

Stakeholders' perceptions on water resources management in the Okavango Delta, Botswana

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Abstracts

Cultural perceptions are an integral part of rural water resources governance, which ostensibly conflict with urban water resources management. Issues of access to water and culturally embedded gender roles are rife in water governance debates. Notwithstanding the importance of cultural perceptions in water management, no study has been undertaken to assess stakeholders' perceptions on customary and statutory water management institutions and their impact on water management issues in the Okavango Delta. Guided by the cultural lag concept, purposive sampling technique was used to select three villages (that is, Shakawe, Tubu and Shorobe) in the study area. While 455 household heads were randomly selected to elicit pertinent socio-economic and cultural data through questionnaire survey, expert purposive sampling technique was used to select 9 key informants from whom in-depth information on the subject was obtained. The results indicated that local people's perceptions on cultural water management practices were mostly tied to their belief systems even though the existing management strategy is grossly sympathetic towards statutory water management institutions. The paper recommends the blending of customary and statutory water management institutions and placing both of them on the same pedestal in the management of water resources in the Okavango Delta and other similar social-ecological milieu.

Keywords: allocation, culture, ethnic, intangible, Okavango Delta, perceptions, Tswana, water management

1 Introduction

Perceptions and cultural traditions, embodied in social institutions are part of the intangible aspects of water resources management (Akpabio, 2011). They constitute important elements of water resources management in most developing countries and elsewhere. Perceptions in this context refer to the subjective opinions on and beliefs about water resources, which derive mostly from the cultural traditions of various ethnic groups. Whereas customary institutions constitute nonstate, socially embedded beliefs based on culture and daily practice meant for water resources management (Gachenga, 2012), statutory institutions denote formalised arrangements based on explicit organisational structures, contracts and legal rights often introduced by governments (Akpabio, 2011). There is a clear distinction between statutory and customary institutions. While customary water management institutions are informally and unwritten humanly devised constraints and behaviours that are accepted by the community and persist over time, statutory water management institutions are officially written and codified legislations (Clever, 2002). Contrary to customary water management institutions, which are enforced by the elders and spirit mediums, statutory water

management institutions are prescribed by the central government. Whereas government authorities enforce statutory institutions by means of sanctions such as fines, imprisonment and in some extreme cases execution, implementation of customary institutions takes place by expulsion from the community, ostracism by friends and neighbours or loss of customary reputation (Gondo *et al* 2018; Nkonya, 2006; Pejovich, 2012). Based on Nkonya (2006) and Pejovich, (2012) customary institutions are rules which were developed by the forefathers based on their societal understanding at a point in time. These are customs, moral values, religious beliefs and all other norms of behaviour that have passed the test of time. Customary water management institutions are often known as “[o]ld ethos, the hand of the past, or the carriers of history” (Pejovich, 2012). Thus, they embody the community’s prevailing perceptions about the world, accumulated wisdom of the past and current set of values. Literature has shown that customary water management institutions include community’s views about water resources management (Nkonya, 2006; Uphoff, 1986), the accumulated wisdom of the past in water resources management (Uphoff, 1986) and the current set of affairs. In this regard, Nkonya (2006) remarks customary institutions is part of the community’s culture. They are unwritten laws that are maintained from one generation to another through various transitional mechanisms among them being imitations, oral, sanctions, taboos, traditions, cultural norms, beliefs, values, social networks, kinship ties and codes of conduct and teaching. The enforcement of customary institutions contrasts unambiguously with the methods employed to enforce statutory institutions. The differences in enforcement strategies have to a greater extent a bearing on the degree of compliance and perceptions within both sets of institutions.

While several studies have acknowledged the cultural significance of customary institutions and their influence in determining the general management of water resources (Akpabio, 2011; Craig and Gachenga, 2010; Gachenga, 2012; Gondo *et al*, 2018; Huggins, 2000; Kuruk; 2002; Twikirize, 2005; Maganga, 2003; Latham and Chikozho, 2004), there is little attention on water governance issues such as access, use or allocation within the Okavango Delta. Little is known in this study area about how customary meanings and values assigned to water affect the success of statutory water governance institutions. As noted by Akpabio (2011), the knowledge of customary practices is very crucial in helping government and development agencies negotiate their water development projects and initiatives in rural communities. The main objective of this paper is to assess key stakeholders’ perceptions about the management of water resources by means of both customary and statutory water governance institutions in the Okavango Delta, Botswana.

2 Conceptual framework underpinning perceptions on water resources management

The thrust of the paper is underpinned in Ogburn's (1886–1959) *cultural lag* concept, which helps to explain how rural and urban people predispose themselves to water management issues. In Ogburn's thesis, culture consists of both concrete and nonconcrete components. While the tangible (material) aspect of culture comprises objects such as fabrics, food, musical instruments, artefacts, communication technology gadgets, etc., the intangible (non-material) aspect comprises the language, norms, mores and values of the people. Ogburn demonstrated that the material aspects of culture change at a faster rate than its non-material aspects, which makes the latter to lag behind the former (Volti, 2004). This implies that people might not readily change their perspectives on how they understand their world unlike the change that occurs among them in relation to their responses to newly introduced, concrete innovations (see Kolawole, 2014; Lewin, 1947). Invariably, the rate of change happens at a faster rate in the material than in the non-material aspect of culture due to many discoveries and inventions (Godin, 2010). While the change in material component of culture is visible and pervasive, that of non-material aspect of culture is not easily noticeable and slow if at all it changes over time. Elsewhere, Kolawole (2001; 2012) posits that:

Local people are naturally inclined to uphold age-long philosophies, mores, values and traditions, making them to exhibit more preference for their knowledge systems even in a technology-burgeoned environment [and] ...regardless of the degree to which they have embraced modernity, local people continue to prefer the knowledge which belongs to them in time and space.

It is this cultural delay (Godin, 2010), which influences indigenous people in the Okavango Delta to perceive customary water management institutions and practices as having a crucial role in the management of water resources in their locality.

3 Methodology

3.1 Study area and sample size

This study adopted a cross-section design in which data gathering is done at one point in time in order to give a snapshot of the phenomenon under study (Levin, 2006). This type of study was adopted because its usage results in no need for making follow ups and it is relatively inexpensive (Garn *et al.*, 2018) and therefore takes up little time and resources to conduct. This study was conducted in the three villages of Shakawe, Tubu and Shorobe in the Okavango Delta (see Fig. 1). Socio-economic and cultural background of the residents in the study sites were the focus of investigation. The three study villages comprising major ethnic groups (BaSarwa, BaYeyi, BaHerero and HamBukushu) were purposively selected. The rural nature of the villages provides a conducive platform for studying the perceptions on cultural issues on water management practices as opposed to the centralised statutory institutional structures. Nonetheless, data derived from the study area might not truly represent the vast socio-economic and cultural diversity of

Botswana. However, this study was very significant as it opened up research opportunities in areas of distributive water governance, which is mostly overlooked by many researchers probing social issues in the area. Using Taro Yamane’s formula (see Table 1), a total of 461 household heads (55 from Shorobe, 315 from Shakawe and 91 in Tubu) were proportionately sampled from each village. However, a total of 455 instead of the listed 461 household heads were interviewed in the end because of the failure to get consent from some household heads, absence from homestead by certain homestead owners during data collection periods, etc.

