This regime was characterized by the 'fines and fences' strategies, in which forested landscapes were demarcated by fences and local communities charged and sanctioned for trespassing (Guthiga, 2008; Kubo & Supriyanto, 2010; Wells et al., 1992). Within the lens of this approach, local communities were displaced from forested areas and considered agents of destruction to the same resources they lived with and conserved for ages before conventional conservation approaches came into being. Consequently, this sparked conflicts between forest-adjacent communities and state authorities over access to and use of forests. This negatively affected rural livelihoods, especially to those heavily reliant on forest resources for their subsistence. Under SFM, there were very little benefits accruing to the communities, as all the revenue generated from the forests accrued to the state rather than the adjacent communities (Guthiga, 2007).

Despite the established pitfalls of the state-centralized approach and the resultant paradigm shift to decentralized and participatory management approaches, SFM is still embraced in some countries such as Botswana, Iran, and Ukraine (Khalyani et al., 2014; Sarkki et al., 2019). Although inconclusive, approximately three-quarters of the world's forests are somewhat governed under state-oriented approaches (Agrawal, Chhatre, & Hardin, 2008; White & Martin, 2002). Besides, other countries use dual systems where some forests within the respective countries are governed under SFM while others through PFM (participatory forest management), such as in Ethiopia and Kenya (Guthiga, Mburu, & Holm-Mueller, 2008; Woldie & Tadesse, 2019).

Since their establishment in the late 1960s, Botswana's only six gazetted forest reserves have been governed through SFM regime. A paradigm shift to decentralized and participatory forest management approaches is yet to be embraced in Botswana (Forest Conservation Botswana, 2013; Garekae, Thakadu, & Lepetu, 2016). To date, the local communities adjacent to the forest reserves are generally alienated from their conservation and management. This is against the background that Botswana was among the pioneer countries to promulgate community-based natural resource management (CBNRM) program in 1989 (Gujadhur, 2000), with the first pilot project commencing in 1993 among the Chobe enclave community (Jones, 2002; Mbaiwa, 2015). The CBNRM program is aimed at promoting communities' active role in management and conservation of natural resources. Chobe enclave community, which is the focus of this study, borders with two protected areas: Chobe Forest Reserve (CFR) and Chobe National Park (CNP). The communities around the enclave have been actively engaged in wildlife co-management with government through the Department of Wildlife and National Parks

(DWNP) since the early 1990s (Jones, 2002). A community-based organization was formed, the Chobe Enclave Conservation Trust (CECT) which draws representation from the five villages constituting Chobe enclave community: Mabele, Kavimba, Kachikau, Satau and Parakarungu (Figure 1). Some of the noted successes of communities' participation in wildlife management in Botswana include among others (1) community policing of wildlife resources; (2) promotion of sustainable utilization of wildlife resources; (3) management-oriented monitoring systems and (4) participation in anti-poaching programs (Mbaiwa, 2015). This notable community engagement in wildlife management could also be harnessed by the forestry sector in a bid for sustainable forest management.

On the contrary, CBNRM has not yet gained support within Botswana's forestry sector. This phenomenon could be attributed to limited forest stocks which covers a mere 1% of the country's surface area and little recognition accorded to the sector, resulting in ineffective management and conservation. The sector has remained unimportant and undeveloped, notwithstanding its potential to generate significant economic returns (Mogaka et al., 2001). Another factor impeding extension of CBNRM into forests is that CBNRM programs in Botswana and the SADC region historically focused on wildlife, with implementation spearheaded by wildlife agencies and this promoted sectoral bias. Safari hunting in communal areas brought quick, immediate, and significant benefits to the local communities and therefore focus was given to wildlife. This sectoral approach resulted in failure to diversify CBNRM and prompted calls to move beyond wildlife by including other resources such as forests and forest resources (Rihoy, 1995). Forest management literature has also made similar calls for participatory forest management in Botswana as currently, communities do not actively participate in decision-making process (e.g., Garekae et al., 2016).

