Economic analysis of the preferences and perceptions of tourists in the Okavango Delta,

Botswana: implications for rural development

by

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Disclaimer

The work in this thesis was completed at the University of Botswana between August 2011 and February 2016 by the author. It is the original work except where reference is made and has not been submitted for any award at other universities.

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Lastly, many thanks to God Almighty, His mercy endure forever. All were possible because of Him. If it wasn't for His mercy, love and grace I wouldn't have made it this far. It is by His grace that the project is a success.

DEDICATIONS

This study is dedicated to my grandmother Olivia Matlhola, mother Montlenyane Matlhola

and my brother Kago Matlhola.

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ABBREVIATIONS AND ACRONYMS

ASC	Alternative Specific Constants
CBNRM	Community Based Natural Resource Management
CE	Choice Experiment
CICES	Common International Classification of Ecosystem Services
CVM	Contingent Valuation Method
DWNP	Department of Wildlife and National Parks
GDP	Gross Domestic Product
GIS	Geographic Information System
GoB	Government of Botswana
HPM	Hedonic Pricing Method
MEA	Millennium Ecosystem Assessment
MEWT	Ministry of Environment, Wildlife and Tourism
MNL	Multinomial Logit model
ODMP	Okavango Delta Management Plan
OECS	Organisation of Eastern Caribbean States
OKMCT	Okavango Kopano Mokoro Community Trust
RPL	Random Parameter Logit model
RUT	Random Utility Theory
SDG	Sustainable Development Goals
TCM	Travel Cost Method
TEV	Total Economic Value
TIIS	The International Ecotourism Society
UNESCO	United Nations Educational, Scientific and Cultural Organization
WTA	Willingness to Accept
WTP	Willingness to Pay
WTO	World Tourism Organization
WTTC	World Travel and Tourism Council

ABSTRACT

The Okavango Delta, Botswana is one of the renowned inland deltas in the world. The Delta was declared a Ramsar and World Heritage sites in 1997 and 2014, respectively. This pristine wilderness habitat attracts international tourists, making it an international tourist destination. Despite its importance to various users, local communities and tourists, the Okavango Delta is faced with environmental threats due to population increase, tourism growth, and climate change. Furthermore, tourism planners have been faced with the challenge of diversifying tourism products in the Delta and improve the qualities of tourism experience. Thus, there is a need for valuation of the attributes of the Delta in relation to ecotourism and the marginal willingness for the attributes. This study therefore, used choice experiment method to analyse the preferences of tourists for ecotourism in the Okavango Delta and estimate their marginal willingness to pay for the attributes of the Delta.

The data was collected from 180 international tourists visiting the Okavango Delta and from *mokoro* excursions. Tourists prefer to visit the Okavango Delta when it is receiving high levels of floods with high chances of seeing wildlife species. They also prefer to use tourism enterprises managed in joint-venture by both local communities and the private safari companies. The marginal willingness to pay for the attributes ranges from US$-5.82 (BWP-53.03) to US$ 37.24 (BWP339.61) with landscape having the highest marginal WTP. As tourists value the Okavango Delta mainly for its landscape, which is based on water dynamics, the continuing of water flow from the Angolan highlands is crucial for the Botswana tourism sector.

The also study revealed the average and total consumer surplus for tourists as US$ 267[1] (BWP 2, 422.82) and US$ 772, 879 (BWP 7, 026, 172.73), respectively. The study recommends that institutions and mechanisms be developed to capture the untapped consumer surplus of tourists and use it on rural development and management of Okavango Delta. Consumer surplus can also be used in promotion of ecotourism in the Okavango Delta.

Key words: Okavango Delta, ecotourism, choice experiment method, marginal willingness to pay, consumer surplus, rural development

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[1] BWP 1 = US$ 0.11

CHAPTER 1
INTRODUCTION AND BACKGROUND

1.0   Introduction

Chapter one covers the background information of the study, the statement of the problem, the objectives and hypotheses of the study. The chapter also addresses the significance and delimitation of the study. It closes with the outline of the thesis.

1.1   Background Information

Wetlands are amongst the earth's most productive and valuable ecosystems to both human and wildlife. They play a critical role in maintaining many natural cycles and supporting a wide range of biodiversity. They are particularly important providers of all water-related ecosystem services, such as clean water for drinking, water for agriculture, cooling water for the energy sector and regulating water quantity. Wetlands are estimated to provide about 40% of the value of all ecosystem services worldwide (Lantz, Boxall, Kennedy, & Wilson, 2013). However, wetlands have high recreational, historical, scientific, and cultural values as they have an important role in in human development. They are also often inviting places for recreational activities. They are therefore seen as the world's renowned tourism destinations, offering recreational activities such as sunbathing, swimming, boating, sport fishing, duck hunting, photography, bird watching, and simply enjoying the landscape. Wetlands attract millions of international tourists yearly.

International tourist arrivals grew by 4.4%, reaching a record of 1, 135 million arrivals worldwide (World Tourism Organization, 2015b) in 2014. Tourism experienced an increase in international tourist arrivals despite a slow global economic recovery, EBOLA scare in West Africa and geopolitical conflicts (World Tourism Organization, 2015b). Despite the

EBOLA scare in West Africa, Africa experienced an increase of 2% in international tourist arrivals in 2014. The demand for international tourism continues to exceed expectations, even though the world economic growth is experiencing a slowdown. Tourism is a rapidly growing phenomenon that has increasingly become a popular component of development strategies in many developing countries (Meyer, 2007; Truong, Hall, & Garry, 2014). These countries have invested in tourism due to its vast growth and its potential to alleviate poverty, especially in rural and isolated communities. However, more emphasis is given to sustainable tourism, particularly ecotourism.

Ecotourism is a form of tourism, concerned with "responsible travel to natural areas that conserves the environment and improves the well-being of local people" (The International Ecotourism Society, 1990). It encourages participation of local communities in natural resource management and tourism development in their areas (Liu, 2003; Mbaiwa, 2008; Novelli, Barnes, & Humavindu, 2006) as well as environmental conservation. Therefore, Mbaiwa (2008) and Wunder (2000) suggest that ecotourism is an effective tool to reduce conflicts between conservation of natural resources and rural and tourism development as it gives an incentive for natural resources conservation to local communities. Ecotourism has shown prospects for successfully funding conservation and sustainable development programs (Dhami, Deng, Burns, & Pierskalla, 2014).

The growth of ecotourism depends on the number of tourist arrivals, which in turn depend on the market of tourism products and tourists destination. Dhami *et al.* (2014) thus note that tourism planners and operators need to identify various characteristics of the tourist destination desired by tourists, and find the best ways to reach and convince tourists to visit

the destination. The characteristics of tourists especially their behaviour, preferences and expectations, are of fundamental importance to tourism development of destinations. However, incorporating tourists' preferences and expectations in the planning of tourist destinations has received little attention in the Okavango Delta, Botswana. An understanding and knowledge of tourists' preferences and expectations can assist local communities, entrepreneurs, park managers and policy makers in identifying current and potential tourism investment opportunities (Chaminuka, Groeneveld, Selomane, & van Ierland, 2012; Hearne & Santos, 2005).

Preferences of tourists can assist in formulation of management and rural development strategies. In addition, the funds from the captured consumer surplus could be used for compensation of local communities for the costs of tourism development in the Okavango Delta. Consumer surplus is the difference between what an individual is willing to pay for the good he/she purchases and what he/she actually pays (Wieland & Horowitz, 2007). Studies (Krug, Suich, & Haimbodi, 2002) have shown that tourists are willing to pay for the protection of protected areas and to reduce loss of biodiversity and ecosystem services. However, this consumer surplus has not been captured in Botswana, therefore mechanisms and institutions to capture it need to be established (Kgathi, Mmopelwa, Stone, & Thaga, 2009).

Managers of environmental resources need information that provides money metrics for them to make effective, efficient and equitable planning and policy decisions. This information is vital in a world with limited financial resources and environmental valuation, in combination with strong demand pressure for overexploitation and destruction of natural resources.

Communities are therefore able to determine tourism products that are mostly preferred by tourists, in order to promote products that are relevant in the tourism market. This study is intended to determine and analyse the preferences of tourists for ecotourism, using the choice experiment method and also establish the consumer surplus of tourists in the Okavango Delta, Botswana.

1.2   Statement of the Problem

The Okavango Delta is situated in the northern edge of the Kalahari sand veld in north-western Botswana. It represents one of the most outstanding natural areas and was recognised as the United Nations Educational, Scientific and Cultural Organization (UNESCO)'s 1000th World Heritage site in 2014. The Delta has become a unique international tourist and recreational destination and attracts thousands of tourists yearly due to its abundant resources of biodiversity and natural scenery (Mbaiwa, 2005b, 2008; Turpie *et al.*, 2006).

Over the years, the Delta has contributed significantly to the growth of tourism in Botswana. In 2010, international tourist arrivals were estimated at 2, 145, 000 (World Tourism Organization, 2012) and BWP 5, 486.6 million (3.2% of total gross domestic product (GDP)) was the direct contribution of tourism and travel to Botswana's GDP in 2014 (World Travel and Tourism Council, 2015). Tourism growth in the Okavango Delta is dependent on the flow of tourist arrivals which in turn depend on the marketing of tourism. However, the marketing of tourism requires identification of various characteristics of the tourist destination that are preferred by different tourists as well as the characteristics, expectations and preferences of tourists (Dhami *et al.*, 2014).

In Botswana, there is information asymmetry in the tourism industry that hinders marketing and diversification of tourism products, despite all the laws, policies, acts and management plans put in place (e.g. Wildlife Conservation Policy of 1986; Tourism Policy of 1990; The Tourism Act of 1992; Botswana Ecotourism National Strategy of 2002; CBNRM Policy of 2007; Okavango Delta Management Plan). Stevens and Jansen (2002) noted that tourism operators fail to design ecotourism products that accurately meet the demands, due to lack of detailed and up-to-date market and tourists' expectations, characteristics and trends. This therefore implies that there is lack of information about characteristics, preferences, expectations, satisfaction data and trends of tourists in the Okavango Delta. Tourism planning and research in Botswana is mainly conducted from the supply perspective.

Previous studies have predominantly concentrated on the preservation of the scenery and wilderness of the Delta as a tourist destination (Andersson *et al.*, 2006; Folwell *et al.*, 2006; Mbaiwa, 2011b); prospects and challenge of tourism (Mbaiwa, 2004b, 2005b; Moswete & Dube, 2013); tourism contribution to economic growth (Makochekanwa, 2013; Mbaiwa, 2004b, 2004c); effects of tourism development on rural livelihoods (Lepper & Goebel, 2010; Mbaiwa, 2011b; Mbaiwa & Stronza, 2010) and economic valuation of the Okavango Delta (Mladenov *et al.*, 2007; Mmopelwa & Blignaut, 2006; Mmopelwa, Kgathi, & Molefhe, 2007; Turpie *et al.*, 2006) with less attention on the characteristics, trends, expectations and preferences of tourists.

The growth and diversification of the tourism sector cannot be determined in the absence of a sound understanding of tourists' demand because the growth of the sector is both supply-led and demand-driven which is vital for planning and development. To meet the tourism

demand, it is important that the preferences, expectations and motivations of tourists are established. It has been assumed that tourists are interested in wildlife animals found in the area. However, there is little evidence to suggest that tourists visiting the Okavango Delta are interested in biodiversity per se, rather than spectacular landscapes, attractive accommodation facilities, or a few charismatic species. It has been noted that tourists are willing to contribute towards the conservation and protection of wildlife and protected areas. This however has not been captured and utilised by many countries.

1.3   Objectives and hypotheses

1.3.1   General Objective

To establish the preferences and perceptions of tourists for ecotourism in the Okavango Delta, Botswana and their impacts on rural development

1.3.2   Specific Objectives

The following are the specific objectives of the study developed to address the main objective:

- To identify the attributes that characterise ecotourism in the Okavango Delta

- To determine the preferences of tourists based on the attributes of ecotourism in the Okavango Delta

- To determine the tourists' marginal willingness to pay for ecotourism attributes in the Okavango Delta

- To estimate the tourists' consumer surplus and perceptions associated with visiting the Okavango Delta

- To determine the implications of tourists preferences and consumer surplus on rural development in the Okavango Delta

1.3.3 Hypotheses

Literature (Beerli & Martín, 2004; Correia, do Valle, & Moço, 2007; Woodside & Dubelaar, 2002) suggests that tourists use motivations, perceptions, preferences and priorities to decide on their destinations. Attributes of the destination (like accommodation availability, health, safety, scenery, accessibility, wildlife, landscape) are seen as the pulling factors to the site. The rich wildlife habitat, the Okavango Delta is the much visit site in Botswana by international tourists (Mbaiwa, 2005a). The attributes that characterise the Delta (landscape, wildlife) contribute to the utility derived by the consumer from his or her tourist destination. One of the goals of the Okavango Delta Management Plan (ODMP) sustainable tourism and CBNRM component was 'to ensure a high quality visitor experience in the Okavango Delta'. To achieve this goal, the preferences and expectations of tourists visiting the Delta should be known. However, there is inadequate information about the preferences and expectations of tourists for ecotourism in the Okavango Delta, Botswana. Thus, the study hypothesises that different attributes of ecotourism in the Okavango Delta influence the utility of tourists and they are willing to pay for the environmental improvements. The study also hypothesises that loss of ecosystem services and wildlife will negatively impact the marginal willingness to pay of tourists visiting the Okavango Delta.