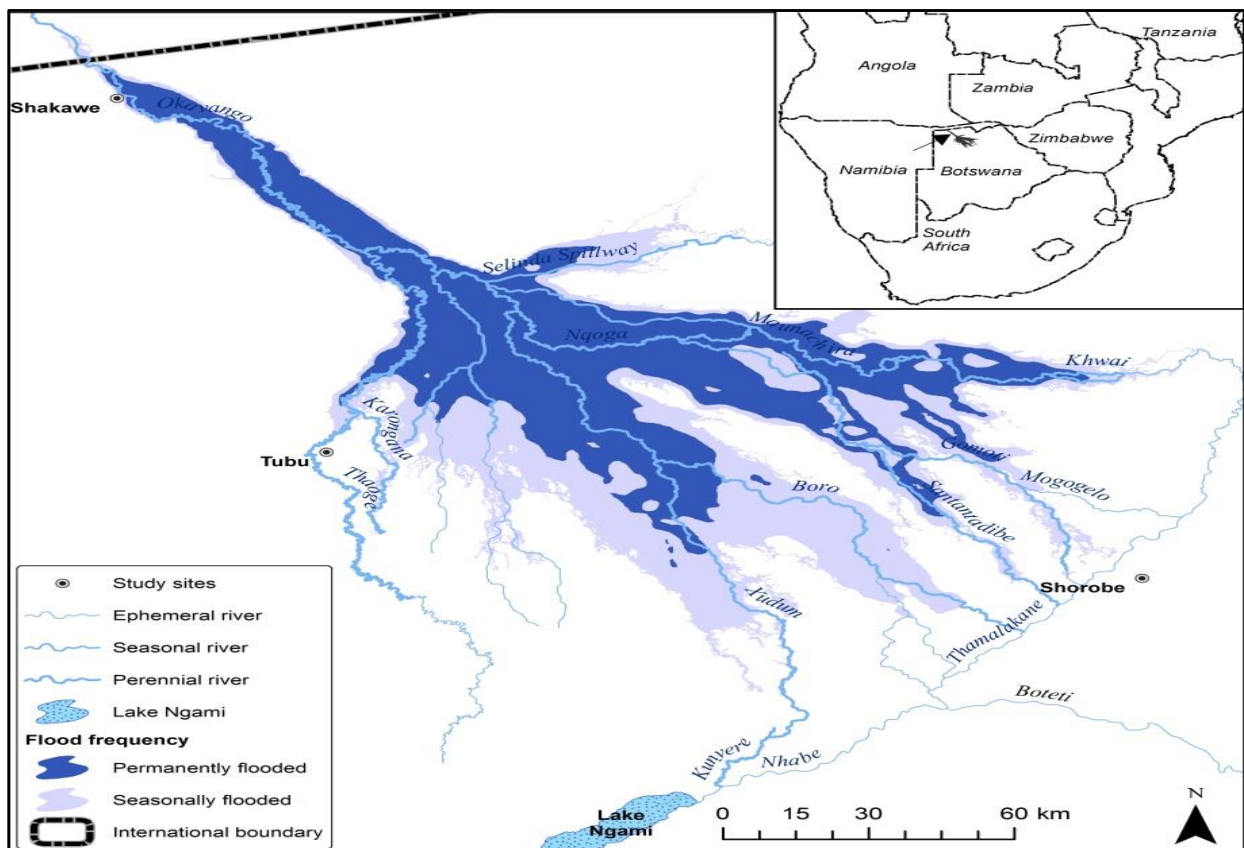


Figure 1 Map of the study area (Source Okavango Research Institute GIS Lab, 2016)

3.2 Instrumentation and measurement of variables

The instruments for data collection comprised a household interview schedules, focus group discussion (FGD) and interview guides, all designed to elicit relevant information on stakeholders’ perceptions about the customary and statutory management of water resources. The choice of a questionnaire and interview schedule as data collection tools were informed by the fact that the tools yield data within a very short space of time (Birmingham & Wilkinson, 2003) and that it is relatively easy to analyse data from such instruments using either Statistical Package for the Social Sciences (SPSS) or other computer based data analysis tools (Rowley, 2014). Respondents’ perceptions were

measured through a set of items or statements on both customary and statutory water management institutions, which were placed on a 5-point Likert scale, ranging from “strongly agree” (SA), “agree” (A), “undecided” (U), “disagree” (D) to “strongly disagree” (SD). Responses on customary water management were assigned 5 points for “SA”; 4 points for “A”; 3 for “U”; 2 for “D”; and 1 for “SD”. The scores were, however, assigned in a reverse order for responses on items addressing statutory water management (see Tables 2-6). Respondents’ average scores were then computed and a perception score was obtained. Demographic, socio-economic and cultural variables either measured or coded in relation to cultural water management issues included religion (which was coded), income (measured by amount earned per month by HH), level of education (measured by the number of years the HH has spent on formal education), age (measured by the number of years which the HH had lived) and gender (coded on the basis of whether the HH was a male or female). FGD and interview guides were also designed to capture perceptions of household heads and water agency (Water Utilities and Department of Water Affairs) officials, respectively, on cultural issues in water management in the Okavango Delta.

A FGD is a very useful tool for data collection as it is easy to obtain detailed information on personal or even group perceptions (Nyumba *et al.*, 2018). Besides saving both resources (e.g. money) and time as compared to individual HHs interview, a FGD also provides opportunity to seek clarification (Tindale & Winget, 2019) and additionally it provides useful material e.g. quotes for presentations (Flick, 2018).

3.4 Data collection

Data were collected using interview schedules, key informant interview and focused group discussion (FGD) guides. Prior to the study, a research ethics clearance consent was sought and obtained from the University of Botswana Ethics Review Board (UBERB). After obtaining the clearance from UBERB, the Principal investigator (PI) sought and was given a research permit from the Ministry of Land Water and Sanitation Services which is the overall institution for water management and governance in Botswana. Furthermore, throughout data collection, a respondent’s consent was sought first before the interview. Failure to obtain consent resulted in not interviewing the HH. Consequently, the sample of 455 HHs comprised those who agreed to participate in the study hence a discrepancy from the 461 households which were initially intended to be involved in the study. To further ensure that the study meets ethical consideration, data was collected anonymously i.e. without identifying information. This was done because the convention of confidentiality primarily upheld as a means to protect research participants from harm regards anonymity in data collection as a prerequisite (Flick, 2018). From Heads of household were interviewed based on the assumption that they were the most knowledgeable persons, especially in

relation to cultural water management practices. As key informants serve as ready source of some in-depth information related to water management, six key informants were also interviewed. For instance, questions relating to water taboos and water management at the local level, and those relating to statutory water management practices at the national level could only be adequately answered by key informants. Key informants were, therefore, consulted frequently as sensitive issues arose, while a final meeting was held with all the key informants to further clarify some of the issues that emanated during the previous discussions. One FGD session, which included both females and males, the youths and elderly, was organised in each of the three villages selected for the study. A total of 51 participants took part in the three FGDs comprising 12 participants from Shorobe, 24 from Shakawe, and 15 from Tubu. A third FGD comprising 14 participants was organised specifically for the Department of Water Affairs (DWA) officials and was conducted in Gumare. In total, 65 participants took part in the FGDs within the study area. Both the FGDs and interviews were conducted in the local language (Setswana) and focused on the broad theme of dissonance between customary and statutory water management institutions. Notes were carefully taken for analysis. The discussions provided opportunities for organised discussion of issues, which enabled the researchers to gain further insights into the people's perceptions of certain meanings and practices relating to water management in the study area. For instance, village chiefs (*dikgosi*) and elders were believed to be the most important sources of information on local water taboos, ancestral matters (*badimo*) and customary water management practices in general while the officials within the DWA and Water Utilities Cooperation (WUC) were very useful in giving insights into statutory water management practices. The opinions of the DWA, WUC officials and those of *dikgosi* were useful as a way of testing the general dissonance between customary and statutory water management practices in the study area.