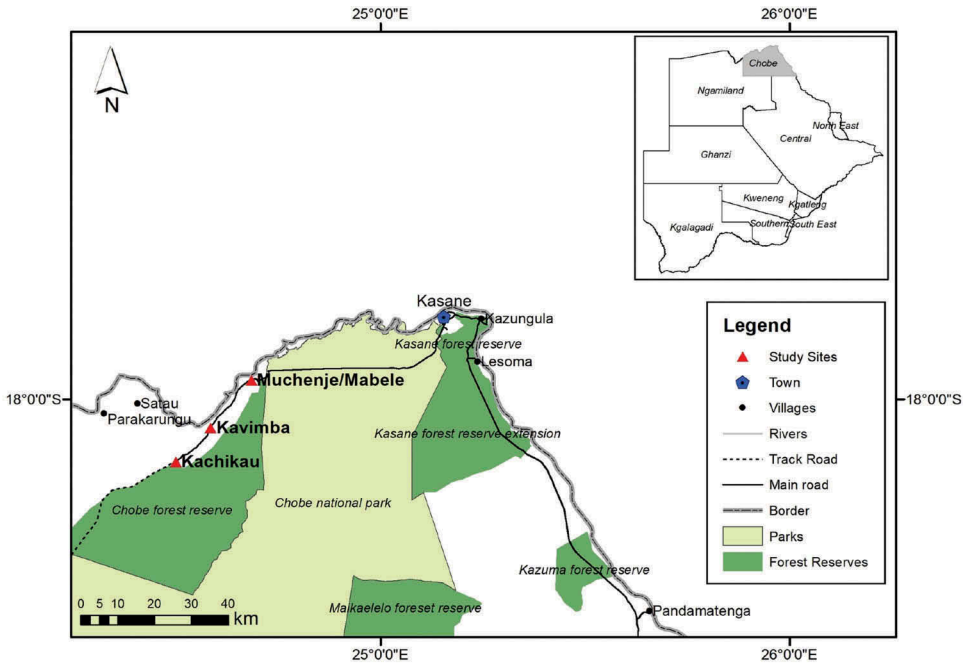

Figure 1. Location of the study villag.(Source: Garekae et al., 2017).

The founding proposition of CBNRM is to manage and protect Botswana's natural resource base across a range of resources, such as wildlife, forest, fish, land, and water (Government of Botswana, 2007). This calls for a swift community participation in forest management and conservation for sustainability. In an attempt to move toward this, it is imperative to understand the local communities' perspectives on the current forest management regime. Nevertheless, Botswana's forestry literature is inadequate to inform participatory forest management approaches, though great strands have been made on wildlife resources through the CBNRM program (e.g., Mbaiwa, 2015; Thakadu, 2005). There is paucity of knowledge on the intricate relations of forests and people, particularly on the needs, values, aspirations, views, and attitudes of the local people toward forest management and conservation. These aspects are integral to the formulation of holistic and inclusive approaches that will facilitate sustainable forest management coupled with local community participation (Badola, Barthwal, & Hussain, 2012; Takon, Amalu, & Okpara, 2013; Triguero-Mas, Olomí-Solà, Jha, Zorondo-Rodríguez, & Reyes-García, 2010; Woldie & Tadesse, 2019). This dearth of information results in uninformed decision-making on planning, management, and conservation of forests. Nonetheless, there is little available information on the biophysical environment (Fox, Vandewalle, & Alexander, 2017; Nduwayezu, Mafoko, Mojeremane, & Mhaladi, 2015), social (Garekae, Lepetu, & Thakadu, 2019; Garekae et al., 2016; Garekae, Thakadu, & Lepetu, 2017; Lepetu, Alavalapati, & Nair, 2009), governance and policy nexus (Manwa & Manwa, 2014). Against this backdrop, the study analyzed local communities' perspectives on the SFM regime governing Chobe Forest Reserve. Second, the study determined the implications of the current management regime on forest sustainability. In order to evoke communities' perspective toward the forest regime, the following three central aspects underpinning the management regime were interrogated: (1) level of satisfaction with SFM, (2) consultation and involvement in decision-making and (3) willingness to participate in forest conservation activities through participatory approaches similar to CBNRM currently implemented in the Chobe district.

Materials and methods

Study setting

The study was undertaken in Chobe district, north-western Botswana (Figure 1). Chobe district, particularly at the confluence of Zambezi and Chobe River is a quadripoint to Botswana, Zimbabwe, Zambia, and Namibia. The district comprises protected areas, wildlife management areas, and trans-boundary perennial waterbodies. On that account, Chobe district is notable for its exceptional flora and fauna, particularly diverse wildlife population, varied vegetation species such as acacia and riverine woodlands; lush flood plains, grasslands, and meandering landscapes which provide astonish scenery. Additionally, the district is endowed with the only six gazetted forest reserves in Botswana, composed of Miombo woodlands biodiversity stretching across southern-central Africa. The abundant wildlife species and the perennial Chobe River make the Chobe district the second spectacular tourist destination in Botswana after Okavango delta (Jones, 2002). The various resources in Chobe have been sustaining livelihoods of many local communities. Chobe district is stratified into two distinct categories: Chobe East (Kasane, Kazungula, Lesoma, and Pandamatenga) and West (Mabele, Kavimba, Kachikau, Satau, and

Parakarungu). Kasane Township serves as the district administrative center. The district is home to about 23,415 inhabitants (Statistics Botswana, 2011).