The socio-economic characteristics of respondents can have an influence on their willingness to pay (Birol & Cox, 2007; Do & Bennett, 2009). For instance, people with higher incomes or education levels are normally more willing to pay for environmental improvements. These socio-economic variables will be introduced to estimate their influence on the willingness to

pay of respondents hence the study hypothesises that the socio-economic variables have a significant influence on the willingness to pay of respondents.

Finally, a number of studies have established the significance of wildlife-based tourism in tourist destinations (Ballantyne, Packer, & Hughes, 2009; Barnes, Schier, & van Rooy, 1999; Di Minin, Fraser, Slotow, & MacMillan, 2013; Government of Botswana, 2000; Lindsey *et al*., 2007). They have also indicated that tourists are willing to pay more for the protection of protected areas and biodiversity, so the study hypothesises that there is consumer surplus among tourists visiting the Okavango Delta.

1.4   Significance of the study

The study will contribute to the existing literature on economic valuation of the Okavango Delta and the tourism sector by using the choice experiment method, a relatively new valuation technique in the field of study. The method has the potential to indicate the significance of attributes of ecotourism and other ecosystem services to the tourism industry at large. The choice experiment in this study established the significance of management of tourism enterprises, the landscape of the Okavango Delta and availability of wildlife species to the demand of ecotourism in the Delta. The cognizance and knowledge of tourists' preferences can assist local communities, tourism operators, park managers and policy makers with identifying current and potential tourism investment opportunities hence make a contribution in improving the quality of recreation for tourists and their satisfaction.

The estimated consumer surplus established in this study can be captured by tourism planners, resource managers and the Department of Wildlife and National Parks (DWNP) to

improve conservation and preservation of natural resources in the Okavango Delta. The consumer surplus can also be used by DWNP to compensate the local communities living within the Okavango Delta and adjacent to protected areas who have lost their property due to wildlife species attracting tourists to the Delta. Satisfactory compensation levels will thus lead to improved tolerance of wildlife by farming communities in the Delta.

1.5   Delimitation of the study

The aim of this study was to estimate and analyse the preferences of tourists for ecotourism in the Okavango Delta. The study also aimed at determining the marginal willingness to pay of tourists if attributes characterising ecotourism were to change. In order to achieve its objectives, the study concentrated on three attributes that characterise ecotourism in the Okavango Delta, management of tourism enterprises, landscape of the Delta, and wildlife. The selection of these attributes is explained in the methodology section. Moreover, only marginal willingness to pay of tourists for the selected attributes was estimated instead of measuring the total economic value of ecotourism in the Okavango Delta.

The targeted population was tourists who were travelling into the Delta for an overnight trip or more nights. These tourists were chosen because the author believed that they had the chance to explore the Delta and had experience with its biodiversity. Due to financial and time constraints, the study only concentrated on tourists going for *mokoro* excursion in the Controlled Hunting Area NG/32 which encompasses six villages (Boro, Daunara, Ditshiping, Xaraxao, Xaxaba, and Qouqau) in the Ngamiland as the study site. International tourists were interviewed. Mbaiwa (2011c) has classified tourists visiting the Okavango Delta into four, independent (private), mobile, high cost (fixed lodge) and day visitors. This study therefore

concentrated on the independent (private) tourists going for *mokoro* excursion in NG/32 (more in chapter three).

1.6   Outline of the thesis

The thesis is divided into seven chapters. The first chapter is the introduction and background of the study. This chapter introduces the study and covers the statement of the problem, research objectives, significance and delimitation of the study. Chapter two presents the literature on environmental valuation and valuation techniques; followed by empirical literature related to the choice experiment method and consumer surplus. Ecotourism and rural development in the Okavango Delta are briefly discussed in this chapter. The study area is discussed in chapter three. The methodological framework of the choice experiment, the development of the choice experiment survey, data collection, and survey design issues are also presented in chapter three. Data collection and analysis of consumer surplus are also discussed in chapter three.

Descriptive statistics of tourists and results of tourists' preferences are presented in chapter four. Chapter five discusses the results of tourists' perceptions and consumer surplus in the Okavango Delta. Chapter six discusses the implications of tourists' preferences and consumer surplus on rural development in the Okavango Delta. Lastly, in chapter seven, the main findings of the study are summarised and policy implications are discussed.

CHAPTER 2
LITERATURE REVIEW

2.0   Introduction

In this chapter, literature about valuation of wetlands and ecosystem services is reviewed. The chapter starts by reviewing the definitions of wetlands and ecosystem services and their contribution to human welfare. Economic valuation and techniques of valuation for ecosystem services are discussed in this chapter. Empirical literature of choice experiment, consumer surplus and ecotourism are also covered in this chapter.

2.1   Wetlands and ecosystem services

A precise and clear definition of wetlands is fraught with controversy, because of the enormous variety of wetland types and the problems of defining their boundaries (Barbier, Acreman, & Knowler, 1997). The Ramsar Convention of 1971 therefore defined wetlands as

> *" areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six metres. May incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands"*

Wetlands are complex ecosystems with multiple values, including biological, ecological, cultural, socio-esthetical, intrinsic and economic values (Schuijt, 2002). Ecosystem services are defined by the Millennium Ecosystem Assessment (2005) as "the benefits people obtain from ecosystems", whereas Haines-Young and Potschin (2010) define them as "the

contributions that ecosystems make to human well-beings". MEA (2005) has classified

ecosystem services into four categories; provisioning (e.g. food, fibre, etc.), regulating (those

responsible for keeping ecosystem functioning bounded; e.g. climate regulation, etc.),

cultural (those which enrich human existence e.g. aesthetic values, recreation and ecotourism,

etc.) and supporting (pre-requisites for the delivery of other services; e.g., nutrient cycling,

soil formation, etc.).

However, Boyd and Banzhaf (2007), Fisher and Turner (2008), Fisher, Turner, and Morling

(2009), Kumar (2010) and Wallace (2007), note that there is no distinct definition and

classification of ecosystem services, as there is a concern about differentiating 'processes'

from 'services'. Haines-Young and Potschin (2010) have excluded 'supporting services' from

classification of Common International Classification of Ecosystem Services (CICES) while

Wallace (2007) has excluded 'regulating services'. Haines-Young and Potschin (2010)

contend that 'supporting services' are structures, processes and functions characterising

ecosystems. A clear and robust classification of ecosystem services aids with their valuation

and helps to avoid double counting (Fisher *et al.*, 2009).

2.2   Economic valuation of wetlands and ecosystem services

The concept of economic valuation is based on individuals' preferences, that they make the

best use of resources and opportunities (Young, 2005). The aim of valuation is to determine

the price tag people attach to ecosystem services (Kumar, 2010), how much people are

willing to forgo to obtain the desired good or service (Emerton, 1998); assist with scarce

resource allocation decisions; provide a stimulus to conserve the ecosystems that offer the

most valuable services; provide insights about management of wetlands and ecosystem services; and help to inform a series of policy decisions and programmes.

The Millennium Ecosystem Assessment (2005) notes that the concept of Total Economic Value (TEV) is the most widely used framework to identify and quantify the contribution of ecosystem services to human well-being. TEV is the sum of all the relevant willingness to pay (WTP) or willingness to accept (WTA) for a project outcome (Kumar, 2010). It is categorized into use values and non-use values (Figure 2.1) (Kumar, 2010; Pearce & Turner, 1990; Perman, 2003; Tietenberg & Lewis, 2000; Turpie *et al.*, 2006).

The utility that people derive from utilising ecosystem services is directly or indirectly known as use value and is further sub-divided into direct and indirect use values (Hoevenagel, 1994; Tietenberg & Lewis, 2000). The direct use value involves the actual utilization of environmental resources by consumers taking the form of consumptive use (hunting, fishing) and non-consumptive use (bird watching, wildlife viewing) (Kumar, 2010; Turpie *et al.*, 2006). Ecosystem functions (wildlife refuge, carbon sequestration, water treatment, etc.) are referred to as indirect use values (Tietenberg & Lewis, 2000; Turpie *et al.*, 2006).

The utility that people derive from ensuring the availability of an ecosystem service for its use in the future is known as option value (Hoevenagel, 1994; Perman, 2003; Tietenberg & Lewis, 2000). Tietenberg and Lewis (2000) liken option value to an insurance premium paid to sustain the availability of an ecosystem service or the willingness to pay to conserve ecosystem services for the future generation. The economic value placed on ecosystem

services that are not used by consumers or will never be used is known as non-use value (Hoevenagel, 1994). It captures elements that are unrelated to the current, future or potential consumption of the good, known as the willingness to pay for improving or conserving an ecosystem service that the consumer is currently not using. This willingness to pay can be captured by resource managers and tourism planners to protect and manage the use of ecosystem services in protected areas. The difference between what an individual actually pays and willing to pay is known as consumer surplus. Tourist's willingness to pay for wildlife conservation can be part of his/her direct use value but can also reflect non-use values (Barnes, Schier, & van Rooy, 1999).
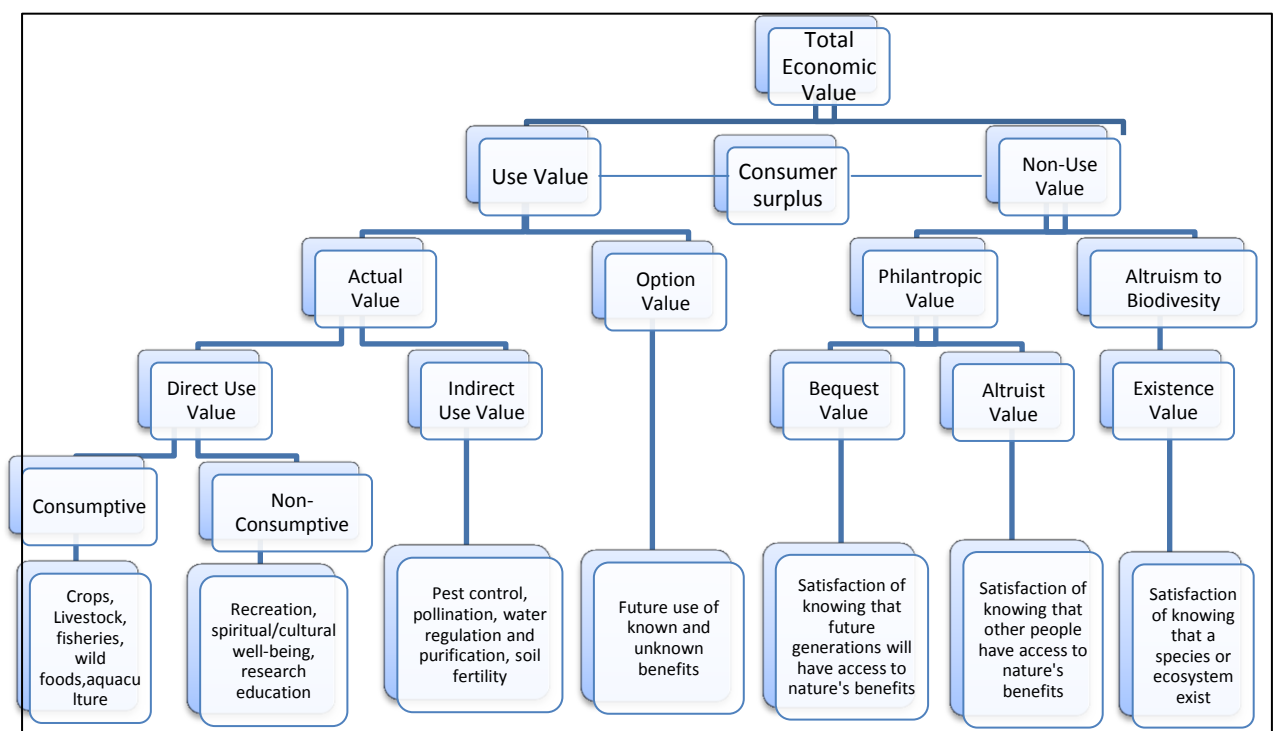
Figure 2.1 Total Economic Value

Source: Kumar (2010)

Non-use value is further sub-divided into bequest, existence and altruist values. Bequest value is the benefit accruing to any individual with the knowledge that others, especially their children might benefit from the resources in the future (Gürlük & Rehber, 2008). Existence values are derived from the knowledge of continued protection of resources (Perman, 2003) and altruism value is the value placed on individual willingness to pay for maintenance of an ecosystem that is not used by the individual so that others may make use of it (Perman, 2003).

It is therefore important that a proper measurement of total economic value of an environmental resource should take into account all these components of value. Any efforts to omit one or more of these components will underestimate conservation benefits of the resource under consideration.