Data analysis

The analysis of data adopted both descriptive and inferential statistics together with thematic analysis. Data generated using a questionnaire were analysed using SPSS as it was coded for analysis using a computer package. For quantitative data generated from questionnaires descriptive statistics such as average age and income of respondents as well as percentages was calculated to summarise data. To derive inferences from data inferential statistics such as Mann-Whitney U and Kruskal Wallis tests (which considers a comparison between two and many groups respectively) were performed to understand the differences in perceptions of male and female respondents on cultural issues on water resources management. Data gathered from key informants and focused group discussions were thematically analysed whereby themes such as *water as therapeutic* and *water as life* were derived and analysis done under each theme.

4 Results and discussion

4.1 Demographic and socio-economic profile of respondents and their perceptions on water

Figure 2 shows the distributions of respondents by age and sex. Data reveal that majority (62.9%) of HHs were females and that the mean age of HHs was 42.5 years old with a standard deviation of 16.24. The majority (69.9%) of the respondents were below 50 years and the rest were 60 years and above. As water use varies significantly between people of different sexes (Jordán-Cuebas *et al.*, 2018), gender then becomes a vital variable in water management issues (Van Koppen, 2018). Females are perceived to use more water than males because they carry out more water-related activities than their male counterparts in a traditional society at household level (Jordán-Cuebas *et al.*, 2018). While a study by Jordán-Cuebas *et al.* (2018) showed that females take long showers than males, another study by Fink (2011) on gender roles indicated that females have a high level of knowledge on water conservation than males who are less frequently engaged in water conservation particularly at household level. A Mann-Whitney U test (which considers a comparison between only two groups) was performed to determine the difference in the perceptions of male and female respondents. The results, however, revealed that there was no statistically significant difference ($U = 23860$, $p = 0.82$) in the perceptions of males and females on cultural issues surrounding water management practices in the Okavango Delta.

A Kruskal-Wallis test (which allows for a comparison between more than two groups) was performed to determine the difference in the perceptions of HHs of different age groups in the study area. The results revealed that there was no significant difference ($X^2 = 8.2$, $p = 0.09$) in respondents' perceptions across five different age groups (see Table 1). To further ascertain the authenticity of the results, a one way between groups analysis of variance (ANOVA) was conducted to explore the impact of age on respondents' perceptions about cultural issues in water management practices in the study area. There was also no significant difference ($F = 2.1$, $p = 0.08$) in the perceptions of the five age groups. The actual difference in mean score amongst the groups was quite small. The effect size calculated using *eta-squared* was 0.02, which, according to Cohen (1988), would be considered a small effect size. It is, therefore, concluded that HHs of different age groups did not perceive cultural issues on water management practices differently in the study area. This is because older people in the Okavango Delta were devoted to cultural issues on water management and were of the belief that culture plays an important role in the management of water. Thus, old people tend to adhere to the cultural ways of water management and they tend to pass on the knowledge to their children. As old people (including Chiefs), particularly in rural Botswana, are well respected

(Vaughan, 2003), people of all age groups appreciate and respect their viewpoints. Given that the influence of mass and social media may probably not have had any significant impact on rural people’s viewpoints on water management issues, it implies that the cultural viewpoints of both old and young people in this study do not differ from each other.

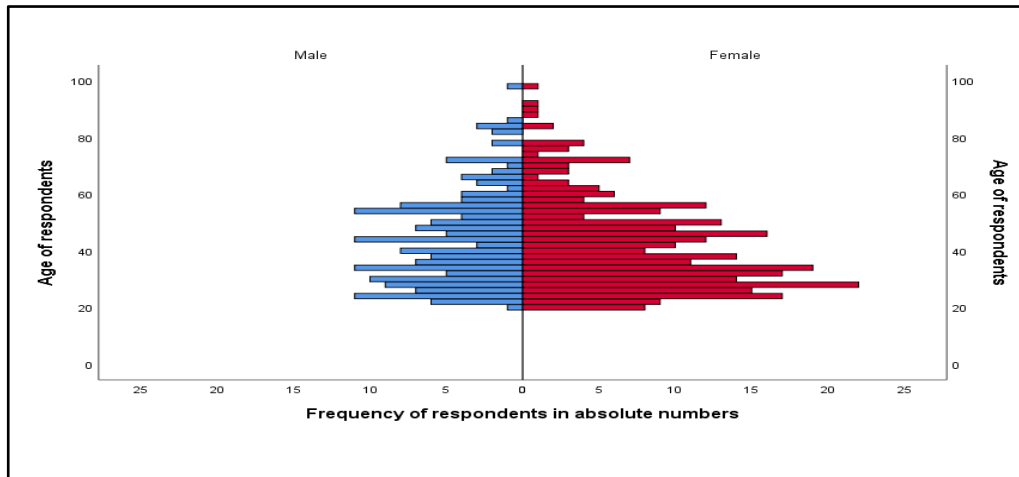


Figure 2 Age sex pyramid of respondents (Source: Field survey June–October 2018)

Data in Table 1 indicate that the majority (83%) of the respondents were Christians while the least (0.7%) were Moslems. While 15.2% of the respondents practised ATR, 1.1% of them belonged to other faiths. A Kruskal-Wallis test was performed to test if there was a difference in perceptions on cultural issues on water management among HHs of different religions in the study area. The results, however, indicated that there was no significant difference ($X^2 = 0.87$, $p = 0.25$) in their perceptions. As religious practices draw attention to people’s spirituality, the finding might imply that HHs of different religious backgrounds in the area may have had the same perceptions about the spiritual importance of water in their day-to-day living experiences. The findings are similar to studies conducted by Akpabio (2012) in Nigeria, Nkonya (2006) in Tanzania and Shoko and Naidu (2018) in Zimbabwe where it was found that water resources were enormously valued and were deemed sacred within the ATR and other religions. Chuvieco’s (2012) and Amanda’s (2018) studies also buttressed the strong impact of religion on individuals’ opinions on water management and use. Similar to the spiritual connotation of water in Christianity and Islam (Amanda, 2018), ATR devotees also perceive water as a sacred symbol (Owomoyela, 2002). Water often appears frequently in prayers, teachings, rituals as well as sacred writings in Christianity, Islam or other major religions. For instance, there are several references to water in the Bible wherein it is perceived as serving three roles of being a source of life, a sign of hospitality and performing a spiritual cleansing (Amanda, 2018; Chuvieco, 2012). The transformative power of water through baptism is evident in Christianity and other religions. For instance, Amanda (2018) offers an insight on this in relation to the Hinduism:

According to the myth of Ganges, the goddess Ganga descended from heaven to dwell in the waters of the Ganges River to protect, purify and bring to heaven those who touch it. Thus, Hindus visit the river daily to offer flowers and food to Ganga. They also drink the water and bathe in the river to cleanse and purify their sins.

In another vein, both Christians and Hindus perceive water as therapeutic. This is in agreement with the perceptions of key informants who also regarded water as a healing substance. Thus, one key informant remarks:

People in this village use water from sacred places such as Tsodilo Hills even today. In our church we use water through the direction of the Holy Spirit, that we should use water from certain places. Even the traditional healers use water from sacred places. We still believe that water can cure diseases and cast out evil spirits (Personal communication: September 2018).