The villages of Mabele, Kavimba, and Kachikau were purposively sampled as study sites. They were sampled based on their proximity to the forest reserve, which is an integral source of livelihood diversification in the area. The villages form part of a stream of five villages spanning along the Chobe River basin – commonly known as the Chobe enclave. The total population size of the sampled villages amounts to 2,678 people (Statistics Botswana, 2011). The villages are multi-ethnic, with the Basubiya being predominant and mostly residing at Mabele and Kavimba while Batawana and fewer proportion of Bayeyi residing at Kachikau. The primary economic activity in the area is agriculture, particularly arable farming at subsistence level. However, the dense wildlife population in Chobe, especially of elephants poses a greater threat to arable farming. The elephants frequently raid on crops resulting in farmers reaping very minimal to no yields at all. This situation leaves the locals with no choice but to resort to natural resources for subsistence, forests included. Before conventional forest management approaches came into being, traditional leaders such as village chiefs (Dikgosi) were entrusted with the jurisdiction of all forms of natural resources on behave of the community.

Sampling

Two groups of participants were sampled: household respondents and focus group discussants (FGDs). Household respondents were drawn from Mabele, Kavimba, and Kachikau. The three villages comprised of 536 households. A total of 183 respondents were randomly sampled, accounting for 34% of the total households in the study villages. Simple random sampling procedure outlined by Babbie (2016) was followed. In regard to focus group discussants, they were purposively drawn from community-based groups (CBG), government departments, and non-governmental organizations (NGOs). CBG consisted of women's basket weavers and craft groups (Lwaavo Art Culture, Vuche-Vuche); traditional leadership (village chiefs) and conservation groups (Village Forest Conservation Committee, Chobe Enclave Conservation Trust). Departments of Tourism (DOT), Forestry and Range Resources (DFRR), Wildlife and National Parks (DWNP), and Crop Production (DCP) constituted government departments. The NGOs representatives were drawn from local and international organizations active in Chobe district. The discussants were chosen based on their profound knowledge and experience on the study's subject matter (Marshall, 1998). Three distinct FGDs, comprising five to nine discussants were conducted – drawing members from the aforementioned organizations and departments. The focus group sample size is within the ranges proposed in literature (e.g., Babbie, 2016; Niewenhuis & Smit, 2012), which recommended an ideal sample size between 5 and 15 people. Moreover, Gill et al. (2008) contend that "… focus groups can work successfully with as few as three and as many as 14 participants" (p. 293). The FGDs were held at Kavimba.

Data collection and analysis

Quantitative and qualitative data were collected. A semi-structured survey questionnaire and interview guide were used for soliciting quantitative and qualitative data, respectively. The survey questionnaire comprised both open- and closed-ended questions. The questionnaires were administered to the respondents by one of the authors. The data collection took place during off-agricultural activities, when most of the households were present within the

villages; hence, easy of access to locate them. The field work was conducted over a period of eight weeks. The questionnaire elicited data on the following: (1) respondent's demographic and socio-economic characteristics, (2) Forest management and conservation, (3) consultation and involvement of communities in decision-making on forest management and conservation as well as (4) communities' willingness to participate in conservation activities. For focus groups, the discussion points revolved around the following issues: access to forest goods and services; forest management responsibility and participation in the planning process. During each session, the moderator asked questions revolving around the themes and facilitated the discussions. Note-taking was done during and after the discussion sessions. Generally, the discussions lasted almost an hour.

The survey data were captured on Statistical Package for Social Sciences (SPSS) version 24. Frequencies, proportions, and measures of central tendency and dispersion were used for summarizing quantitative data. One-way analysis of variance (ANOVA) and independent-samples t-test were conducted to determine significant differences between satisfaction with SFM regime and socio-economic, demographic, and institutional factors. Assumptions associated with the statistical tests were assessed and no violations were observed except for one t-test results where Levene's test for equality of variances was not tenable but the alternative t-value under 'equal variances not assumed' was considered (Field, 2009). Qualitative data from FDGs were mainly used to buttress the survey data. Thematic analysis approach (Braun & Clarke, 2006) was followed for exploring salient viewpoints from the FGDs.

Results

Respondent's profile

Females constituted the majority (61.2%) (Table 1). Most of the respondents were middle aged, as demonstrated by the mean age of 49.3 ± 17.28 years, ranging from 18 to 94 years. Almost half (44.8%) of the respondents had attained a minimum of primary education as their highest education level while only ten (5.5%) indicated tertiary. However, 13.1% of the respondents had not attained any form of formal education (Table 1). About half (54%) of the respondents were unemployed, 12.6% were employed on full-time basis while 14.2% considered themselves to be self-employed. An average household size comprised 4.8 ± 2.64 people and 42.8% of them reported a monthly income not exceeding USD 45.00. However, only seven households (3.9%) indicated an average monthly income amounting to USD 270.00 or more (Table 1).

Perspectives on SFM regime

The jurisdiction of Chobe Forest Reserve and the rest of the gazetted forest reserves in Chobe district are currently governed through SFM regime. Communities' perspectives were expressed through three central aspects underpinning the management regime: (1) level of satisfaction on SFM regime, (2) willingness to partake in conservation activities, and (3) consultation and involvement in decision-making.