2.3 Economic valuation techniques

Different valuation methods (such as, the contingent valuation method, hedonic pricing method, travel cost method, production function approach, opportunity cost, replacement cost and choice experiment) have been developed with the aim to attach monetary value to ecosystem services. The developed methods are categorized into direct market valuation, revealed preference and stated preference (Alpízar, Carlsson, & Martinsson, 2001; Hoevenagel, 1994; Kumar, 2010; Pearce, Özdemiroğlu, & Britain, 2002).

2.3.1 Direct market valuation methods

Direct market valuation approaches use available data from actual and existing markets. These approaches are i) market price-based approach, ii) market-cost based approach and iii)

production function-based approach. Hanley, Wright, and Adamowicz (1998) note that the following conditions are needed to satisfy the achievement of a perfectly competitive market; i) market prices have to be known by all producers and consumers; ii) transaction costs are zero; iii) consumers and producers behave competitively by maximizing benefits and minimizing costs and iv) markets with well-defined property rights must exist to allow free exchange of goods.

Market price-based method

The market price method estimates the economic value of ecosystem services that are bought and sold in commercial markets (Asafu-Adjaye, 2005; Emerton, 1998). The prices of goods reflect the willingness to pay of the good/service (Emerton, 1998). For instance, the price of fish sold in the market is the willingness to pay of the consumer for the good. This is the simplest and most straightforward way of estimating the value of ecosystem services as the prices of these services are readily available (Asafu-Adjaye, 2005; Emerton, 1998; Kumar, 2010).

Market Cost-based methods

Cost based approach, the second method of direct methods, is an appraisal method that estimates the cost to reproduce or replace a good. The approach is based on the assumption that the importance of a good to the people is reflected by the costs they incur when avoiding the loss of an ecosystem service or replacement. Replacement cost, preventive expenditure, damage avoided cost method and opportunity cost of labour are different approaches of the cost-based method. The replacement cost method assumes that ecosystem services have substitutes (Sundberg, 2004) and their values are generated by estimating the cost of replacing goods with alternative goods (Asafu-Adjaye, 2005; Boyer & Polasky, 2004;

Sundberg, 2004). The most famous market cost-based method for valuing ecosystem services is that of estimating the cost of replacing the water filtration services provided by undeveloped watersheds with a drinking water filtration plant (Boyer & Polasky, 2004).

The Preventive Expenditure Method uses the cost of preventing damage or degradation of environmental benefits (Barbier *et al.*, 1997; Sundberg, 2004). The method assumes that the net benefits of a particular project intervention are the same as the amount of money people are willing to spend on mitigating or avoiding the impacts (Young, 2005). That is, a community without quality drinking water may introduce a water treatment plant which will reduce the cost of boiling water for cooking and drinking (Asafu-Adjaye, 2005; Sundberg, 2004).

The damage avoided cost method uses either the value of the property protected, or the cost of actions taken to avoid damages, as a measure of the benefits provided by an ecosystem service (Leschine, Wellman, & Green, 1997). The opportunity cost of labour method focuses on the employment opportunities foregone in order to secure or protect the ecosystem services (Barbier *et al.*, 1997). The assumption of the method is that the producer's decision to spend time collecting non-marketable goods is weighted against alternative uses of household labour.

Production function-based Method
The production function-based method, the third method of cost-based approach, considers an ecosystem service as an input in the production function, which relates the output of a particular marketed good or service to the inputs necessary to produce it (Freeman, 1993).

The assumption is that ecosystem services are either directly used in production as inputs or indirectly as supporting the economic activity (Barbier, 1994).

The advantage of direct market approaches is that they reflect the actual preferences of goods and services and their costs to individuals (Kumar, 2010) and data (i.e. prices, quantity and costs) is relatively available as the ecosystem services are traded in markets. However, their disadvantage is that some ecosystem services do not have markets, hence it is difficult to apply market prices to value them (Emerton, 1998). The link between environmental changes and the market of goods and services may not be observable (Asafu-Adjaye, 2005) when using direct market approaches.

2.3.2   Revealed preference methods

The revealed preference (RP) approach infers the value of non-market goods and services by studying their actual behaviour in a closely related market (Bell, Boyle, & Rubin, 2006; Yacob & Radam, 2009). The rationale of RP is that either the market for the good or service does not exist or the market is imperfect. The approach identifies ways in which ecosystem services influence actual market of other goods and services (Pearce et al., 2002). The price of the marketed good or service is thus used as an indicator of the value of the non-marketed good. RP methods merely capture 'use value'. The preferences of consumers are revealed through their actions in real markets which are related to the value of interest. The most commonly used revealed preference methods are Travel Cost Method and Hedonic Pricing Method (Hoevenagel, 1994; Tietenberg & Lewis, 2000).

Travel Cost Method

The travel cost method seeks to place a value on recreational sites by using consumption behavior in related markets. It is a non-market procedure whereby a value for a recreation site is obtained by considering how much money people are prepared to spend to visit that site. Time and travel expenses incurred by visitors in recreational sites are the basic assumptions of the travel cost method (TCM) (Boyer & Polasky, 2004; Iamtrakul, Teknomo, & Hokao, 2005; Limaei, Ghesmati, Rashidi, & Yamini, 2014), where travel expenses are used to measure the preferences for the recreational site (Kjær, 2005). The method establishes a relationship between the costs (price) incurred by travellers to a site and the number of trips taken. The area under the recreational demand curve, between the actual and choke prices, gives the Marshallian consumer surplus for access to the site.

The travel cost method has two approaches; ''individual'' and ''zonal'' (Asafu-Adjaye, 2005; Gürlük & Rehber, 2008; Young, 2005). With zonal travel cost method, travelling information of an individual is used to construct the travel-cost demand curve of the recreational site (Tietenberg & Lewis, 2000). The recreational site is divided into zones in the zonal TCM approach, to allow the researcher to calculate the number of trips purchased at different prices in the site (Gürlük & Rehber, 2008; Limaei *et al.*, 2014; Twerefou & Ababio, 2012). The assumption is that different zones of the recreational site have different prices and number of visits. This allows the researcher to calculate the number of trips purchased at different prices.

The individual travel cost method (ITCM) accounts for estimating individuals' recreation demand functions by observing the visitation rate of individuals who have made trips to the

recreational site as a function of the travel cost (Limaei et al., 2014). In individual TCM, the recreation demand and recreation cost relationship is based solely on individual observations. Therefore, the value of a recreation site to an individual is the area under each demand curve summed over all individuals. ITCM requires the researcher to do on-site survey with tourists and collect their information about frequency of travel to the site, the cost of travelling to the site, recreational preferences and their socio-economic characteristics (Garrod & Willis, 1999). The dependent variable of the individual TMC is 'the number of trips per year (or per season) by individual users of a recreation site', while the dependent variable of zonal TCM is the 'number of trips taken to the site by the population of a particular region or zone' (Fleming & Cook, 2008; Gürlük & Rehber, 2008; Twerefou & Ababio, 2012). The distinct variation between individual and zonal TCM is that individual TCM requires less number of respondents to compute the demand curve of the recreational site than zonal TCM. However, the disadvantage of individual TCM is that it requires more data from the individual respondent.

The travel cost method uses information on actual behaviour and preferences of recreationalists (Bell *et al.*, 2006) rather than verbal responses on hypothetical scenarios. The method allows for assessment of economic benefits or costs of wetlands resulting from changes in access fees; abolition of an existing site; addition of a new site and changes in environmental quality at a recreational site (Bell *et al.*, 2006). It can also be used to value a change in the environmental quality at a recreational site. Travel cost method has limitations. Firstly, the method concentrates on day trips made by visitors and over looks multiple-day, multiple-destination and purpose trips as it is difficult to apportion the travel costs among the various purposes of the trip (Bell *et al.*, 2006; Gürlük & Rehber, 2008). Secondly, it cannot

be used to assign values to on-site environmental features and functions that users of the site do not find valuable or off-site attributes supported by the site.

Thirdly, there is the issue of treatment of overseas visitors. Mostly foreign tourists visit various places in one trip and they plan their trip through tour companies or agents, making it difficult to use the single site travel cost model. Tourists find it hard to attach costs to a particular recreational site. Lastly, other factors that could be seen as costs are not included in the method except the money spent on travel. For instance, time spent and money spent on preparing for the trip and travelling are not accounted for in TCM. This is because tourists could be working and earning money instead of travelling. So to be able to obtain a good estimate of an individual's travel cost, a time cost that represents the opportunity cost of trip preparation and travel time have to be included.

Hedonic Pricing Method (HPM)

The theoretical foundation of Hedonic pricing method (HPM) was developed in 1974 by Rosen (Kjær, 2005; Palmquist, 1989), to derive the demand for attributes of a good such as environmental quality and land characteristics (Bell *et al.*, 2006). Hedonic models are based on Lancaster's theory of consumer demand (Lancaster, 1966), where a good is regarded as a set of its attributes and its value is considered as a function of each attribute (Asafu-Adjaye, 2005; Bell *et al.*, 2006; Kjær, 2005; Kumar, 2010; Young, 2005). HPM enables estimation of how a change in one characteristic- such as proximity to a wetland or the attributes of a nearby wetland- is affected by a change in property value using data on the market sale prices of houses (Boyer & Polasky, 2004). The value of a good or service can be estimated by analysing the prices of a good or service with different quantities of each attribute in the

market. The public's willingness to pay for housing is the most common application of hedonic pricing method (Tyrväinen, 1997; Tyrväinen & Miettinen, 2000).

The hedonic pricing method, just like travel cost method, depends on the observable data resulting from the actual behaviour of people (Bell *et al.*, 2006). HPM can be adapted to consider several possible interactions between market goods and environmental quality, for instance, changes in attributes of wetlands and market price of houses. The method can value the individual characteristics of a wetland by looking at the willingness to pay for the resource when the attributes change. However, the method only captures people's willingness to pay for perceived differences in environmental attributes and their direct consequences. The disadvantage of the method is that the property owners that are adjacent to the wetlands are the only ones who are able to measure the value of wetlands (Boyer & Polasky, 2004).

Various studies have used hedonic pricing method to estimate the value of environmental goods and services. Tyrväinen (1997) investigated whether and how urban forest benefits are capitalized in property prices using 1006 apartment sales in North Carelia, Finland. The urban forests are appreciated by residents and their benefits were reflected in the property prices as proximity of watercourses, wooded recreation areas and increasing proportion of total forested area in the housing district had a positive influence on apartment price. Tyrväinen and Miettinen (2000) used hedonic pricing method to estimate the residents' value of forests using the sales of terraced houses in Finland. The study revealed that a one kilometre increase of the distance of the nearest forest resulted in 5.9% decrease of the market price of the dwelling. Furthermore, Amrusch (2007) also used hedonic pricing method

to explore how agri-tourism, natural parks, vicinity to the beach, entertainments, transportation and infrastructure impact demand for coastal tourism in Italy.

2.3.3   Stated preference methods

The economic value of many ecosystem services cannot be derived with ease as they are not traded in the real market. Some of these services are preferred by consumers but cannot be valued using market transactions (Young, 2005). Stated preference (SP) approach is therefore used to establish the economic value of ecosystem services that cannot be estimated by the use of revealed preference methods which rely on the market value of alterative goods and services. The economic value of ecosystem services is revealed in a hypothetical market setting (Hoevenagel, 1994; Pearce *et al.*, 2002; Waterman, 2009; Yacob & Radam, 2009) where consumers are expected to reveal their willingness to pay for existing or proposed environmental conditions not registered in the market (Young, 2005). Individuals are asked to state their preferences in monetary terms when provided with alternative outcomes of the ecosystem services in question (Waterman, 2009; Young, 2005). The limitation of the SP methods is that observed preferences of consumers may not reflect their actual behaviour. Most common methods of stated preferences are discussed below.

Contingent valuation method

The contingent valuation method (CVM) uses a created hypothetical market to estimate the willingness to pay and/or accept of people for ecosystem services (Lee *et al.*, 2009; Tietenberg & Lewis, 2000). The underlying principal assumption of this method is that people have true, but hidden, economic values for environmental goods, which can be revealed through the creation of hypothetical markets (Hoevenagel, 1994).

Bateman *et al.* (2002) noted that there are several elicitation methods used under the CVM; 1) open-ended method, 2) payment card, 3) dichotomous choice CVM, 4) bidding game and 5) contingent ranking method. An individual is asked to state his/her maximum willingness to pay in the open-ended method and no amounts are given beforehand. The disadvantage of this method is that it is difficult for respondents to come up with maximum willingness to pay, especially if they are not familiar with the good in question which leads to outliers. In the bidding game method, respondents are given several discrete choice questions to choose from continually until they express unwillingness to pay the given amount. For instance, a respondent is asked if he/she is willing to pay a specific amount for the program to supply the good; if he/she said yes, a higher amount, e.g. BWP 1 more, is asked and, if no, a lower amount is asked. This is repeated until an initial yes changes to a no or vice versa. The short fall of the bidding game is that the initial proposed amount influences the final amount, that is, the starting point bias.