Table 2 Demographic characteristics of the study sample.

Variable	n = 455	%	
Religion			
African Traditional Religion	69	15.2	
Christianity	378	83	
Islam	3	0.7	
Others	5	1.1	
Total	455	100	
Age Group			
20-29	121	26.6	M = 42.5
30-39	112	24.6	SD = 16.2
40-49	85	18.7	
60 +	137	30.1	
Total	455	100	
Education level			
None	71	15.6	
Primary	142	31.2	
Secondary	218	47.9	
Tertiary	24	5.3	
Total	455	100	
Employment			
Employed	62	13.6	
Unemployed	393	86.4	
Total	455	100	
Source of livelihoods			
Small scale mixed farming	270	59.3	
Self employed	71	15.6	
Ipelegeng	99	21.8	
Tandabala	15	3.3	
Total	455	100	
Income Group			
Less than P1500	412	90.5	
P1500-P2000	19	4.2	
P2500-P3000	14	3.1	
P3500-P4000	2	0.4	MD = P945.60
P4500-P5000	4	0.9	Std Dev = 0.73
P5500+	4	0.9	

Source: Field survey, June-October 2018

While data in Table 1 show that 15.6% of the respondents had no formal education, 31.1% of them had attended primary education. However, the majority had attended secondary (47.9%) while only 5.3% of them had tertiary education. A Kruskal-Wallis Test was performed to test if there was a significance difference in perceptions on cultural issues on water management among people of different educational status in the Okavango Delta. The results indicated that there was no significant difference ($X^2 = 1.44$; $p = 0.7$) in the perceptions of HHs across different educational levels. This implies that education status of the HHs might not necessarily influence people's perceptions on cultural issues relating to water management in the area. The results contradict those of Yan (2016) who found that education status of an individual did have a major influence on how the individual perceives different water management practices. The differences between Yan's (2016) results and those of this study might be implicated in the study sites as Yan (2016) carried out his study in an urban setting as against the current study, which was conducted in a rural area. Data also show that there was a high percentage (86.6%) of unemployment in the study area. A Chi-square test (X^2) for independence was also used to determine the association between gender and employment status. Nonetheless, the results imply no association ($X^2 = 2.01$, $\phi = 0.42$) between gender and employment status household heads.

Ethnicity is a social classification of people based upon their shared cultural characteristics and heritage (Kitchin and Rogers, 2013). The identity of a certain ethnicity is based upon characteristics of beliefs, values, language, religion and traditional experiences of an individual (Castree *et al.*, 2013). Data show that there were nine ethnic groups in the three villages of Shakawe, Shorobe and Tubu (see Figure 2). The majority (78%) of the respondents were BaYeyi and were more prominent in Shakawe than the other two villages. The BaTawana were second largest (8.4%) ethnic group in the study area. A Chi-square test (X^2) for independence was used to determine the association between ethnicity of the household heads and their religions. The results imply that there was no association ($X^2 = 9.96$, $\phi = 0.15$) between ethnicity and religions in the Okavango Delta.

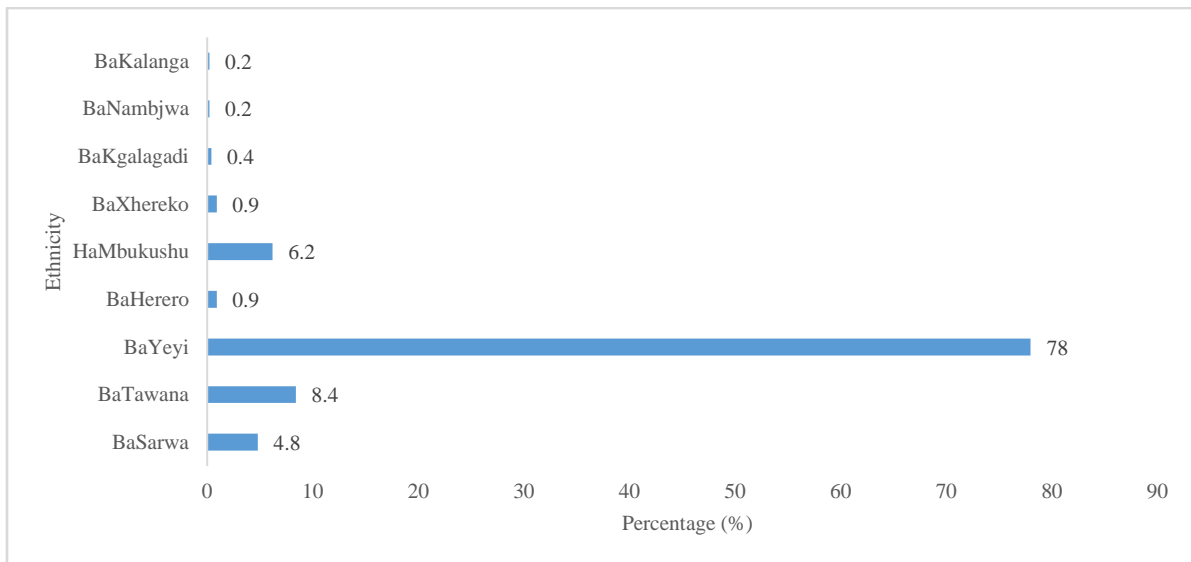


Figure 3 Ethnicity of HHs in the study sites. Sources: Field survey, June-October 2018

The historical background of the different ethnic groups revealed that their economic activities were water related and hence water played a central role in economic activities other than domestic use. Data show that HHs' livelihood sources included small-scale mixed farming (59.3%), self-employment (15.6%), *Ipelegeng* (21.8%) and *Tandabala* (pension) (3.3%). While the majority (90.5%) of the HHs earned less than P1500.00 per month, only approximately 2.0 percent of them earned above P4500.00 per month. A Chi-square test (X^2) for independence on the association between the source of income of the HHs and nature of employment indicated that there was no association ($X^2 = 12.85$, $\phi = 0.17$) between the two variables.

4.2 Cultural concerns on water management practices

Culture is an integrated system of learned behaviour patterns that are unique characteristics of the members of any given society (Amerson, 2018). In the context of this study, it includes everything that a group thinks, says, does and makes about water. Thus, it covers religion, language and shared systems of attitudes towards water. Empirical evidence has shown that one specific issue of water resources management in the Okavango Delta is the sustained perceptions about sacred water sites. Based on Akpabio (2011), sacred water sites are linked to a deity and are important for water governance and conservation. Findings in this study indicated that elderly people perceived water as life and hence they had developed management strategies and devised methods to monitor people's adherences to such management strategies. Table 2 shows the perception of HHs on water as a therapeutic. Analysis shows that majority (55%) of HHs strongly agreed and agreed that there were sacred water points in the three villages under study. While 9% of the respondents were undecided as to whether or not there were sacred water points in their village, only 1% disagreed and 26% strongly disagreed with the viewpoint. Water is used not only for common domestic purposes like washing, cooking, bathing and

drinking, but is also important for religious devotions. Christianity and ATR mostly agreed that water is used in devotions. The majority (85%) of the respondents either strongly agreed (62%) or agreed (23%) with the assertion that “[b]esides using water for domestic purposes, we also use it for religious devotions”. The results buttress the view that water is the *fons et origos*- meaning water is the sources of all possible existence (Eliade, 1958) and that it is unsurprising to find hydrolatry in every cultural and temporal context (Strang, 2005). Although, 6.4% of the respondents had no opinions on the subject, some of the HHs strongly disagreed (6.4%) and disagreed (2.2%) with the statement.