Table 1. Summary of households' profile.

Variable	Items	N	M (SD)	%	n
Gender	Male			38.8	71
	Female			61.2	112
Age (years)			49.33 (17.28)		182
Ethnicity	Basubiya			53	97
	Bayei			13.7	25
	Batawana			10.9	20
	Hambukushu			6.6	12
	Basarwa			7.1	13
	Banabjwa			.5	1
	Others			8.2	15
Education level	None			13.1	24
	Primary			44.8	82
	Secondary			36.1	66
	Tertiary			5.5	10
Employment status	Full-time employed			12.6	23
	Part-time employed			6.6	12
	Self-employed			14.2	26
	Unemployed			54.1	99
	Others			12.6	23
Average monthly income (USD)	< 45.00			42.8	77
	> 45.00 < 90.00			32.2	58
	> 90.00 < 135.00			7.8	14
	> 135.00 < 180.00			3.9	7
	> 180.00 < 225.00			6.1	11
	> 225.00 < 270.00			3.3	6
	> 270.00			3.9	7
Household size (Years)		183	4.85 (2.64)		
Length of residency (years)			40.26 (20.73)		175

Satisfaction with SFM regime

The level of satisfaction with SFM regime was elicited by asking the respondents to rate their overall satisfaction with the way CFR is currently managed on a five-point Likert type scale. The scale comprised two extremes: very dissatisfied and very satisfied. Generally, the results demonstrated that respondents harbored ambivalent viewpoints (M = 3.49 ± 1.49) on the performance of SFM approach. The results imply that respondents were neither satisfied nor dissatisfied with the manner in which CFR is currently governed. The respondents decried locals' exclusion in management decisions, which result in the formulation of regulations which infringes on their right to access the adjacent forests for livelihood sustenance. This view is in accordance with that of the focus group discussants. The discussants, especially CBG representatives denounced inadequate participation of the locals in management decisions, which are mostly reached through top-down approach – with the community only involved during implementation. However, this is one of the established pitfalls of SFM.

> We are rarely part of the decision-making, we only get to learn about such decisions during consultation meetings convened by the forestry officials. But we need to be part of the decision-making – people should be accorded an opportunity to express their views. In that way, we will share our views and educate one another – then we will be able to reach a common understanding regarding the management of the forest and it will abate conflicts between the community and the officials. But if they (forestry officials) impose decisions upon us, it might end up brewing conflicts over the forest reserve.

Against this narrative, the discussants opined that the forest reserve management regime should be inclusive of all stakeholders, with a participatory governance approach

preferred. This approach entails bringing together all concerned stakeholder's in the management of forests, with clearly defined roles and expectations from all parties.

Consultation and involvement in forest management and conservation

The majority of the respondents (84.1%) affirmed that forestry officials consult locals on issues pertaining to management and conservation of forest, such as on sustainable harvesting, tree planting, and wildfire management, among others. However, 15.9% of them disagreed on being consulted by forestry officials. On average, the respondents were satisfied (M = 3.56 ± 1.50) with the level of consultation from forestry officials. Disaggregating the respondent's overall satisfaction with consultation against their views on CFR management regime provided an encouraging insight. Respondents overall satisfaction with forestry officials' consultation significantly influenced their view points on CFR management approach ($t_{179,\ 116.59} = -12.70$, $p = .000$). The finding implies that respondents satisfied with consultation (M = 4.31 ± 0.96) were more likely to embrace CFR management approach compared to those not satisfied (M = 2.13 ± 1.19). On the contrary, respondents expressed mixed reactions on the underlying reasons behind their satisfaction level with consultation by forestry officials. Those who were dissatisfied assert that forestry officials are hardly seen in their area and contended that sometimes the forestry officials imposed decisions without their input despite them being the custodian of the resources. However, others praised the forestry officials and acknowledged among other things consultation and engagement in decision-making structures, education on the importance of forest ecosystems, promotion of sustainable utilization and good working relations between the community and forestry officials.

About half (54.6%) of the respondents acknowledged communities' participation in forestry decision-making process whereas a considerable number disagreed (41.5%). Of noteworthy, participation in decision-making process increases the probability of communities favoring the current CFR management approach ($t_{175,\ 146.62} = 5.67$, $p = .000$). The village forest conservation committee group was identified as the medium which facilitates communities' participation in decision-making process. The former is a grassroots level association made up of Chobe enclave community members and interacts with forestry officials on various issues. This is provided for in the country's Forest Policy (2011), which envisages increasing community participation in forest management through formation of community-based forest organizations. Although this may not be a realistic approach under SFM, it ameliorates the exclusionary nature of the regime and accords the community passive engagement with the forestry officials. In light of the above observation, focus group discussants concurred that stakeholders participate in forest management decisions. The stakeholders herein the community, CBG, NGOs, and other relevant authorities play a critical role in forest management decisions. In bid to strengthening communities and other stakeholders' engagement in decision-making process, the discussants identified the following as key strategies: capacity building, resource access, integrative policies, and outreach and educational programs. Integrative policies recognize community' reliance on forests and facilitate adequate access to forest resources, hence ensuring sustained harvesting. This will foster a cordial relationship between the community, stakeholders, and forestry officials, which nurtures a common goal of managing the forests sustainably.