Mitchell and Carson (1981) proposed a payment card whereby respondents were shown an array of numbers on a card and asked to pick the amount on the card or any amount in between that best represented their WTP. With the payment card method, respondents are presented with cards having a set amount of money and have to identify the most preferred amount. In the dichotomous choice method (also termed as close ended and referendum), a respondent is confronted with an amount and given the opportunity to accept or reject the given amount, i.e. they only answer with 'yes' or 'no' (Lee *et al.*, 2009). Dichotomous choice tends to give higher WTP estimates compared to open-ended and payment card approaches. The Double bounded dichotomous choice is the form of dichotomous choice method with follow-up questions (Arrow *et al.*, 1993).

The major concern with the CVM is biased answers provided by respondents. The four potential biases associated with this method are starting point, information, strategic and hypothetical biases (Tietenberg & Lewis, 2000; Venkatachalam, 2004). The National Oceanic and Atmospheric Administration (NOAA) sponsored a panel of prominent economists to review the reliability of CVM (Arrow *et al.*, 1993). The panel made the following recommendations: 1) the CVM studies should use face-to-face interviews for data collection; 2) there should be pre-testing of questionnaires before the final survey; 3) photographs should be included in the survey only if presentation bias can be avoided; 4) the survey should adopt a willingness to pay format as opposed to willingness to accept compensation; 5) all responses, whether yes or no, should be followed by an open-ended question; and 6) dichotomous choice method should be used instead of open-ended method to reduce biasness (Arrow *et al.*, 1993; Hoevenagel, 1994).

Studies that used contingent valuation method concentrated on the following areas of environmental goods and services: water quality improvements (Hanley *et al.*, 2006a; Hanley, Wright, & Alvarez-Farizo, 2006b; Metcalfe *et al.*, 2012); visual aspects of forest management (Madureira, Nunes, Borges, & Falcão, 2011); nature-based tourism (Baral, Stern, & Bhattarai, 2008; Lee, 1997; Lee *et al.*, 2009); benefits of climate change mitigation (Longo, Hoyos, & Markandya, 2012); protection and conservation of wildlife (Hanley, Czajkowski, Hanley-Nickolls, & Redpath, 2010); restoration of environmental goods and services (Loomis, Kent, Fausch, & Covich, 2000a); and urban air quality improvement (Wang & Zhang, 2009).

The Choice Experiment Method

The choice experiment method (CE) has its origin in conjoint analysis and the field of transport and marketing (Adamowicz, Boxall, Williams, & Louviere, 1998; Alpízar *et al.*, 2001; Birol, Karousakis, & Koundouri, 2006; Rolfe, Alam, Windle, & Whitten, 2004). It was later applied in various fields including health (Hall *et al.*, 2002; Ryan & Gerard, 2003) and natural and environmental economics (Adamowicz *et al.*, 1998; Cerda, 2013; Chaminuka *et al.*, 2012; Hearne & Salinas, 2002; Hearne & Santos, 2005; Kaffashi *et al.*, 2012; Lee, Lee, Kim, & Mjelde, 2010; Yacob & Radam, 2009).

The choice experiment method is built on the Lancaster's theory of consumer utility and random utility theory (Birol *et al.*, 2006; Lancaster, 1966). The Lancaster's theory of consumer utility postulates that a consumer derives utility from the attributes of a good or service rather than the good or service itself (Adamowicz *et al.*, 1998; Chaminuka *et al.*, 2012; Lancaster, 1966; Perman, 2003).

On the other hand, Cascetta (2009) notes that the random utility theory (RUT) is based on the hypothesis that every individual is a rational decision-maker, maximizing utility relative to his or her choices. The random utility theory also postulates that individual utility (*U*) is unknown but can be decomposed into systematic or deterministic component (*V*) and an unobserved or stochastic component (*e*). Therefore, the choice experiment method assumes that people make their choices based on the attributes of an environmental good that maximize their utility. It employs a series of questions with more than two alternatives to elicit responses that allow estimation of preferences over attributes of an environmental state. The method also assumes that consumers are highly rational decision makers who seek to

optimize their utility by selecting the best option among the available alternatives, subject to constraints such as time and income. Choices in this experiment are discrete in nature, that is, only one alternative from a given choice set can be selected.

Like the contingent valuation method, the CE method requires the creation of hypothetical markets for ecosystem services in order to obtain value estimates of willingness to pay for an improved provision of the service, or willingness to accept compensation for an impaired provision (Christie *et al.*, 2006; Yacob & Radam, 2009). In the CE method, the created hypothetical market together with its attributes are presented to the respondent in the form of a series of alternative resource use options and the respondent is asked to choose his/her preferred one. These set of options/alternatives are known as choice sets. The CE method is proficient in measuring the economic benefits associated with the attributes of an environmental good (Bateman *et al.*, 2002; Christie *et al.*, 2006; Rolfe *et al.*, 2004).

The choice experiment method is considered as a generalization of the CVM in the sense that rather than asking people to choose a base case and specific alternatives, people are asked to choose between cases that are described by their attributes (Adamowicz *et al.*, 1998; Birol *et al.*, 2006). Contingent valuation method is defined by some researchers to mean a single binary discrete choice question and the choice experiment method was defined to mean a sequence of multinomial choice questions. The method attempts to understand the respondents' preferences over the attributes of a scenario rather than a specific scenario as is the case with the CVM. It is easy to estimate the value of the individual attribute that make up an ecosystem service in the CE method and there is an opportunity to identify marginal values of attributes (Hanley, Adamowicz, & Wright, 2005). The fall-back of the choice

experiment method is that it assumes that the sum of attributes of a resource is the same as the value of the stated resource (Hanley *et al.*, 1998). In the contingent valuation method, the respondent makes a choice between "yes/no" for the provision of a particular environmental service at a particular price, while the choice experiment presents the respondent with a menu of options of different environmental services at different prices (Cerda, 2013).

2.4   Consumer Surplus

Economic values are important in making economic choices especially when trade-offs are concerned. This is based on the preferences of individuals and mostly measured by someone's willingness to give up one good or service to acquire another good or service (Humavindu, 2002). The dollar that one is willing to forgo in order to attain a good is commonly known as the willingness to pay. However, in most cases, individuals are willing to pay more than what they are actually supposed to pay and the difference between what an individual is willing to pay and what he actually pays is known as consumer surplus. Consumer surplus is the difference between what an individual is willing to pay for the items he purchases and what he actually pays (Wieland & Horowitz, 2007). This is the economic benefit of an individual.
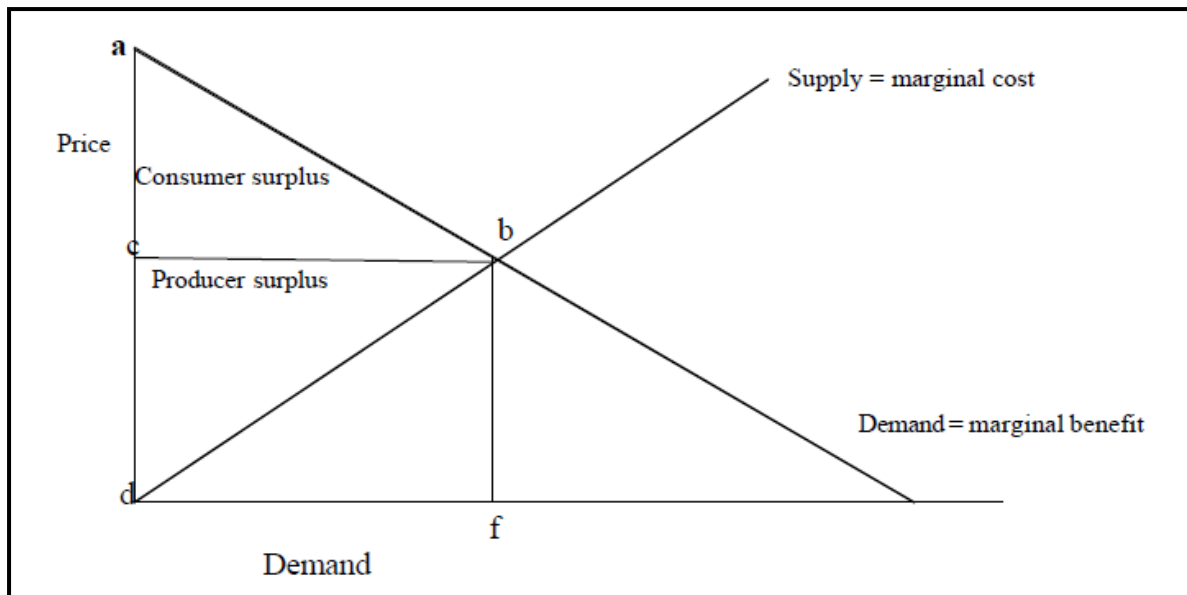
Figure 2.2: Graphic presentation of consumer surplus

Source: Gregory and Ruffin (2007)

The consumer surplus is the area under the demand curve and above the market price (*abc*). Consumer surplus can be derived from both use and non-use values (see Figure 2.1) (Gregory & Ruffin, 1997).

2.5   Empirical Literature Review

2.5.1   The Choice Experiment Method

Various studies have used the choice experiment method to establish the preferences of tourists and local communities on the management and improvement of natural resources (environmental goods and services).

Cerda (2013) used the choice experiment method to assess public economic preferences for biodiversity conservation and water supply and factors influencing those preferences in La Campana Peñuelas Biosphere Reserve, Chile. Visitors were willing to protect the selected

attributes (existence of endemic orchid species, chances of observing animals with scenic attraction, additional protection for an endemic amphibian, and availability of drinkable water in the future) and their WTP for the attributes ranged from CHP \$2,600 (\$5.4) to CHP \$6,600 (\$14) per person per visit. On the other hand, Chaminuka *et al.* (2012) used the CE method to establish the potential of ecotourism in communities adjacent to protected areas (Kruger National Park). The study suggested that there was a potential for the development of ecotourism services in villages adjacent to KNP as tourists were willing to participate in cultural activities around villages.

The choice experiment method can also be used to assess the trade-offs of local communities on the improvement of the water quality and biodiversity conservation. Kaffashi *et al.* (2012) established that the trade-offs between the five wetland attributes showed that water quality improvement and biodiversity conservation were the most highly valued attributes by respondents.

Do and Bennett (2009) on the other hand estimated the wetland biodiversity protection values of Tram Chim National Park using the choice experiment method in Vietnam's Mekong River Delta and established that the net social benefit of a proposed protection program ranged from US\$ 0.52million to US\$ 1.84 million, which indicates that the proposed programme had the potential to improve the social welfare of the locals.

Birol and Cox (2007) used the choice experiment method to investigate the economic benefits derived by the public from sustainable management of the Severn Estuary Wetland

in the United Kingdom. The study indicated that the public was deriving positive and significant values from sustainable management of this wetland. The study demonstrates that the choice experiment method is a promising tool, for designing socially optimal policies for sustainable management of wetlands as well as assessing the trade-offs of local communities and tourists.

Other scholars used the choice experiment method to examine the demand of tourists and foreign residents for nature-based tourism. For instance, Naidoo and Adamowicz (2005) used the method to determine the demand of tourists for nature-based tourism in Uganda and they revealed that tourists were willing to pay more when there was an increase in bird population.

In Botswana, not many studies have used the choice experiment method to assess the demand and preferences of tourists, management of natural resources or to establish the trade-offs associated with the implementation for local communities and tourists. However, Pienaar, Jarvis, and Larson (2014) did a study in Kasane, Botswana using the CE method to determine the value CBNRM community members placed on both private and quasi-public development interventions. The study indicated that the interventions were sufficient to encourage households to engage in anti-poaching enforcement, revegetation of wildlife habitat and wildlife monitoring in their area (Kasane).

2.5.2 Consumer surplus

The bulk of the literature in Africa has indicated that there is consumer surplus in wildlife viewing for protected areas (Barnes *et al.*, 1999; Kgathi *et al.*, 2009; Krug *et al.*, 2002; Mmopelwa *et al.*, 2007; Navrud & Mungatana, 1994). These studies used various valuation

techniques to estimate the consumer surpluses of tourists and the most used methods were the travel cost and contingent valuation methods. Barnes *et al.* (1999) used the contingent valuation method in Namibia to estimate the economic value of wildlife viewing in protected areas. The results indicated that each wildlife viewing tourist contributed N$ 907 in 1995.

Navrud and Mungatana (1994) also estimated the consumer surplus of wildlife viewing tourists in Lake Nakuru National Park, Kenya, using the open-ended method. The annual recreational value of wildlife viewing was estimated to be US$ 7.5-15 million in 1991. Mladenov *et al.* (2007) and Mmopelwa *et al.* (2007) did their studies at Moremi Game Reserve using the contingent valuation method. Mladenov *et al.* (2007) estimated consumer surplus of US$ 225 per person using the travel cost method and US$ 60 per person using the contingent valuation method. Mmopelwa *et al.* (2007) determined the perceptions of self-drive tourists and clients of mobile tour operators on park fees of Moremi Game Reserve and the study revealed that tourists were willing to pay an average of BWP129.00 and BWP 39 for entrance and camping fees, respectively. Moreover, Kgathi *et al.* (2009) estimated the recreational use value of nature-based tourism and willingness to pay for conservation of biodiversity in the Okavango Delta. They found the average consumer surplus of tourists to be US$ 235, which was 7% of the mean expenditure for the tourist trip.