Table 3: HHs’ perceptions on water as therapeutic (n = 455)

Statement	SA	A	U	D	SD
There are sacred water points in this village	88(19)*	162(36)	42(9)	45(1)	118(26)
Besides using water for domestic purposes, we also use it for religious devotions	280(62)	106(23)	29(6.)	11(2.2)	29(6.4)
There are religions in this community which regards water sources as sacred	108(24)	163(36)	39(9)	40(9)	105(23)
People in this village see water as having a religious/cultural value	269(59)	126(28)	29(6)	9(2)	22(5)

Source: Field survey, June-October 2018) * Percentages in parenthesis

The majority (60%) of the respondents strongly agreed (24%) and agreed (36%) that ‘[t]here are certain religions, which regarded water sources as sacred’. While 9% of the respondents were neutral, 32% of them did not support the statement. A total of 87% of the HHs either strongly agreed or agreed that the “[p]eople in this village see water as having a religious/cultural value”. While 6% of the respondents were neutral and therefore did not have any opinions on the subject-matter, only 7% of them either disagreed or strongly disagreed with the statement. The distribution of HHs by their disposition towards water as life (Table 3) indicate that the overwhelming majority (80%) of them strongly agreed or agreed that “[s]nakes, frogs and crocodiles are creatures associated with water taboos”. Whereas 10% of the HHs were neutral, 10% either disagreed or strongly disagreed with the statement. This finding supports Strang’s (2005) work in which water creatures are regarded as an intriguing anthropological objects reflecting ways in which indigenous people use them as an imaginative resource. Also, Amanda (2018) is of the belief that water creatures indicate historical narratives and reveal critical transition in religious beliefs and human water engagement in indigenous societies.

Table 4: HHs’ disposition towards water as life (n = 455)

Statement	SA	A	U	D	SD
Snakes, frogs and crocodiles are creatures associated with water taboos	205(45)*	163(35)	45(10)	17(4)	25(6)
If one kills a frog in sacred water source the source dries up	62(14)	46(10)	147(32)	35(8)	165(36)
There are spiritual beings in sacred water sources	151(33)	168(37)	74(16)	19(4)	43(10)
There are proverbs which talk about water in our culture	95(21)	144(31)	168(37)	18(4)	30(7)

Source: Field survey, June-October 2018)* Percentages in parenthesis

Few (24%) of the HHs either strongly agreed or agreed with the statement that “[i]f one kills a frog in a sacred water source the source dries up”. Furthermore, 32 percent were neutral about the statement. However, 44 percent of them either disagreed or strongly disagreed with the statement. For instance, a key informant in Shakawe community claimed that:

There used to be many sacred water points in our village but due to people of other religions who came and killed water creatures like crocodiles and frogs, we no longer have sacred water sources in here except for Tsodilo water points.

The majority (70%) of the HHs opined that “[t]here are spiritual beings in sacred water sources”. This implies that the people in the Okavango Delta regards water sources as sacrosanct. These findings are similar to those of Shoko and Naidu (2018) in Zimbabwe where they found that water sources were enormously valued and were deemed sacred. Proverbs were a powerful and effective instrument used to illustrate and buttress the wisdom of the cultural code of conduct and for the transmission of manners and values of indigenous people from generation to generation (Mapadimeng, 2018; Manyozo, 2018). Thus, proverbs help in inculcating the perceptions, which enhance sustainable utilisation and management of water resources. In the current context, 52 percent of the HHs strongly agreed or agreed that “[t]here are proverbs which talk about water in our culture” while 11% of them either disagreed or strongly disagreed with the statement. Thus, the majority (52%) of key informants interviewed were aware of the proverbs, which were devised to enhance water use sustainability. Based on the feedback from key informants in Tubu, it is clear that the Batswana culture is replete with proverbs. For instance, one chief said “[*m*]aru ga se pula, mosimolelo” literally translated to mean clouds are not rain, but smoke is fire and “[*m*]oselewa pula o epiwa go sale gale” literally translated to mean make hay while the sun shines. These proverbs imply that as water gives life it then follows that the Batswana must preserve the available water as rain is not guaranteed within the Okavango Delta.

A taboo is an activity that is forbidden or sacred based on religious beliefs or morals (Tetlock, 2003). A taboo could also mean strong prohibitions relating to any area of human activity or custom that is sacred or forbidden based on moral judgment, religious beliefs, or cultural norms (Wallace, 2004). Breaking a taboo is extremely objectionable in a traditional society. Around the world, an act may be a taboo in one culture and not in another (Brown *et al.*, 2008). Such prohibitions are present in virtually African rural societies and perhaps elsewhere (see Eriksen, 2001). Analysis shows that household heads in the study area perceived taboos as crucial in water conservation issues.

Table 5: HHs perceptions on water taboos (n = 455)

Statement	SA	A	U	D	SD
There are taboos relating to water abstraction from water source	161 (35.4)*	110(24.2)	37(8.1)	74(16.3)	73(16)
Taboos are set and enforced by chiefs	55(12.1)	32 (7)	49(10.8)	177(38.)	142(31.2)
There are sanctions for failure to comply with taboos for water use	132(29)	116(25.5)	71(15.6)	64(14.1)	72(15.8)
I came to know taboos for water use through folktales from elders	100(22)	56(12.3)	49(10.8)	165(36.)	85(18.7)
Local water taboos were meant to monitor and control water pollution	159(34.9)	121(26.6)	66(14.5)	52(11.4)	57(12.6)

Source: Field survey, June-October 2018)* Percentages in parenthesis

Although taboos are not officially recognised in water management in the Okavango Delta, Colding and Folke (2001) opine that they exist in most cultures, whether Western and non-Western, and they have a crucial role in guiding human conduct towards utilisation of natural resources. A cumulative 59.6% of the HHs (Table 4) strongly agreed and agreed that “[t]here are taboos relating to water abstraction from water sources”. HHs asserted that their forefathers had ways of achieving water conservation and mitigating water pollution from various anthropological activities. While 8.1% of the HHs did not have any opinion on the issue, 32.3% of the HHs either disagreed or strongly disagreed with the statement. Some 19.1% of the respondents either strongly agreed or agreed that “[t]aboos are set and enforced by chiefs”. While 10.8% of the HHs were neutral and hence did not reveal their opinions on the subject, an overwhelming majority (70.1%) of the HHs disagreed and strongly disagreed that “[t]aboos are set and enforced by chiefs”. Also, 54.5% of the HHs opined that “[t]here are sanctions for failure to comply with taboos for water use”. However, while some 15.6% of the HHs had no opinion as to whether “[t]here are sanctions for failure to comply with taboos for water use”, 29.9% of them disagreed and strongly disagreed with the statement. A handful HHs (34.3%) felt that “[t]hey came to know taboos for water use through folktales from elders”. While 10.8% were neutral, majority (54.9%) of them either disagreed or strongly disagreed that “I came to know taboos for water use through folktales from elder”. A majority (61.5%) of the HHs either strongly agreed or agreed that “[l]ocal water taboos were meant to monitor and control water pollution”. While 14.5% of the HHs were neutral about the issue, 24% of them either disagreed or strongly agreed with the statement. This implies that cultural factors such as taboos continue to influence people’s beliefs in water management in the Okavango Delta despite rural people’s exposure to the influence of modernisation. The perceptions in the three villages indicate that people believe that water comes from God. This contradicts the modern statutory institutions, which see water as an economic good. A key informant interview indicated that there were renowned people in the villages who had supernatural powers to make rain. The narrations by some village chiefs support the notion that people in the Okavango Delta believe in rain-making. One of the village chiefs had this to say on rain-making:

When people anticipated drought, which we used to do by observing stars like selemela (a type of star) and if there was any interpretation known by the chief, Kgosi would call the kgotla, and the belief was that there was nkgodi (eagle) that had laid some eggs somewhere. Kgosi would then assign people to find the nest and if found the villagers would be requested to bring their daughters (who are virgins of about 19-21 years) for the ritual known as go phekola. The rain-making ritual is performed by cutting and burning the tree with the nest. The virgins would, therefore, bring clay pots containing water from the river to the ritualist (Kgosi and elders) who then put the pot on the fire. The water is mixed with crushed pieces of “chobachobane” (a herb). After boiling, the steam from the pot would disperse into the sky. This eventually forms some clouds which then causes the rain to fall. (Kgosi, 28 September 2018)

A key informant gave a detailed explanation of what the rains depict for Batswana:

Pula is a Setswana word which is used to represent three related meanings. The word pula means rain, which is scarce in Botswana’s semi-arid climate. Almost half of Botswana is desert and pula is in great demand. It is therefore no wonder that pula is the word that is used by Batswana to wish others well. This demonstrates that for a long time Batswana have always lived in very challenging, dry environments where there is rain scarcity. Scarce rainfall depicts poor crops, weak or no livestock and great poverty. The lack of pula usually led to the fragmentation of the morafe (ethnic groups) as part of the morafe would break away in search of water and fertile grazing land elsewhere.

One other key informant concurred with the first on the cultural meaning of water (rain) by saying:

The presence of pula marks the abundance of water to drink, grass for animals, milk, healthy beasts, good number of wild animals for hunting and happiness all around in the morafe. Therefore, Batswana over time used the word Pula as a cry to God to wish life, fertility, progress and prosperity on the people and land. Pula! Batho betsho! (Rain! Rain everyone!).

Literature has shown that in the Tswana culture some people are rainmakers (Segadika, 2006). This perception is popular in the study area. Local knowledge and discourse regarding water were shaped by cultural factors which were expressed in belief, taboos, norms and spiritism more than its physical properties in prehistoric times in the Okavango Delta and elsewhere. Table 4 shows the responses from the assertion that some people in Tswana culture are rainmakers. It indicates that the respondents strongly disagreed (22%) and disagreed (7.3%) with the notion. A majority (66.2 %) of the respondents agreed and strongly agreed with the viewpoint. One key informant remarked thus:

Pula has been so central to the Tswana society that for many centuries the role of the moroka (rainmakers) has remained central to the survival of Batswana especially those in moroka. (cattle post). This role was condemned by the missionaries, as they centralized God and Jesus in the daily affairs of men and women. Besides the disapproval of the practice, even today at Tsodilo Hills, there is a spring containing water of prominent spiritual importance and sites where rainmaking ceremonies were performed by our forefathers. (Personal communication with key informant: 28 September 2018)

The majority (87%) of the HHs opined that “[i]n the Tswana culture when drought persists traditional rain-making ceremonies are conducted” (Table 5). While 2% of the HHs were neutral, 11 % of them either disagreed (4.4%) or strongly disagreed (7%) with the assertion that “[i]n the Tswana culture when drought persists traditional rain making ceremonies are conducted”. Furthermore, most (66.2%) of the HHs agreed that it is commonly believed in the Tswana culture that some people are rainmakers. About half of the respondents strongly agreed (51%) while some agreed (15.4%). While 5% of the HHs were neutral, some either disagreed (7%) or strongly disagreed (21%).

Table 6: HHs' perceptions on water in the Setswana culture (n = 455)

Perception statement	SA	A	U	D	SD
In Tswana culture when drought persists traditional rain making ceremonies are conducted	316(69)*	80(18)	7(2)	20(4)	32(7)
In Tswana culture the belief is that some people are rainmakers	231(51)	70(15)	21(5)	33(7)	100(22)
Cultural values have no role in water management	53(12)	87(19)	51(11)	142(31)	122(26.8)
Water is <i>God-given</i> , and people must get it free of charge	243(53)	84(19)	12(3)	64(14)	52(11)
Water has an <i>economic value</i> and people must pay to access it	58(13)	163(36)	15(3)	74(16)	145(32)
Spirit mediums play a crucial role in water management	161(35)	151(33)	52(11)	57(13)	34 (8)
We need to revive rain making ceremonies in our village to boost the amount of rain we receive.	190(42)	136(30)	32(7)	53(11)	44(10)

Source: Field survey, June-October 2018) * Percentages in parenthesis

Also, the HHs disagreed (31%) and strongly disagreed (26.8%) that “[c]ultural values have no role in water management”, implying that most (57.8%) HHs were of the opinion that cultural values played a significant role in water management. An interview with a key informant who is a devotee of customary institutions revealed that villagers in the Okavango Delta regarded waters as sacrosanct. For instance, one key informant opined that “[w]ater from Tsodilo hills has a spiritual value to both Christians and non-Christians and it is often used to cleanse bad luck amongst people in our community and it works according to the faith of the user”. This observation is similar to the results of some studies conducted by Huggins (2000) in Kenya and Tanzania and Nguyen and Ross (2017) in Vietnam, where in both cases water sources were enormously valued and were deemed sacred by the indigenous people. However, 27.8% of them opposed the viewpoint that cultural values played a significant value in water management. The contradiction in perceptions amongst HHs were probably due to differences in religious affiliation as well as age. The trend noticed in data analysis was that old generations, especially those affiliated ATR and thus were in agreement with the use of cultural practices in the management of water while the young generation and believers of other religion such as Christianity had negative perceptions on cultural practices in water management. This concurred with literature which demonstrate that elderly people are custodians of cultural values within society (Mkabela & Nyaumwe, 2007). Consequently, one participant in the FGD who opposed customary institutions opined that “[l]ocal people’s knowledge about water management in the Okavango Delta is very low and is purely spiritual and as such very difficult to apply in the modern day water management...” Also, the majority (72%) of the household strongly agreed (53%) and agreed (19%) that “[w]ater is God-given and therefore people must get it free of charge”, whereas 3% of the HHs were neutral, 26% of them did not agree with the statement. This finding agrees with that of Akpabio who found that indigenous people in Nigeria believed water is a free gift from God and like Him water is perfect (see Akpabio, 2011). The failings of this viewpoint is that even when the physical quality of water is very poor, it still cannot be questioned for drinking purposes (see

Gondo *et al.*, 2018). Almost a half (49%) of the HHs either strongly agreed (13%) or agreed (36%) that “[w]ater has an economic value and so people have to pay to access it”. Conversely, in Withanage’s (2015) opinion,

Water is not a commodity and must not be left to the whims of the market because no person or entity has the right to profit from it. Water must not, therefore, be commodified, privatized, traded or exported for commercial gain. Water must be excluded of being a “good”, a “service” and an “investment” in all international, regional and bilateral trade agreements.