> We need to be capacitated on the importance of forests and conservation. This will enable us to actively engage with the relevant authorities entrusted with forest management and conservation. We will be able to voice our opinions on how best the adjacent forests could be managed, taking into consideration our needs, values and aspirations. All this will assist in informed decision-making.

Willingness to participate in management and conservation activities

A greater proportion of the respondents (80.3%) vowed active participation in forestry conservation programs and activities. The respondents' willingness could be mediated by the benefits they derive from the forest for their livelihood subsistence. Forest resources provided household energy needs, construction materials, agricultural inputs, and dietary needs.

> Truth be told, Chobe enclave locals including myself are greatly reliant on this forest. There are various things which we gather from the forest, more so that it is not all of us who got the means against the face of high unemployment rate in the country. Among others, we collect firewood, wild foods, medicines, craft and construction materials from this forest. As you might know, we are the people of the river. For us to catch fishes, we need a canoe. So, in this forest adjacent to us, there are valuable tree species such as Baikiaea plurijuga used for carving 'dugout canoes'. Moreover, those with livestock also graze in the forest. There is life in this forest!

Focus group discussants opined that stakeholders could actively participate in management and conservation of forests through formation of forest conservation organizations, laboring for restoration of degraded areas, forest resource development, and law enforcement. One of the success stories which could be underpinned to these claims includes post-degradation reforestation by Kachikau's residents. Although the aforementioned claims have not been executed in the forestry sector, some of them have triumphed in fostering active community participation in other natural resource sectors such as wildlife. As reiterated earlier, the Chobe enclave community is actively engaged in wildlife co-management with government through their community trust. Among others, they assist with patrol services and conducting species inventory. This notable endeavor provides a potential platform to harness community engagement in forest management and conservation.

Factors influencing community's satisfaction with SFM regime

In order to get a more insight on communities' perspectives on CFR management regime, their level of satisfaction with SFM was characterized across a range of socio-economic, demographic, and institutional factors. On that note, differences in the level of satisfaction with SFM against factors such as gender, age, place of residency, education, conservation attitude, forest dependency, consultation, and decision-making were established. Independent samples t-test and ANOVA were used for assessing significant differences. The findings revealed no statistically significant association between satisfaction level and gender and forest dependency while age, place of residency, education, conservation attitude, consultation, and decision-making significantly influenced satisfaction (Table 2).

With regard to age, post-hoc comparisons using Turkey HSD test indicated that satisfaction with CFR management approach significantly differed among the youth ($M = 3.81 \pm 1.38$) and elderly ($M = 3.09 \pm 1.53$) while the middle aged ($M = 3.53 \pm 1.51$) did not differ with either of the groups. The effect of age on satisfaction level was somewhat pronounced and accounted for at least 6% of the variance on overall satisfaction with CFR management regime

(Table 2). The youth recorded a slightly higher mean score compared to their counterparts, suggesting that they were more likely to express greater satisfaction with CFR management approach.

Satisfaction with CFR management approach significantly differed with place of residency. Post-hoc comparisons using Hochberg GT2 test revealed that residents of Kachikau (M = 3.91 ± 1.40) significantly differed from the ones in Mabele (M = 3.05 ± 1.47) and Kavimba (M = 3.18 ± 1.52) in evaluating their satisfaction level. However, residents of Mabele and Kavimba did not differ significantly from each other. The actual effect of place of residency on satisfaction level was moderately strong,[1] accounting for about 7% of the variance. The findings suggest that residents of Kachikau were more likely to be satisfied with management approach compared to the other two villages.

Similarly, education[2] significantly influenced overall satisfaction toward CFR management regime. Post-hoc comparisons using Hochberg GT2 test showed that overall satisfaction ratings differed between respondents without formal education (M = 2.83 ± 1.52) and those with secondary education (M = 3.82 ± 1.38). However, satisfaction scores did not differ for primary (M = 3.52 ± 1.48) and tertiary (M = 2.70 ± 1.70) education holders. Education induced a moderate effect toward overall satisfaction and it explained 6% of the total variance (Table 2). The results demonstrate that respondents who attained secondary education portray greater chances of being satisfied with CFR management approach. This is evidenced from the means plot trend which depicts satisfaction ratings sharply increasing from the category of 'none education' to 'secondary', then rapidly decreasing toward 'tertiary education'.