In general, empirical studies cited above have shown that the existing research on the benefits associated with recreation has largely been restricted to either the estimation of recreational benefits using the travel cost method or to the benefits associated with improvements to the recreational resource using the contingent valuation method or to a combination of the two methods. Existing research in developing countries in general and in Botswana in particular,

has inadequately used multi-attribute based valuation (choice experiment) method to value recreational sites and ecotourism. Furthermore, the existing research is mostly restricted to measuring the benefits of tourism and recreational sites to the local communities, looking at their socio-economic and environmental impacts and it neglected the recreational net benefits experienced by tourists. Thus, this research is expected to address this knowledge gap by using the choice experiment method and by estimating the consumer surplus of tourists, of one trip on the Okavango Delta in Botswana that may have not received much attention in the literature.

2.6   Ecotourism

Much attention has been paid to the question of what constitutes ecotourism, and numerous definitions and concepts have erupted in the course (Chaminuka *et al.*, 2012; Chiutsi, Mukoroverwa, Karigambe, & Mudzengi, 2011; Mbaiwa, 2008). Approximately 85 definitions of the concept of ecotourism have been unearthed by Fennell (2001). Definitions of ecotourism are noted to be influenced by the character of the organizations using the concept and nature-based tourism is noted to be the most used theme that runs across most ecotourism definitions (Mbaiwa, 2008). Ecotourism is defined by The International Ecotourism Society (1990) (http://www.ecotourism.org/what-is-ecotourism) as *"responsible travel to natural areas that conserve the environment and improves the well-being of local people"* and this definition has been adopted by this study. A new definition of ecotourism has been adopted and it is now defined as *"responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education"* (TIES, 2015).   This definition has three areas; community, environment and interpretation; where education is for all stakeholders involved in ecotourism.

The key principles of ecotourism as defined by The Quebec Declaration on Ecotourism according to World Ecotourism Summit (2002) are: '(i) active contribution to cultural and natural heritage; (ii) inclusion of local and native communities in the planning of ecotourism and a contribution to their well-being; (iii) visitors are familiarized with the cultural and natural heritage of the places they visit; (iv) better independent travellers and organized tours of small-sized groups'. Ecotourism is considered the fastest growing market segment of the tourism sector (Chaminuka *et al.*, 2012; Lepper & Goebel, 2010; Lindsey *et al.*, 2007; Mbaiwa, 2008; Wight, 1997). Fennell (2003) and Wight (2001) suggest that ecotourism grows faster than the tourism sector as a whole, with estimates ranging between 7% and 30%. Ecotourism has the potential to generate income for local communities, distribute the revenue among locals, promote economic development in remote rural areas and ensure natural resource conservation (Chiutsi *et al.*, 2011; Lindsey *et al.*, 2007; Liu, 2003; Mbaiwa, 2008, 2011b; Novelli *et al.*, 2006). As a result, great emphasis has been placed on ecotourism over the years as one of the most beneficial forms of sustainable tourism by developing countries (Novelli *et al.*, 2006).

Ecotourism is considered a strategy for sustainable tourism and seen as a channel of sustainable development, by virtue of its purported small scale, local involvement and low environmental impacts. The Organisation of Eastern Caribbean States (OECS) has defined sustainable tourism development as

"..the optimal use of natural resources for national development on an equitable and self-sustaining basis to provide a unique visitor experience and an improved quality of life through partnership among government there private sector and communities".

Sustainable tourism embodies the concepts of environmental, socio-cultural and economic sustainability (Mbaiwa, 2005a) and it is expected to take into account the needs of the host communities and contribute to poverty alleviation (Tosun, 2001). Community-Based Natural Resource Management (CBNRM) emerged as part of this discourse. Communities are given the platform to partake in ecotourism in their localities through CBNRM; established with acknowledgement that sustainable use and conservation of natural resources can be achieved with the involvement of local communities. Community involvement and participation as a principle of ecotourism, ensures the sustainability of natural resources and availability of enhanced opportunities for local people from (eco)tourism (Sebele, 2010).

2.7 Tourists' Preferences for Tourism Development

Sustainability of tourism has been widely regarded as a strategy to considerably address the negative impacts of mass tourism and maintaining its long-term viability (Liu, 2003; Mbaiwa, 2005c). This entails an analysis and understanding of tourism demand at destination level. Tourism demand acts as a determinant of the provision of tourism facilities and services by the host communities (Lejarraja & Walkenhorst, 2007; Wight, 1997) and to understand the capacity and capability of locals to meet these demands (Hearne & Santos, 2005). Tourism sustainability and development necessitates a balance in its supply and demand in terms of quality, quantity and price as it matches tourism resources to the demands and preferences of actual or potential tourists (Chaminuka *et al.*, 2012; Lejarraja & Walkenhorst, 2007; Liu, 2003). The preferences and motivations of tourists determine their demand for tourism services and products (Chaminuka *et al.*, 2012; Liu, 2003; Waterman, 2009). The motivations, preferences and perceptions of tourists influence the tourism resource itself in the sense that they determine what object or site becomes a tourist attraction and its relative value in the market place (Liu, 2003).

Understanding tourism demand assists communities in establishing potential tourism development and investments. Lejarraja and Walkenhorst (2007) stated that tourists tend to bring along their tastes and preferences from their home countries which influences their requirements when they travel, hence, establishment of new products. Tourism product diversification is another benefit of establishing tourists' preferences as tourists tend to appreciate goods and services that draw on local culture, tradition, and natural resources (Chaminuka *et al.*, 2012; Hearne & Salinas, 2002; Hearne & Santos, 2005; Lejarraja & Walkenhorst, 2007; Mbaiwa, 2005c). Tourists are also interested in exotic things. This makes entrepreneurial opportunities available to the local people. Establishing preferences and motivations of tourists creates employment opportunities for communities as it links the tourism sector to other sectors especially transportation, accommodation and agriculture. Protected area managers, policy makers, government agencies, and entrepreneurs need to make research on tourists' preferences and expectations on tourism development in tourist destinations to support the establishment of developments and new tourism products (Hearne & Salinas, 2002; Hearne & Santos, 2005; Waterman, 2009).

Identifying the best alternative for tourism development requires knowledge of its effects on the environment and the economy, as well as the welfare impacts on local communities. It is therefore essential to appreciate community's perceptions and preferences to avoid conflicts (Concu & Atzeni, 2012). The measurement of the host community's perceptions of tourism development plays a vital role in the future success of a destination (Andriotis, 2005). However, this is beyond, scope of this project. If there is a conflict between the preferences of tourists and local communities, it will create a mismatch in the residents' supply of and tourists' demand for tourism services and products that needs to be addressed to promote the best tourist development strategy.

2.8   Tourism and Rural Development

Rural development is referred to as 'the process of strengthening of the liveability in rural areas' (Elands & Wiersum, 2001). Its aim is to *'improve the livelihoods/ quality of life of people, rural economy, the landscape identity, the protection of the environment and the attractiveness of rural areas'* (ECRD, 1996 cited in Elands & Wiersum, 2001). Rural development is said to have five discourses; *agri-ruralist, hedonist, utilitarian, community sustainability and natural conservation* (Elands & Wiersum, 2001). According to the *hedonist discourse*, rural areas are seen to be providing urban-dwellers with quietness and naturalness and rural development in this discourse is therefore concerned with improving the image of rural areas (Elands & Wiersum, 2001).

According to Elands and Wiersum (2001), the various discourses mention that rural development is concerned with agricultural production (*agri-ruralist*); improving the aesthetic values of rural areas such as quietness and naturalness (*hedonist*); stimulating economic activities to satisfy the productive and consumptive needs of people (*utilitarian*); concerned with maintenance of community infrastructure as well as employment and income generation (*community sustainability*); and the environmental sustainability of rural areas (*natural conservation*). All these discourses conceive rural development in social, cultural economic and environmental terms. Therefore, rural development is a '*holistic process of transforming the socio-economic, cultural and political conditions of the people residing in relatively remote and sparsely populated communities with the ultimate aim of improving their quality of life and well-being'* (Kolawole, 2014b). The approach to rural development in many countries is to promote integration of different rural dimensions, including food production, maintaining rural landscapes, protecting biodiversity, providing employment and economic development, in a sustainable manner.

Tourism development is understood as a potential route to wider rural development. Tourism has also been promoted in rural areas to reduce or alleviate poverty. Tourism had the potential to contribute to attaining the expired United Nations Millennium Development Goals (MDGs), particularly poverty alleviation and environmental sustainability (Christie & Sharma, 2008; Lacey & Ilcan, 2014; Mbaiwa, 2011b; Saarinen & Lenao, 2014; Saarinen & Rogerson, 2014). Revenue generated through tourism could also be used in various environment and natural resource conservation campaigns and avoiding uncontrolled tourism development (Lacey & Ilcan, 2014; Mbaiwa, 2011b). At the completion of MDGs in 2015, they were replaced by the newly formed sustainable development goals.

The sustainable development goals (SDGs) are the new intergovernmental set of aspiration goals of United Nations' agenda for sustainable development. The SDGs recognise the potential of tourism in creating employment and contributing to the well-being of local communities. For instance, Target 8.9 of Goal 8 states that *"By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products";* while Target 12b of Goal 12 states that to *"Develop and implement tools to monitor sustainable development impacts for sustainable tourism which creates jobs, promotes local culture and products"* (http://icr.unwto.org/content/tourism-and-sdgs) (World Tourism Organization, 2015a).

Tourism needs to be integrated into development strategies of local communities, so that communities can harness its benefits, but this has not always been a success story (Liu, 2006; Saarinen & Lenao, 2014). However, there are challenges with integrating tourism into development strategies of rural areas. According to Liu (2006), strengths and constraints of

"rurality" have contributed to the limited successes of tourism development in rural areas. The Integrated rural tourism framework was therefore developed with the aim of 'holistic tourism planning through the integration of tourism as a new activity for localities' (Saarinen & Lenao, 2014). This framework places strong emphasis on endogenous development, bottom-down approach, where participation of local communities is encouraged.

Community-based natural resource management (CBNRM) was therefore introduced with the aim of involving local communities in the management of natural resources and tourism in their areas (Mbaiwa, 2005a; Mbaiwa & Stronza, 2010). CBNRM was introduced with the 'bottom-down' approach in mind, in order to promote local community participation. This approach of CBNRM allows communities to have a say in the management of natural resources and tourism development in local communities. CBNRM in Botswana is *'a conservation and rural development strategy involving community mobilisation and organisation, institutional development, comprehensive training, enterprise development and monitoring of the natural resources'* (Mbaiwa, 2013).

In the Okavango Delta, rural development is mainly driven by tourism (Kolawole, 2014b). Literature (Mbaiwa, 2008, 2011b; Mbaiwa & Stronza, 2010; Sebele, 2010) indicates that tourism has contributed to the welfare of local communities in the Okavango Delta and Botswana at large. Tourism revenue in local communities goes through community-based organisations (Mbaiwa, 2004c; Pienaar *et al.*, 2014; Thakadu, Mangadi, Bernard, & Mbaiwa, 2005). Through the development of tourism in rural communities, tourism has created employment for the communities and dividends for households (Lepper & Goebel, 2010; Mbaiwa, 2008; Thakadu *et al.*, 2005); changed the attitudes of local communities towards

wildlife and natural resources conservation (Mbaiwa, 2011a; Mbaiwa & Stronza, 2011); empowerment of local communities (Mbaiwa, 2008; Mbaiwa & Stronza, 2011); contributed to conservation of natural areas (Mbaiwa & Stronza, 2010; Sebele, 2010); and infrastructural development (Mbaiwa, 2008, 2009; Sebele, 2010).

Many community and rural development projects in the Okavango Delta are implemented through CBNRM (Kolawole, 2014b). However, infrastructure in many areas is limited. For instance, Khwai village is adjacent to Moremi Game Reserve, and does not have much infrastructure because it is close to a protected area. Infrastructure is limited in many areas because community based organisations do not work with village development committees when development of the communities are concerned. Blaikie (2006) notes that community based organisations take all the revenues of tourism which do not flow to the local Village Development committees (VDCs). In Botswana, VDCs coordinate development activities and implement development projects in villages by proposing projects to the district councils for their considerations and inclusion in the District Council Development Plans.

2.9   Summary
Wetlands play a crucial role in the lives of people and biodiversity around them. They provide food and habitats to wildlife. However, these resources are threatened by population increase, urbanisation, industrialisation and anthropogenic factors. Conservation of wetlands is therefore needed. Some of the valuation techniques include direct market valuation methods (market price-based approach, market-cost based approach and production function-based approach); revealed preferences methods (travel cost and hedonic pricing) and stated preferences methods (choice experiment and contingent valuation method).