Although Withanage’s (2015) viewpoint is plausible, it is perhaps unrealistic for government to continue to provide treated water free-of-charge to consumers, particularly in a developing economy where the cost of governance is daunting and where other unfavourable intervening factors could sabotage the dividend of quality public service to the poor majority. Ideally the provision of water subsidy meant to alleviate the suffering of the poor might be worthwhile to explore. While only 3% of them were neutral, the majority (67%) of the HHs believed that the “[s]pirit mediums play a crucial role in water management”, Thus, the results of this study are similar to the findings of Muyambo and Maposa (2014) in Zimbabwe which claimed that the indigenous people link water bodies with the concept of sacredness to which people should approach with a sense of awe and unquestionable homage. A few of the HHs (11%) were neutral. However, 20% of the HHs disagreed with the statement. Analysis also showed that 72% of the respondents strongly agreed (42%) and agreed (30%) with the viewpoint on the role of spirit mediums. Only 7% of the HHs were neutral while 12% of the HHs disagreed and 10% of them strongly disagreed.

The results of this study indicated that people in the Okavango Delta value the rains. Findings from key informants showed that there were many ways that rain or water were celebrated in the Okavango Delta and indeed the country. According to one key informant, the names of children born during the rainy season are called *Mmapula* (for girl child) or *Rapula* (for boy child). This clearly shows that water resources are valuable in the Tswana culture, hence the association of names to rain (water). Based on Denbow and Thebe’s (2006) submission, it is also not uncommon to see young children dancing and jumping in the rain, and chanting *Pula nkgodisa* (rain makes me grow) whenever there is a downpour - the perception associated with the practice that encourages vitality and healthy growth of young children. In the Okavango Delta, water is culturally used in different ceremonies. For instance, one informant said:

When there are prominent national celebrations or key national gatherings to be addressed by the highest officials in the land, including the President, the chanting slogan is often Pula. In fact, when the said officials of high standing conclude their speeches, they end with chants of Pula – at least three times. The crowd enthusiastically responds similarly. This is done in wishing and anticipation for more rain, which gives abundant supplies of water (Key informant personal communication - 28 September 2018)

In receiving a prominent visitor as well, the guest is accorded a special welcome with reference to rain. The expression in Setswana goes thus: *Goroga ka Pula* (arrive with rain). Furthermore, when droughts persist for too long, or when rains delay beyond the usually expected season, communities hold prayers. During the prayer sessions, the congregation members incessantly chant *Pula, Pula, Pula!* (Denbow and Thebe, 2006). This is done while gazing to the heavens – perhaps in expectation of mystical cloud formation. This is exemplified by a case in which the former President of Botswana Ian Khama in 2013 during a series of *kgotla* meetings encouraged Batswana to come together to seek divine intervention and collectively pray for rain and in so doing he declared the month of September a month of prayer for rain (Mongwa, 2013). Thus, in the same year (2013) when Gaborone dam was almost drying, various churches converged at the dam for prayers. Amid song, dance and chants, the men and women in attendance broke into loud heartfelt prayers, hands raised to the skies, begging the Lord above for the heavens to open (Mongwa, 2013).

Table 7: HHs’ perceptions towards statutory water institutions (n = 455)

Perception Statement	SA	A	N	D	SD
People in this village don’t know about government water law.	287(63)	127(28)	14(3)	14(3)	13(3)
Government water laws need to be explained to the people in this village	147(32)	127(29)	35(8)	66(14)	80(18)
It is wise for offenders of water law to be tried at the Kgotla	203(46)	129(24)	31(7)	49(10)	43(10)
Local leaders are respected than WUC and DWA officials	194(46)	95(20)	50(11)	57(12)	59(13)
People who fail to pay for water must be disconnected	59(1)	62(13)	16(4)	98(21)	220(48)

Source: Field survey, June-October 2018) *Percentages in Parenthesis

A cumulative 91% of the HHs (Table 6) strongly agreed and agreed with the statement that “[p]eople in this village don’t know about the government water law”. The findings resonate with Nkonya’s (2006) who found that the majority of the rural folk were unaware of government water laws but instead had a strong allegiance to customary institutions for water access and use. Thus, in a focus group discussion, one DWA official concurred with the HHs’ viewpoint that people in Shakawe, Tubu and Shorobe were unacquainted with statutory institutions by saying:

Most people do not know about Water Act (1968) because public awareness campaigns are still to be done by the Department of Water Affairs through the communication department. These public awareness campaigns will soon be rolled out through road shows and kgotla meetings to sensitise communities on government water legislation, policies and regulations.

Consequently, HHs’ claim that they were not aware of government water institutions [Water Act (1968) and Policy (2012)] supports the notion that awareness campaigns had not been implemented in the area prior to this study as revealed by key informants at Gumare. A number of HHs in the three villages revealed that they were never involved in the drafting of the 1968 Water Act and neither were

they aware that a new Water Act (i.e. Water Bill, 2005) was under way at the time it was launched. Rural people's ignorance of statutory institutions is not uncommon; Kujinga and Joker's (2005) study in Zimbabwe, which analysed stakeholder's knowledge on water governance transformation revealed that the majority (80%) of the people in middle Manyame were uninformed of the Water Act of 1998. While 3% of the HHs were neutral on the statement, some 6% of them disagreed and strongly disagreed with the statement. Also, 60% of the HHs strongly agreed and agreed that "[g]overnment water laws need to be explained to the people in this village". This is similar to the viewpoint echoed by some respondents in Kujinga and Joker's (2005) Zimbabwean study. The minority (8%) of the HHs were neutral while 32% of them disagreed and strongly disagreed with the statement: A majority (73%) of the HHs strongly agreed and agreed that "[i]t is wise for offenders of water law to be tried at the kgotla". This viewpoint agrees with Malzbender *et al.* (2005:5) who argue that the responsibility of traditional leaders should be to reconcile discords on water-related issues among community members. Besides, literature has revealed that rural people prefer traditional leadership in the handling of water-related disputes. For instance, Sawunyama *et al.* (2005) study in Limpopo area, Zimbabwe, shows that the headman will endeavour to manage any clashes through the *Dare* (traditional court) in the event of communal conflict over water access. This is also similar to water arbitration issues in the *Kgotla* system in Botswana. While 64% of the HHs either strongly agreed or agreed that "[l]ocal leaders are respected than WUC and DWA officials", only 11% of them were neutral and 26% of them disagreed and strongly disagreed. Majority (70%) of the HHs disagreed and strongly disagreed that "[p]eople who fail to pay for water must be disconnected". However, some 27% of them either strongly agreed or agreed with the statement.

Nevertheless, all government officials who were interviewed during this research emphasize the difficulty of involving indigenous people and their indigenous knowledge in water resources management; they perceive local people as lacking knowledge and capacity to participate in modern water management programmes. Consequently, these government officials believe that indigenous culture of water management is archaic, mystical and outdated. This agrees with Nguyen and Ross' (2017) study in Vietnam that assesses barriers and opportunities for the involvement of indigenous knowledge in water resources management in the Gam River. This is despite one government official's recognition of local knowledge and local people regarding their capacity to explore underground water resources through the use of simple dowsing rods derived from locally available materials. The government officials based in Gumare community argue that although local knowledge on water management do exist in the Okavango Delta, it does not apply in the 21st century where scientific

knowledge must inform decision-making in water management. One other government official had this to say:

While local people can be involved in ground water exploration, maintenance and monitoring, indigenous knowledge is not scientific enough to be used in the modern day water management, and indigenous people in this area do not possess enough knowledge and capacity to participate in water use and planning which requires the application of a very complex knowledge.