The level of satisfaction with CFR management approach significantly varied with conservation attitudes. Respondents who harbored positive attitudes (M = 4.02 ± 1.26) toward forest conservation were more likely to embrace the management approach compared to those with negative attitudes (M = 2.95 ± 1.52). Furthermore, the effect of conservation attitude was quite strong and attributed to 13% of the variance in overall satisfaction. Lastly, consultation and involvement in decision-making significantly influenced respondents overall satisfaction level with CFR management approach. The results suggest that respondents who affirmed consultation (M = 3.74 ± 1.41) and involvement in decision-making (M = 3.98 ± 1.30) exhibited greater probability of embracing CFR management approach compared to those in disagreement

Table 2. Summary of the association between satisfaction level with CFR management regime and selected explanatory factors.

Variable	*df*	*F*	*t*	η^2	*p*
Place of residency	2, 179	7.096		.073	.001*
Age	2, 178	3.586		.039	.030*
Education	3,178	3.718		.059	.013*
Gender	137.785		.607	.002	.545
Conservation attitude	151.245		−5.016	.127	.000*
Forest dependency	154		−.830	.004	.408
Consultation	179		5.774	.157	.000*
Decision-making	146.624		5.673	.157	.000*

*$p < .05$, *df*: degrees of freedom, *F*: F ratio (ANOVA), *t*: t-value (t-test), η^2: Eta squared

[1]Small effect = .01, medium effect = .06 and large effect = .14 (Cohen, 1988, p. 284).
[2]Primary = 7 years, Junior Secondary = 3 years, Senior Secondary = 2 Years; Primary and Junior secondary education levels are pursued consecutively while Senior secondary is subject to a minimum pass at Junior exist examinations.

(M = 2.11 ± 1.17 and M = 2.76 ± 1.49, respectively). The influence of consultation and involvement in decision-making on satisfaction ratings was quite strong and accounted for 16% of the variance.

Discussion

The study findings revealed that communities harbored ambivalent viewpoints toward SFM regime governing Chobe Forest Reserve. The results imply that communities were neither satisfied nor dissatisfied with the performance of CFR management approach but rather held more or less neutral viewpoints. This result is in accordance with the focus group discussants sentiments regarding inclusive forest management approaches founded on participatory principles. This narrative suggests that the discussants might be somehow dissatisfied with SFM regime; a notion resembling respondents viewpoints. A possible explanation for the ambivalent viewpoints exhibited on the current CFR management regime may be attributed to Botswana's top-down forestry sector. Despite the embraced paradigm shift on forest management worldwide, it still remains alien to the country's forestry sector (Garekae et al., 2016). Since their inception, Botswana's protected forest areas have been governed under SFM regime. The regime is top-down in nature and characterized by the centralized and authoritarian structure in forest management and conservation.

Studies from elsewhere have shown that since SFM approach is exclusionary in principle and strongly grounded on the pristine conservation of resources, it is more likely to render local communities disgruntled (Mehta & Heinen, 2001; Nagendra, 2007; Obua, Banana, & Turyahabwe, 1998). However, the case of Chobe enclave community is rather a peculiar one. Chobe enclave is contiguous with CFR and the locals' livelihood is intertwined with the forest resources. Moreover, the locals had sustainably managed and conserved the forests before the conventional management approaches came into being in the late 1960s. During that time, forest jurisdiction was at the helm of traditional leadership, coupled with informal legislations and customs. As it is the case elsewhere, the state centralized management approach toward protected areas has curtailed the *a priori* roles and responsibilities held by communities adjacent to the forest in management and conservation of forests. On this basis, the CFR management regime alienates the local communities from playing active role in forest management and conservation. However, this is against the established role of Chobe enclave locals in one of the participatory management approach governing wildlife management and conservation in their area, through the CBNRM program (Jones, 2002; Mbaiwa, 2015). Through this approach, there is a joint initiative between the community and government, demonstrating the communities' commitment toward wildlife conservation. Subject to this longstanding engagement in wildlife co-management, it may spark the desire for a similar approach in the forestry sector. Consequently, this may polarize the locals' viewpoints on CFR management approach, toward being positive than neutral.

The finding of communities expressing ambivalent satisfaction with SFM conforms that of another study conducted locally (Lepetu, 2012). The study found that SFM was less preferred among the possible forest management approaches, with the majority preferring PFM. Although this study fell short of modeling satisfaction level across hypothesized management regimes (PFM and CFM) as done by others (e.g., Guthiga et al., 2008), it contended that communities' neutral viewpoints on SFM might be an indicator of the

desire for other forms of management approaches which are community or participatory oriented, such as the one they are engaged in with the wildlife sector. This sentiment is buttressed by Garekae et al. (2016) study which expounded on the Chobe enclave local's desire for devolution of CFR from 'state forest' to 'community forest'. This endeavor could be realized through fostering partnership with the already existing community structures at grass roots level, in this case, Chobe Enclave Conservation Trust.