The choice experiment method uses the attributes of an environmental good to estimate its value. Several studies have used the CE method to value environmental goods; establish the demand for nature-based tourism; or establish trade-offs of local communities with respect to improved management. However, the preferences of tourists can be used to estimate the economic value of these protect areas and determine which management programmes are efficient and effective. This study has used the choice experiment method to establish the preferences of tourists and determine the economic value of attributes of ecotourism in the Okavango Delta. This method has been chosen as method provides the opportunity to establish the marginal value of attributes as they change and can estimate the intrinsic value (habitat-based and aesthetic values) of the Okavango Delta.

Consumer surplus is the differences between what the consumer is willing to pay and what he actually pays. Several studies in Africa have estimated consumer surplus of wildlife viewing or wildlife tourism. They have established that there is consumer surplus in the tourism sector that is not captured. They have suggested that mechanisms be put in place to tap this consumer surplus. Studies have revealed that tourists are willing to pay for the conservation of protected areas and ecosystem services. This willingness to pay can be captured to finance the implementation of several policies that are meant to improve, conserve and protect protected areas and ecosystem services.

The reviewed literature has indicated that the existing research was mostly based on the benefits (both socio-economic and environmental benefits) of tourism and recreational sites to the local communities and neglected the recreational net benefits experienced by tourists. The consumer surplus of tourists was also estimated in national parks in Botswana leaving

out tourists visiting areas adjacent to national parks. Some of the knowledge from the reviewed literature has been used to support and supplement the results this research.

<div align="center">

CHAPTER 3
METHODOLOGY

</div>

3.0 Introduction

Chapter three is concerned with the study area (Okavango Delta) and the study site, wildlife management area Ngamiland 32 (NG/32). The data and methodology are discussed in this chapter, that is, the choice experiment method and consumer surplus. The methods used for sampling, data collection and analysis of tourists' preferences and consumer surplus are also covered in this chapter.

3.1 Study area

3.1.1 Geographic and Demographic Features of the Study Area

The Okavango Delta is the study area for this project. It is situated in the northern edge of the Kalahari sand veld in north western Botswana below the Caprivi Strip in Namibia (19 17S 22 54E). The Okavango Delta is considered as one of the largest inland deltas in the world, covering about 28, 000 km^2 in size (Ramberg *et al.*, 2006). It is home to a wide variety of wildlife species, which depend on the grassland vegetation sustained by the floods from Angola. The diverse flora and fauna includes 1, 300 plant species, 122 mammal species, over 444 species of birds, 71 species of fish, 33 for amphibians and 64 for reptiles, all of which include rare, endangered and endemic species (Ramberg *et al.*, 2006).

The Okavango Delta has hot, wet summers and cold, dry winters (McCarthy, Bloem, & Larkin, 1998). It experiences small amount of summer rainfalls during the months of November to March each year with an annual average rainfall of 500mm per year (McCarthy *et al.*, 1998). This rainfall varies from year to year and has negative implications on both tourism and agricultural development in and around the Delta. The Delta is fed by seasonal

floods from the highlands of Angola (Gumbricht, McCarthy, & McCarthy, 2004). The flood levels vary considerably from year to year, depending on the precipitation rate in the catchment areas of the Angolan highlands (Bendsen & Meyer, 2002). The inflow ranges between 7000 and 15 000 million cubic metres of which 97% is lost to evapotranspiration and seepage leaving only 3% to exit past Maun through Thamalakane River (Ramberg *et al.*, 2006). Water usually arrives at Mohembo/Shakawe around March/April via Okavango River and gradually spreads throughout the Delta. The annual flood wave takes about 4 to 5 months to reach the lower part of the Delta (regions around Maun) from Mohembo (a distance of 250km). This is due to the low topographic gradient of the Delta (McCarthy, 2006; Ramberg *et al.*, 2006).

Wildlife is not the only species that depend on the waters of the Okavango Delta, people also depend on it, both the local communities and visitors. The Government of Botswana has therefore formulated policies, laws and regulations to govern the sustainable use and management of the Okavango Delta and its resources. Some of the policies and regulations include Water Act of 1968; Forest Act of 1976; Wildlife Conservation and National Parks Act of 1992; Environmental Impact Assessment Act of 2005 and Okavango Delta Management Plan (ODMP). In addition, Botswana is a signatory to international conventions such as Ramsar Convention and the Convention on Biological Diversity. In 2014, the Okavango Delta was listed the 1000th World Heritage site in the world by the United Nations Educational, Scientific and Cultural Organization (UNESCO) (http://whc.unesco.org/en/news/1159/). This suggests that the recognition of the Okavango Delta as a heritage site will expose the Delta to the international tourism market and promote the tourism sector in Botswana.

3.1.2 Livelihoods in the Okavango Delta

The Okavango Delta is vital to the livelihoods of people living in its catchments (Kgathi *et al.*, 2006; Kgathi *et al.*, 2013). The main livelihood activities in the Ngamiland District include rain-fed and flood recession arable farming (the latter is known as *molapo* farming in *Setswana*), livestock agriculture, fishing, hunting, gathering of veld products, production and sale of crafts and local food and beverages, employment in the informal sector, and formal employment in the government and in the private sector (Bendsen & Meyer, 2002; Kgathi *et al.*, 2013). *Molapo* farming is a system of farming that utilises soil moisture from the receding floods in the floodplains and is common in communities around the south eastern parts of the Delta (Motsumi, Magole, & Kgathi, 2012; Turpie *et al.*, 2006). Conversely, dryland farming is common in areas around the Etsha villages and those along the Panhandle (Bendsen & Meyer, 2002; Wilk & Kgathi, 2007). Pastoral farmers keep cattle and small livestock like goats and sheep.

Veld products collected by communities in the Okavango Delta include river reeds (*Phragmitesspp*) and thatching grass which are later sold to lodges and individuals for cash. Residents also gather Hyphaene petersiana (*mokololwane*) to make baskets sold to tourists or accommodation facilities and government departments for decoration. Many communities in the Delta have commercialized their culture as an alternative source of income; they display and perform cultural activities to tourists. The Okavango Delta also supports a small-scale fishery (Mmopelwa *et al.*, 2009). The recreational fishery is concentrated in the upper Delta, while the commercial fishery is more widespread (Kgathi, Mmopelwa, & Mosepele, 2005).

The mass participation in the tourism sector and employment in the public sector has led to the overall decline of the economic significance of agriculture over the years in Ngamiland (Bendsen & Meyer, 2002). Tourism sector and other related service sectors such as transport and travel agencies, air charter companies, hotels, and catering services, retailing of food and beverages, camp construction and maintenance provide a source of employment for many people (Bendsen & Meyer, 2002). According to Government of Botswana (2011), in 2011, 9, 600 people were employed in the accommodation sector. Furthermore, 1, 737 people were employed in the tourism sector in Ngamiland District. Employment revenue from the tourism sector contributes to poverty reduction in the area (Lepper & Goebel, 2010; Liu, 2003).

3.1.3 Tourism in the Okavango Delta

Tourism in the Okavango Delta is mainly nature-based as the area is rich in biodiversity and surface water coming from the Angolan Highlands via Okavango River. The Delta has been recognised as an international tourism destination, renowned for its tranquillity, natural beauty and near pristine environment (Kgathi *et al.*, 2013). The tourism sector is mainly non-consumptive (Mbaiwa, 2008, 2009; Mmopelwa *et al.*, 2007; Turpie *et al.*, 2006); activities like game viewing, bird watching, bush walks, *mokoro* excursions, storytelling, dancing, fishing, horse riding and boat driving (Mbaiwa, 2008, 2009). Wildlife is the dominant attraction of tourists to the Okavango Delta and the Delta has all Africa's big five game animals (elephants, lions, buffalo, leopard, and rhinos). Diversity of plant species and unique landscape also attracts tourists.

The tourism sector in Okavango Delta, Ngamiland has experienced growth since 1990's, both through infrastructure and the number of tourist arrivals. In 2010, Botswana received 2, 145,

079 international tourist arrivals, from 463, 196 in 1994 (GoB, 2010). An increase in tourist arrivals has resulted in the establishment of tourism related services and enterprises; like accommodation facilities, travel agencies, restaurants (food outlets), aircrafts, and others.

3.1.4 Study Site (NG/32 Concession)

The study was carried out in wildlife management area/controlled hunting area Ngamiland 32 (NG/32) concession. Wildlife management areas (WMAs) are areas located on the margins of protected areas (e.g. national parks) and they serve as buffer zones between incompatible land-uses particularly livestock and wildlife. NG/32 used to be a hunting concession area in the Okavango Delta. The concession area has been leased to Okavango Kopano Mokoro Community Trust (OKMCT) by Tawana Land Board. It is situated in the central part of the lower Okavango Delta, in an area of approximately 1, 225 km^2 (see Figure 3.1). It is bordered by the Buffalo/veterinary Fence in the north and Moremi Game Reserve (NG/28), NG/17 and NG/31 in the south (GISPlan (Pty) LTD, 2013). NG/32 concession is under management of community-based organization called OKMCT.

Diversification of tourism products has been encouraged in the Okavango Delta to promote ecotourism as well as community involvement in the tourism sector (Government of Botswana, 2000). Cultural tourism has been seen to have the potential to promote this diversification and some cultural activities like *mokoro* excursions have been identified to benefit the communities within the Delta (Government of Botswana, 2000; Modimootsile, 2005). Local communities including NG/32, offer *mokoro* services to tourists as transportation into the Delta. Therefore tourists coming for *mokoro* excursion were selected hence the selection of the controlled hunting area NG/32.

NG/32 offers tourists the opportunity to experience unspoilt natural landscapes with wild animals. The site is highly recommended for bird watching (i.e. fish eagles, marsh harriers, crested barbet) and game viewing outside national parks (GISPlan (Pty) LTD, 2013). NG/32 is located in permanently flooded areas which are slightly different from permanently flooded areas in the Panhandle area with extensive stands of papyrus and common river reed (Ellery & Ellery, 1997). This gives the tourists the opportunity to experience the landscape as well as view wildlife which are the attributes identified for this study. Therefore NG/32 was seen as the suitable study site to assess the preferences of tourists for. NG/32 was also selected due to its proximity to Maun (the entry point to the Okavango Delta) as a potential geological site to diversify tourism products other than the commonly visited Moremi Game Reserve.

OKMCT was registered in 1997 with the Registrar of Deeds and is made up of six villages: Boro, Daunara, Ditshiping, Xaxaba, Xharaxao and Qouqau (http://www.ncongo.info/?page_id=925). The main ethnic group in these villages are WaYei who are dryland and livestock farmers. Poling is also a common livelihood activity in these villages practiced by licenced polers who take tourists into the Delta with their canoes (*mekoro*). OKMCT is managed by a Board of Trustees comprising of two representatives from each village making the community trust. The mandate of OKMCT is to carry out CBNRM projects within the concession area (NG/32) to promote sustainable utilization and management of natural resources. OKMCT manages *mokoro* trails undertaken in their concession area. The trusts take bookings for *mokoro* trails from various private tour operators in Maun; including Audi Camp, Delta Rain, Drifters, Bushways, Crocodile Camp Safaris, Quadrum Safaris, Island Safari Lodge and Okavango River Lodge.
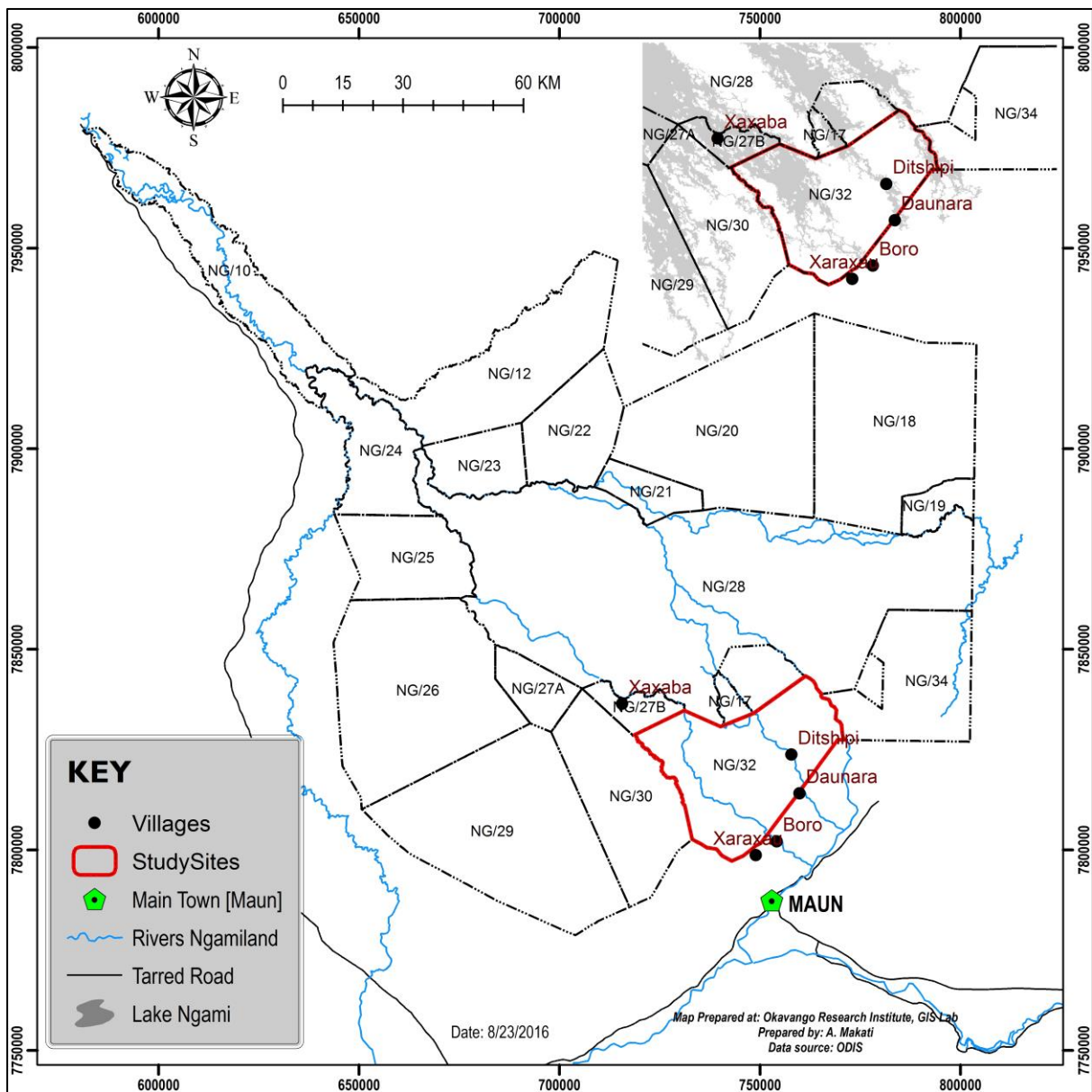
Figure 3.1: Map of the Okavango Delta indicating the study site (NG/32)

Source: Okavango Research Institute, GIS Laboratory

3.2   Methods

In this section, the procedure for the method utilised is outlined under the following headings: sampling and data collection; design of choice experiment, and data analysis for consumer surplus and tourists' preferences.