The above demonstrates the patronizing viewpoints of the adherents of statutory institutions about customary institutions in the Okavango Delta. Government officials are thus implicated by their perceptions about local people who they think do not have requisite knowledge of water resources management or that their knowledge is generally outdated, largely spiritually constituted or applicable to only local contexts. Ramazzotti (2008), however, discountenances this standpoint based on his study that assessed customary water rights and contemporary water legislation in India.

The synergy in customary and statutory water institutions in the Okavango Delta

This section begins by outlining the differences in customary and statutory water institutions based on the perspectives of the Okavango Delta communities. Unlike the statutory institutions that strictly operate through written codes and laws, findings show that customary water institutions in the area are unwritten. This is also similar to the customary water management institutions in Zimbabwe whose rules of access to water are purely oral (Latham and Chikozho, 2004). As also buttressed by Goldin and Gelfand (1975), customary water institutions are validated by community recognition and acceptance while statutory institutions are authenticated by case law and judicial precedents. The written and codified nature of statutory water institution makes it the preserve of professionals who engage in the “esoteric work of interpretation, application and creation of rules” (Latham and Chikozho, 2004). A key informant opined that customary institutions were passed from one generation to the other through oral traditions. Findings also show that tribunals at the *Kgogla* are open to all and that there is no stringent rules for court attendance except that *people wearing short trousers are not allowed court access during deliberations at the Kgotla* (Personal communication with key informant, August 2018). In terms of administrative cost, the key informant said “[c]ustomary water tribunals are cheap and lawyers are not permitted to represent a client during court proceedings at customary courts”. This observation shows that customary institutions operate at a minimal cost, if any, unlike the statutory institutions. Also, findings show that litigants seeking a redress within the context of statutory institutions travel a great distance to access arbitrations in urban areas unlike in customary institutions where the *Kgotla* is readily available within local communities. Whereas the researchers noticed that the DWA offices are located in relatively urban villages of Gumare and Maun, which are very far away from the study areas (Shakawe, Tubu and Shorobe), observational evidences obtained during the study also show that each of the studied communities has a *Kgotla* system (village court) presided over by

the *Kgosi* (Chief) and assisted by the *Kgosana* (assistant chief). This resonates with Hook and Raumati's (2011) argument that most structures of statutory institutions are in urban areas and difficult to access by the majority of the rural folk. In terms of communication, findings show that local dialects are used in the operations of customary institutions unlike in the statutory institutions where the language of proceedings is English laden with law technical jargons, which makes it impossible or somewhat difficult for local people to understand. In addition, customary water tribunals are meant to encourage decisions that are restorative; the affected party is either compensated or fined as the case may be. Nonetheless, a different scenario obtains in the statutory institutions just as the Government of Botswana (GoB) 1968 Water Act categorically specifies that:

A person who is guilty of an offence under sections 9(2) or 36(1) shall be liable to a fine not exceeding P1000 or to imprisonment for a term not exceeding one year, or to both. (2) A person who is guilty of an offence under sections 7(4), 17(2) or 29(3) shall be liable to a fine not exceeding P500 or to imprisonment for a term not exceeding six months, or to both. (3) In addition to the penalties which may be imposed in terms of this section the court may, in the event of a continuing offence, impose a fine not exceeding P10 for each day during which the offence continues.

While the fines have since failed to stand the test of time that they are paid to the State makes it unfavourable from the point of view of the advocates of customary institutions in the study area

Table 8 Differences between customary and statutory institutions (as perceived key informants)

SN	Customary institutions	Statutory Institutions
i.	Presided over by elders, chiefs, spirit mediums	Presided over by government officials
ii.	Restorative decisions	Adversarial decisions
iii.	Litigation aims at reconciliation	Litigation aims at punishing the wrongdoer
iv.	Unwritten, embodied in maxim and daily observations	Documented as Policy, Act and management practices
v.	Vary from area to area	Uniform nationally
vi.	Transmission is by word of mouth	Transmission is by written documents
vii.	Litigants attend courts locally	Litigants travel long distance to attend courts
viii		
.	Use of local language in trials	Language used is technical English

While it is difficult to homogenise customary institutions in the Okavango Delta, a synergy of the customary and statutory institutions can be achieved through all stakeholders' consultation. Based on evidence from GoB Water Bill (2005) (thereafter referred to as water bill), plans are already underway to synergise water institutions in the Okavango Delta. The water bill has a very crucial component of synergy which recognises the importance of water governance at the village level.

The water bill thus, says:

The Minister, in consultation with the Council and the district council concerned, may establish village water management committees for any village based on the village development committees operating in district council areas as may be appropriate having regard to the nature of the water resources available in the area of the village concerned.

The inclusion of village water management committees (VWMCs) in water governance, which is absent in the current GoB, Water Act (1968), is a positive development that could ensure the proper recognition of customary institutions in water governance at local levels. In sum, it is plausible to ensure that all water legislative acts allow enough room for hearing the voices on the other side of the divide through proper consultations in water policy development. In other words, policy processes comprising need identification, policy formulation and implementation in relation to water access and management within rural communities need to integrate the norms and values of local people to alleviate the sour relationship between the government and its grassroots clientele. That way, a sustainable water resource management will have been achieved.

5 Conclusion

With an objective to assess stakeholders' perceptions on the management of water through customary and statutory institutions, the paper has shown that in the Okavango Delta, indigenous people perceive that water is a gift from God which needs to be freely accessed. Statutory institutions recognise water as a commodity which must be sold like any other good. The paper has demonstrated that there was a deep animistic belief in water amongst the local people and that contemporary approaches to water management and governance did not fully conform to local beliefs, norms and expectations of the indigenous people within the study area. For instance, while the results of this study revealed that the majority of the respondents regarded water as a God-given commodity, which people must access free of charge, statutory institutions regarded water as a commodity with a market value, which people must buy and sell like any other goods. Similarly, contradictory perceptions were also found by Ramazzotti (2008) and Akpabio (2012) in their separate studies in India and Nigeria, respectively. While local people had diverse belief systems in water with some regarding it as sacred and others as secular, it is commonly believed that water has three key functions in the lives of Batswana. These functions depict water as a source of life, sign of hospitality and spiritual cleansing substance. As emphasised by Ramazzotti (2008) elsewhere, the findings of this study underscore the complementary legal pluralism in water management in which both customary and statutory institutions are utilised and given equal consideration. In line with the above, local communities' full participation in policy formulation process might provide important information on the values and belief systems that could engender practical, relevant and acceptable water resources management approach in the Okavango Delta. The study offers an understanding of the importance of cultural and local institutions in transmitting meaning and perceptions about water. It then follows that policy makers can utilise it to shape water management policies in order for them to align their practices with the cultural code of the indigenous people. Policy makers need to incorporate local cultures in policies to enable local

people understand water projects being implemented in their localities. It must be emphasised that indigenous people's notions of water and its management practices hold implications for the success or failure of state water projects. This study further demonstrated that Okavango Delta people are not aware of key aspects of statutory institutions for water management making them resort to local customary institutions to manage water resources as they deem appropriate. Therefore policy makers and water managers need to translate statutory institutions to the first language (Setswana) to allow local people understand key sections in the statutory water statutes. Given that the use of customary institutions does not need enforcement by external resources, policy makers need to reinforce and forge a link between customary and statutory institutions to reduce the costs involved in water resource management. This is in agreement with the first Dublin Principle underlying integrated water resources management, which calls for a participatory approach to water management involving all stakeholders like water users, planners and policy makers at all levels.

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