Although not common, some studies conducted regionally (Gugushe, Grundy, Theron, & Chirwa, 2008; Obiri & Lawes, 2002; Sikhitha, 1999) and elsewhere (Fabra-Crespo, Mola-Yudego, Gritten, & Rojas-Briales, 2012; Guthiga et al., 2008) established that local people were greatly satisfied with the protectionist-oriented forest management regime over participatory-oriented one such as community-based forest management and participatory forest management. For example, Obiri and Lawes (2002) found that local forest users at Eastern Cape, South Africa, supported the protectionist-oriented forest management regime over community-lead and participatory ones. In their study, about 68% of the forest stakeholders preferred SFM over community forest management and participatory forest management. In Kenya, communities bordering Kakamega Forest greatly supported state-led protectionist approach while participatory one received less support (Guthiga et al., 2008). While in Bangladesh, almost half (51%) of the respondents were generally satisfied with the state-led protectionist model governing the Sundarbans Mangrove Forest (Roy, Alam, & Gow, 2013). Despite community-driven and participatory approaches been poised as vital alternatives toward inclusiveness, the aforementioned findings demonstrate that some communities are still in supportive of state-lead protectionist model. As argued by Obiri and Lawes (2002), the counterintuitive observation could be attributed to the diminished efficacy of the previously recognized local level institutions entrusted with management and conservation of natural resources. For instance, some community-based organizations (CBOs) which were involved in wildlife co-management in Botswana were embroiled in poor management and accountability of funds generated. This phenomenon may instill a sense of mistrust among the general community members when it comes to playing a leading role toward natural resource management and conservation.

Although the respondents were equivocal toward SFM regime, the majority of them acknowledged consultation from forestry officials on issues pertaining to management and conservation of forests. On average, the respondents were satisfied with the level of consultation. The level of satisfaction with consultation greatly influenced respondents overall perspectives on SFM approach. Those respondents who were satisfied with consultation from forestry officials were more likely to embrace SFM approach. The plausible explanation for this observation could be that consultation acquainted respondents with requisite knowledge and information on forest management and conservation. Consultation establishes and builds rapport between forestry officials and community members. Hence, this study calls for intensified community consultation as one way of fostering communities' participation in management and conservation of forests albeit under undesirable approaches such as SFM regime. This is a pivotal step toward forest sustainability. Despite the respondents being satisfied with consultation, they offered mixed reasons on the underlying impetus. A common sentiment among those satisfied was "… *we get consulted, the forestry officials educate us on the importance of forests and they encourage sustainable harvesting of the resources*" while others countered that "… *we hardly see the forestry officials in our villages and they impose decisions upon us*". We suggest that the contrasting views could be tied to the communication platforms

mostly used by the forestry officials when reaching out to the community. The most widely used communication platform across Botswana, more especially in rural areas is the '*kgotla* system' (Osei-Hwedie, 2010; Serema, 2002). A kgotla is an enclosed structure within a village, where public meetings, community councils, and customary court convene. Throughout Botswana, village meetings convened by either government officials or village leaders are normally held at the kgotla. Although the *kgotla* system remains an important forum for public communal meetings, its effectiveness as a space for public participation and consultation is heavily contested (Molebatsi, 2013). Studies have noted that the *kgotla* system falls short of reaching out to the wider community because the attendance is normally dominated by certain groups of people who bear influence on the views and opinions expressed herein, for example the elites and elderly people (Molebatsi, 2013). Furthermore, kgotla meetings are poorly attended particularly by the youth. This challenges the forestry officials to explore other alternative communication platforms that are target specific to the intended audience such as the youth and women.

Despite the decision-making process centralized and vested with the state authority under SFM approach, respondents affirmed participation in the decision-making mostly through their grass-roots level conservation committee. Although this form of participation is somewhat tacit, it nonetheless offers communities an opportunity to express their views and opinions albeit under the rigid structure of the management approach. Furthermore, participation in decision-making increased the community's prospects of embracing SFM regime. Against this backdrop, participation in decision-making incentivizes communities to actively engage in forestry issues as well as support the status quo. Of noteworthy, an overwhelming majority of the respondents expressed their willingness to participate in conservation programs and activities. This finding counters the respondent's equivocal satisfaction with SFM regime, demonstrating their desire for involvement in CFR management and conservation. The respondent's willingness to participate in conservation programs and activities is an encouraging insight. Their willingness could be harnessed to facilitate community's active participation in forestry management. Moreover, respondents' willingness provides a basis for the establishment of community-led or participatory forest management approaches. The finding on communities' willingness to participate in forest management is consistent with studies from elsewhere also governed by the SFM regime (Roy et al., 2013). In their study, almost half of the forest-dependent community vowed to partake in Sundarbans Mangrove Forest conservation and management – with the ulterior motive of becoming proprietors. Therefore, the community's willingness was propelled by the exclusionary management regime in place; hence, they strived for inclusion in governance of Sundarbans Mangrove Forest in Bangladesh.