3.2.1   The choice experiment method

This study used the choice experiment method. The choice experiment method (CE) is a technique that provides respondents with multiple choice sets, in which each set mostly contains two or more management options where the respondent is asked to choose his/her most preferred option. This allows researchers to evaluate the impacts of different attributes on respondents' welfare or utility. The choice experiment method uses various models; this study utilised the multinomial and random parameter logit models.

The choice experiment method was chosen for the stated reasons below. Firstly, the choice experiment method as the stated preference method was chosen because of its ability to capture the non-use value of environmental goods compared to the travel cost method and hedonic method. The two methods are can only capture use values, shedding no light on non-use values which could be much larger, at least in principle. In addition travel cost and hedonic methods all suffer from the common inability to estimate the demand for benefits which are strongly separable in utility functions, a characteristic which severely limits their utility for recreational benefit estimations.

Secondly, the choice experiment method allowed the study to value the intrinsic value of the Okavango Delta, the habitat-based (e.g. wildlife viewing, photography) and aesthetic (water

enhanced activities like *mokoro* excursions, sightseeing) values. The choice experiment method provides the opportunity to identify marginal values of attributes that may be difficult to identify using revealed preference data because of co-linearity or lack of variation. The method enabled the study to estimate the marginal value of ecotourism attributes in the Okavango Delta, i.e. wildlife species and landscape.

Thirdly, compared to contingent valuation method (CVM), the choice experiment method is able to reveal the value of different attributes that comprise a good or service. The CE method allows the researcher to break down the relevant attributes of the situation and to determine preferences for different attributes. The choice experiment method was thus used to examine the responses of tourists to changes in the scenario attributes of ecotourism over other valuation methods. Fourthly, the CE method has the ability to evaluate various alternatives from one application, due to the differences in attribute levels. With the inclusion of a cost attribute in the choice set, it becomes possible to evaluate improvements and the supply of goods by means of welfare measurement. That is, one is able to find the trade-off of attributes, how much to forgo one attribute in order to attain the other.

Finally, this study has adopted a consumer-based approach which choice experiment method falls under. The consumer-based approach segments tourists according to their behavioural and psychographic variables. Psychographic bases include benefits sought, travel motivations and destination preferences. The choice experiment method uses the preferences of tourists to determine the value they attached to the environmental goods hence its use in this study.

Empirical Model Specification for Choice Experiment

The choice experiment is based on the Lancaster's theory of consumer utility and random utility theory (Birol *et al.*, 2006; Lancaster, 1966). Lancaster's theory postulates that choices can be modelled as a function of attributes of the alternatives relevant to a given choice problem (Adamowicz *et al.*, 1998; Chaminuka *et al.*, 2012; Perman, 2003) whereas the random utility theory (RUT) assumes that the alternative with the highest overall utility is selected (Chaminuka *et al.*, 2012; Yacob, Radam, & Rawi, 2009). According to the choice experiment, the utility of an option *i* for individual *n* (U_{in}) is assumed to depend on environmental attributes of the option (Zn) and the socio-economic characteristics of the individual (Sn). Hence, the utility function through which the individual is assumed to derive utility can be expressed as (Louviere, Hensher, & Swait, 2000):

$$\mathbf{U}_{in} = \mathbf{U}\,(\mathbf{Z}_{in}) + \mathbf{S}_n \qquad\qquad 1$$

where U_{in} is the utility function of alternative *i* and Z_{in} is the vector of all attributes of alternatives *i* as faced by the respondent *n*. RUT assumes that U_{in} can be divided into two components; a deterministic component (*V*) and stochastic component or error term (ε_{in}) (Chaminuka *et al.*, 2012; Yacob & Shuib, 2009; Yacob *et al.*, 2009);

$$\mathbf{U}_{in\,=}\,\mathbf{V}\,(\mathbf{Z}_{in}) + (\mathbf{\varepsilon}_{in}) + \ \mathbf{S}_n \qquad\qquad 2$$

The behavioural model is written as $U_{in} \geq U_{jn}$; $i{\neq}j$ and if the respondent chooses choice set *i,* then we can write

$$\mathbf{U}_{in}\,(\mathbf{Z}_{in}) \geq \mathbf{U}_{jn}\,(\mathbf{Z}_{in});\ \mathbf{i}{\neq}\mathbf{j}.$$

According to Yacob and Shuib (2009), '…the probability that an individual randomly draws from the sample population of respondents will choose alternative i equals the probability of the difference between the deterministic utility levels of alternative i and j for all alternatives in the choice set.' The probability of the respondent choosing alternative i over all other alternatives is:

$$\mathbf{P}_{in} = \mathbf{Prob} \ (\mathbf{V}_{in} + \varepsilon_{in}) > (\mathbf{V}_{jn} + \varepsilon_{jn}) \ ; \ j \neq i$$

$$= \mathbf{Prob} \ (\mathbf{V}_{in} - \mathbf{V}_{jn}) > (\varepsilon_{jn} - \varepsilon_{in}) \ ; \ j \neq i \qquad\qquad 3$$

Multinomial Logit Models (MNL)

A typical assumption is that these stochastic components (ε_{in}) are independently and identically distributed (IID) with a Gumbel distribution. The IID assumption is restrictive in that it does not allow for the error components of different alternatives to be correlated. This leads to the use of Multinomial Logit Models (MNL) to determine the probabilities of choosing i option (Hanley, Mourato, & Wright, 2001). Thus the probability of the respondent n choosing alternative i can be expressed as:

$$\boldsymbol{Pin} = \frac{\exp(\mu Vin)}{\sum_{j}^{J} \exp(\mu Vjn)} \qquad\qquad 4$$

Where, μ is a scale parameter that is inversely related to the standard deviation of the error term and μ is assumed to be 1 (i.e., a constant variance) (Hanley *et al.*, 2006b). When using the MNL models, choices must satisfy the Independence from Irrelevant Alternatives (IIA) property, which means that the addition or subtraction of any option from the choice set will not affect relative probability of individual n choosing any other option (Louviere *et al.*,

2000). Modelling constants, known as Alternative Specific Constants (ASC) are included when estimating multinomial logit model. The most basic form of V_{iis} is,

$$V_i = ASC + \sum \beta_k Z_{ik} \qquad\qquad 5$$

Where ASC is an alternative specific constant; β is a vector of coefficients, and Zs are attributes from the choice sets. The effects of attributes in the choice sets are captured by the Z variables, while the ASC captures any systematic variations in choice observations that are associated with alternatives that are not explained either by the attribute variation or respondents' observed socio-economic characteristics (Ben-Akiva & Lerman, 1985). In a Multinomial logit model with l option there are l-1 ASCs. By assuming that V_{in} is linear in parameters, the respondent's deterministic component of utility function can be expressed as:

$$V_{in} = \beta_1 X_{in} + \beta_2 X_{2in} + \beta_3 X_{3in} + \dots + \beta_k X_{kin} \qquad\qquad 6$$

Where Xs are variables in the utility function and the βs are coefficients to the estimates. In this study, management of tourism enterprises, landscape, wildlife species and *mokoro* trip price have been selected as variables or attributes of ecotourism.

Random Parameter Logit Model (RPL)

Mixed logit (also called Random Parameters Logit) generalizes standard logit by allowing the parameter associated with each observed variable (e.g., its coefficient) to vary randomly across customers (Revelt & Train, 1998). The main drawback of the Multinomial Logit Model (MNL) is that the Independence of Irrelevant Alternatives (IIA) seems to be restrictive

in many empirical applications. This assumption requires that the ratio of probabilities of choosing two alternatives be independent of the presence of any other alternative. This makes the parameter estimates from the MNL model biased if IIA assumption is violated. Moreover, MNL does not take into consideration correlations within each respondent's series of choices which are accounted for by using simulated likelihood mixed logit with Standard Halton sequence/draws (Bhat, 2001; Hensher, Rose, & Green, 2005a). The advantage of mixed logit is that it can utilize any distribution for the random coefficients, unlike probit which is limited to the normal distribution. The RPL model permits the utilities of each alternative to be correlated (Hensher & Greene, 2003).

To avoid the problem associated with the MNL model, Revelt and Train (1998) proposed the use of the RPL model. This is due to the following advantage of the RPL relative to the MNL model. First, RPL is not subject to the IIA assumption (Birol & Cox, 2007). Secondly, it accommodates correlations among panel observations. Thirdly, the procedure explicitly incorporates and accounts for heterogeneity in tastes across respondents by allowing the model parameters to vary randomly over individuals (Adamowicz & Boxall, 2001).

The relative utility associated with each alternative i as evaluated by each individual n in choice situation t is represented in a discrete choice model by a utility expression of the general form in Equation (7).

$$U_{itn} = \beta_q X_{itn} + \epsilon_{itn} \qquad\qquad 7$$

Where: U_{it} is the total utility for respondent n from choosing alternative i in the choice set t. The indirect utility is assumed to be a function of the choice attributes X with parameters β (and socioeconomic and environmental attitudinal variables, if included in the model), which due to preference heterogeneity may vary across respondents by a random component η_t.

It is assumed that the utility function consists of both systematic component and stochastic component. The components β and ε_{itn} are not observed by the analyst and are treated as stochastic influences (equation 8).

$$U_{in} = \beta_n'X_{in} + (\eta_{in} + \epsilon_{in}) \qquad\qquad 8$$

where η_{in} is a random term with zero mean whose distribution over individuals and alternatives depends in general on underlying parameters and observed data relating to alternative i and individual n; and ε_{in} is a random term with zero mean that is IID over alternatives and does not depend on underlying parameters or data.

The probability that an individual n chooses alternative i from each choice set is then presented as:

$$Pit = \frac{e^{Zit\,(B\,+\,\eta t)}}{\Sigma e^{Zjt\,(B\,+\,\eta t)}}$$

56

As noted by Birol *et al.* (2006), since the RPL model does not require the IIA assumption, the stochastic part of utility may be correlated among alternatives and across the sequence of choices via the common influence of η_t. Moreover, it is indicated that in terms of overall fit and welfare estimates, the RPL model is superior to the multinomial logit model.

Implicit prices/marginal willingness to pay
The coefficients estimated under the Multinomial Logit and the Random Parameter Logit models can be used to estimate the rate at which respondents are willing to trade-off one attribute for another. This trade-off is known as marginal willingness to pay or implicit price given that one of the attribute is a price or cost. The ratio of a non-monetary attribute's coefficient to the coefficient of the monetary attribute represents the marginal implicit price of the attribute. Marginal WTP is an additional amount consumers are willing to pay for one more unit of a particular good. It is also known as the marginal utility in monetary amounts. The ratio represents the implied change in the willingness to pay of the attributes relative to a current situation or *status quo* as in the equation below:

$$\textbf{Marginal WTP} = \frac{-\beta non-monetary\ attribute}{\beta monetary attribute} \qquad 9$$

Where $\beta_{attribute}$ represents the coefficient of the corresponding non-monetary attribute and $\beta_{monetary\ attribute}$ represents the marginal utility of income. They enable the understanding of the relative importance people place on the various attributes (Meyerhoff, Liebe, & Hartje, 2009). Bennett and Blamey (2001) noted that in a linear utility function, the ratio of the

coefficients, monetary and non-monetary, is the marginal rate of substitution between two attributes using the coefficient for cost as the 'numeraire'.