As evidenced from the literature, perspective toward forest management approaches is a function of an array of factors and key among them includes demographic, social, economic, contextual, and institutional factors (Infield & Namara, 2001; McFarlane & Boxall, 2000). In this study, numerous factors significantly influenced communities overall satisfaction with SFM regime: place of residency, age, education level, conservation attitude, consultation, and decision-making. With regard to place of residency, residents of Kachikau were more likely to be satisfied with the CFR management regime compared to those residing at Mabele and Kavimba. This finding could be tied to residents of Kachikau's proactive-conservationist behavior. Working as a collective, the residents rehabilitated an area which was first inhabited by the first settlers – known as Old Kachikau. They planted both indigenous and exotic tree

species in the area and ensured their sustainability. Similarly, some residents practiced species domestication – particularly some of the indigenous tree species endowed in the area such as Rhodesian teak (*Baikiaea plurijuga*). These endeavors demonstrate residents of Kachikau's zeal for conservation matters. Against this background, the residents may have interacted more often with the forestry officials, a phenomenon which might accord support for SFM approach. This observation is buttressed by Guthiga (2007) who postulated that individuals engaged in any forest conservation activities possess greater chances of being satisfied with forest management, regardless of the regime in place.

The youth harbored greater chances of being satisfied with CFR management regime as compared to the middle aged and the elderly. This counterintuitive result could be attributed to the youth's minimal participation in community-based natural resources in Botswana. Most of the CBO members are dominated by the elderly people, a feature which may urge the youth to prefer SFM regime. Since young people are considered agent of change, their favorable satisfaction on CFR management offers an opportunity to harness their zeal in bid to promoting sustainable forest management.

Education exhibited a similar trend to the age of respondent on satisfaction level. Secondary education holders possessed greater chances of favoring SFM approach than those with lower education levels and or none. Although higher education was expected to favor more participatory conservation approaches, the contravening results owe to Botswana's education system which is still wanting in environmental education, particularly at elementary level. Generally, tertiary education holders – particularly those who pursued natural resources-related programs are abreast with the paradigm shifts in natural resource discourse as well as better management approaches for resource sustainability. Education tends to raise one's awareness on the importance of sustainable management of environmental resources, including forests (Obua et al., 1998; Shrestha & Alavalapati, 2006). However, this study finding contradicts with the observation made by Guthiga et al. (2008) in Kenya. In their study, educated respondents were more likely to be dissatisfied with the protectionist approach governing Kakamega Forest. Guthiga (2008) cautioned that higher level of education is likely to raise respondents' expectations on the performance of particular forest management regime in charge – hence more likely to be dissatisfied if the regime does not perform per their expectations. The findings revealed a positive association between conservation attitudes and satisfaction with the SFM approach. Respondents who harbored positive attitudes toward forest conservation were more likely to be satisfied with CFR management approach. This finding could be linked to people's quest for conservation of the remnant miombo woodlands in their proximate environment, which were once under threat of logging in the 1980s.

Consultation and participation in decision-making process influenced respondent's satisfaction with CFR management approach. Respondents' who affirmed consultation and participated in decision-making were more likely to favor SFM approach compared to those who disputed. This observation is not surprising as consultation and participation in decision-making serve as an incentive for favoring any forest management regime set in place. Possibly, this could ameliorate the shortfalls of SFM approach which is largely exclusionary in the day-to-day running of the management affairs. The results conform the observation by Guthiga's (2007) study in Kenya. In their study, engagement in decision-making process increased community's probability of favoring the state protectionist approach governing Kakamega Forest. While in South Africa, Thondhlana and Cundill (2017) noted lack of consultation to be at the height of local people-park official conflicts over the management of protected areas.

This culminated into local people bearing unfavorable perceptions toward protected areas and park officials. Moreover, the locals decried about the dearth of information on among other things opportunities arising from the reserve management, changes in managerial approaches and potential expansion of reserve boundaries.

Conclusion and implications on forest sustainability

The study analyzed local communities' perspectives on the SFM regime governing Chobe Forest Reserve in Botswana. Although the locals were equivocal on the management regime, they vowed willingness to participate in forest conservation programs and activities. Hence, this calls for a shift away from the longstanding practices of local community exclusion but to inclusive participatory approaches. The locals' willingness could be harnessed by incorporating participatory forest programs and activities within the already existing CBNRM approach implemented in the study villages. This endeavor will foster active community engagement in forest management and conservation, which is a cornerstone for forest sustainability worldwide. Community perspective on the SFM regime varied with demographic, social, economic, contextual, and institutional factors. These factors need to be taken into consideration during planning and development of management and conservation strategies in a bid to promoting sustainable forestry.

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