3.2.2 Sampling and Data Collection

Systematic sampling was used to select the respondents. A number between 1 and 5 was selected every morning and the selected number was the number that represents the tourist to be enumerated. For instance, if the number 3 was picked, every third tourist to arrive at Boro or Xharaxao (see Figure 3.1) boat station from the Delta was interviewed. The advantage of using systematic sampling procedure is that each element in the population has a known and equal probability of selection. Using systematic sampling, data was collected from 180 international tourists visiting NG/32 concession area in the lower Okavango Delta. NG/32 is mostly visited by independent tourists who Mbaiwa (2011c) termed 'low-cost tourists' as they are assumed to have low expenditure for their trips and spend less while in the delta. These are the tourists who were interviewed. They came from their respective homes and meet their tour agents in South Africa who would then travel with the respondents across countries in Southern Africa until they return home. The number of respondents was constrained by the project budget and difficulty in intercepting visitors before they departed from boat stations to their next destinations. In some cases, the tour agent did not allow the enumerator to have with the tourists.

A structured and semi-structured questionnaire was used to collect data from the respondents. The questionnaire comprised of five sections. These were: 1) demographic and socio-economic information; 2) tourist's visit to and knowledge about the Okavango Delta; 3) trip expenses to the Okavango Delta; 4) preferences of tourists using choice sets, and 5) tourists'

perceptions about the Okavango Delta and ecotourism development. Tourists were asked to rank questions of their perceptions about the Delta and ecotourism development using the 5-point Likert Scale, from strongly disagree to strongly agree- with 1 assigned to strongly agree and 5 strongly disagree. Data was also obtained from a review of reports, books, journals and internet sources.

A pilot survey was conducted in Maun at Thamalakane River Lodge in May 2012 before the actual survey with the aim of pre-testing the survey instrument. Pilot study was set out to test the following: readability of the questionnaires in general; ability to complete the whole questionnaire; ability to complete the choice modelling sections of the questionnaire; correct skips or logic in the questionnaire; interviewers' understanding of the study and how it to be administered; interview length; additional questions needed; omission of questions; interviewing process can be carried out smoothly. A total of 20 tourists at the lodge attempted the questionnaire.

The questionnaires were administered face-to-face to tourists by the researcher. The choice sets were explained to tourists before they could make their choices. This was because the researcher believed that the tourists had a time to explore the Delta so they were in a better position to describe their experiences. The main survey was conducted at Xharaxao and Boro boat stations in NG/32 in July/August 2012, October/November 2012 and February/March 2013. The data collection phases were determined by the peak periods of the tourism sector in the Okavango Delta. A higher number of tourist turn-ups are experienced during the months of July to March when the lower Delta starts to receive floods and the rainy season which is around the December-March period.

Section three of the questionnaire required tourists to state their expenses for the trip to the Okavango Delta. This section collected data for consumer surplus of the tourists. Because the researcher was aware that most tourists were possibly involved in multi-destination trips, the main destination of the trip and the overall expenditure of the trip, from the home country to the final destination were established. To estimate the consumer surplus, tourists were first asked to estimate the overall cost of their trip. Then they were asked how much percentage increase over this expenditure that they were willing to pay to make a return trip to the Okavango Delta. Tourists had to choose from the following percentage increase; 0%, 10%, 20%, 30%, 40% and 50%. Section four of the questionnaire covered tourists' preferences for ecotourism in the Okavango Delta.

The objective was to establish the preferences of tourists and their marginal willingness to pay for the ecotourism attributes. Each questionnaire had eight choice sets with three options where a tourist was expected to choose one option per choice set (see Table 3.2). Prior to making their choices, the researcher explained to respondents the scenario of the current situation of the Okavango Delta and what is expected of them. This was done to provide enough information to the tourists so they could make informed choices. More on data collection and questionnaire design on the preferences of tourists and the choice experiment method are explained in more details below.

3.2.2.1   Design of the Choice Experiment Method

In the design of the choice experiment, four steps were followed: 1) definition of attributes, attribute levels and customisation; 2) experimental design; 3) experimental context and questionnaire development; and 4) choice of sample and sampling strategy.

Defining Selected Attributes and Levels

As the purpose of this study is to determine the preferences of tourists for ecotourism activities and their impacts on rural development in the Okavango Delta, scenarios were developed using the choice experiment method to identify the interests of tourists on attributes of the Okavango Delta. The following four attributes of ecotourism were carefully chosen after reviewing literature and having discussions with different stakeholders/experts; 1) management of the tourism enterprise, 2) landscape, 3) wildlife species and 4) *mokoro* price; which was selected as the payment vehicle because tourists use *mokoro* to explore the Okavango Delta. Selected attributes and their levels are presented in Table 3.1.

Attribute 1: Management of the tourism enterprise

Community based natural resources management (CBNRM) in Botswana focused on providing incentives for communities to take responsibility of managing natural resources sustainably and on actively building community capacity to do this. These incentives include communities carrying out tourism activities in regard to natural resources in their areas. Communities therefore established tourism related projects or enterprises to retain income from tourism. The Wildlife Conservation Policy of 1986 encouraged 'the development of a commercial wildlife industry that is viable on a long term basis' (GoB, 1986). These tourism enterprises can be in the form of accommodation facilities, food outlets, craft markets; etc. Their management is essential for their survival as local communities have been criticised of

lacking managerial and entrepreneurial skills. Management of tourism enterprises had two levels; joint venture and non-joint venture (community managed enterprises).

Non-joint venture is when the enterprise is run solely by the community, i.e. all the activities of the enterprise are on the hands of community trust. It can also be addressed as community managed enterprises. Joint venture is when the community runs the enterprise in partnership with the private sector. It is defined by the Department of Wildlife and National Parks (DWNP) (1999, cited in Gujadhur, 2001:1) as

'a business activity undertaken between two or more partners for their mutual benefit. Partners in a community joint venture will be rural people, who have user rights to the natural resources occurring in an area, and established private sector companies that recognize an area's potential for business development.'

Attribute 2: Landscape:
Numerous landscape researchers have defined landscape as scenery or scene, a way of seeing the world (Setten, 2006) focusing on visual qualities – predominantly from a non-local perspective. A particular landscape has been seen as that portion of the world visible to an observer from a specific position. However, most Europeans define landscape as having a human element or influence whereas; Americans tend to think of landscape as natural scenery that is, wilderness and more or less untamed areas (Jackson, 1986). Therefore this study adopted the definition of landscape as defined by Americans. The Okavango Delta is known for its unique scenery. To depict the landscape of the Okavango Delta, level of flooding in the Delta was used as it influences the appearance of the Delta. This was hypothetically associated with withdrawal of water from the Okavango Basin by Angola and Namibia,

construction of dams along the Okavango Basin and effects of climate change. The attribute establishes whether tourists are only interested in viewing wild animals or they are also interested in the landscape ecology of the Okavango Delta. This attribute had two levels: 1) high floods in the Okavango Delta due to plenty of water received from Angola and 2) low floods in the Okavango Delta due to less water coming to the Delta.

Attribute 3: Wildlife Species

The Okavango Delta is rich with diverse wildlife species. According to Kerley, Geach, and Vial (2003), most tourists visiting protected areas are interested in viewing mega-fauna. This was supported by OKMCT management who stated that first-time tourists are usually interested in viewing wildlife whereas those visiting for the second time or more are usually interested in viewing birds. Wildlife species that attract tourists to the Delta are at the same time an inconvenience to the farmers as they cause damage to their property. They kill livestock and destroy fields/crops. Farmers at times kill these wildlife species when they are a threat to their lives or as a way of protecting their property. The uncontrolled killing of wildlife in the Okavango Delta by farmers may cause a decline in their population, hence causing a decline in tourist arrivals in the Okavango Delta. The wildlife species attribute has two levels; high chances of seeing compensated wildlife species and less chances of seeing a wildlife species for which damage is compensated when visiting the Okavango Delta.

Attribute 4: Price of mokoro trip

Price of *mokoro* trip was used as a payment vehicle. The payment vehicle can be in the form of costs, income or time of respondents. Costs can take many different forms in a CE, including options such as consumer price, transportation cost, salary, donation, tax payment, tax payment in a referendum context, etc. Several studies have used different prices as

payment vehicles. For instance, Yan, Barkmann, and Marggraf (2007) used the travelling costs to the tourism destination (south western China); Naidoo and Adamowicz (2005) used entrance fee of protected areas; Lee *et al.* (2010) used the admission fee into bird festival and Chaminuka *et al.* (2012) used park entrance fees as payment vehicle. Marginal utility estimates from probabilistic choice models can be converted into willingness to pay (WTP) estimates for changes in attribute levels if price is incorporated as one of the attributes in choice experiment (Hanley *et al.*, 2005). The price of *mokoro* trip was varied in three levels, i.e. the current price that is paid by tourists, 10% increase and 15% increase of the current *mokoro* price.

Experiment Design of the choice experiment method

For the choice experiment method (CE), an orthogonal main effect design was obtained using R. This resulted in 24 choice sets i.e. a combination of all attributes and levels resulted in a full factorial design of 24 ($3^1 * 2^3$) choice sets. Fractional factorial designs are helpful in creating efficient choice sets in CE without making the number of choice sets too large. Fractional factorial designs are a statistical way of designing experiments in engineering commonly used to reduce the number of experiments. A full factorial design was then reduced to a manageable number of choice sets through fractional factorial design of eight choice sets. Therefore, eight choice sets were given to each respondent. Each choice set consists of two options representing experience of *mokoro* trips into the Okavango Delta i.e. option A and B and the *status quo* option.

Table 3.1: Attributes of Ecotourism in the Okavango Delta

Attribute	Description	Levels
Management of tourism enterprise (Lodge)	Management of the tourism enterprise encompasses joint venture and non-joint venture. In joint venture, the community is in partnership with a safari company. Non joint venture is when the enterprise is run solely by the community trust.	1.Joint venture [BL2] 2.Non-joint venture
Landscape	Landscape of the Okavango Delta can be affected by various factors including flow of water from upstream (i.e. Angola). If there is reduction in flows, less water will be received downstream due to upstream abstraction, the scope and value of tourism might diminish. Some channels of the delta may dry up and wildlife and birds might even migrate to other places.	1.High floods in the delta 2.Low floods in the delta [BL]
Wildlife species	Tourists are interested in different viewing wildlife species when visiting the Okavango Delta. Some of the preferred wildlife species cause damage to the farmers' crops and livestock. For defense farmers might kill these species.	1. High chances of seeing a wildlife species for which damage to farmers' property is compensated 2. Less chances of seeing a wildlife species for which damage to farmers' property is compensated [BL]
Price of *mokoro* trip	The current price of a *mokoro* trip into the delta offered by OKMCT is BWP1, 680 ($221)[3] per person per day. This price may be changed as per choice combination in scenarios of your preferences. The price increases are 10% and 15%.	1.0% increase [BL] 2.10% increase 3.15% increase

The *status quo* alternative is included in most decisions as a benchmark. It can either represent the current or previous situation or doing nothing (Meyerhoff & Liebe, 2009). In situations where the *status quo* is included, respondents are likely to choose the alternative. The choice of the *status quo* may be due to the mistrust of the providing organization, complexity of choice sets, lack of information and protesting against the survey (Adamowicz *et al.*, 1998). The advantage of including the *status quo* in choice sets, however, is that it makes it possible to scale the utilities between the various choice sets and may lead to better

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[2] BL= Basic Level

[3] US$1 = BWP 8.03

prediction of market penetrations. The *status quo* was therefore included in all the choice sets to give room for a respondent to select any of the two alternatives provided. The *status quo* in the study represents the current situation of the *mokoro* trip experience in the Okavango Delta. An example of choice set is illustrated in Table 3.2.

Table 3.2: An example of choice set

	OPTION 1	OPTION 2	*STATUS QUO*
Management of the tourism enterprise	Non Joint venture	Joint venture	
Landscape	Low floods in the delta	High floods in the delta	No, I would not choose any of the options
Wildlife species	High chances of seeing a wildlife species for which damage to farmers' property is compensated	High chances of seeing a wildlife species for which damage to farmers' property is compensated	
Price of *mokoro* tour	0% increase	10% increase	
Tick your choice	☐	☐	☐

3.2.2.2   *Consumer Surplus*

To determine the consumer surplus of tourists visiting the Okavango Delta, tourists were asked to state their trip expenditure (the sum of travel cost per round trip and money spent in the Okavango Delta) and the maximum willingness to pay were asked from tourists. Before they could state their trip expenditure, tourists were asked to state their main destination for the trip. If the tourists indicated the Okavango Delta or Botswana as their main destination, they were thus, asked to state the portion of the trip that was spent in the Okavango Delta, that is, how much they spent to make their trip (including transport costs, fuel, accommodation, food). If the tourists' main destination was not the Okavango Delta, they

were asked to state their whole trip expenditure (transport costs, fuel, accommodation, food). Majority if not all international tourists were involved in multi-destination trips and hard bought packaged tours; that is, they were not only coming to Botswana but visiting other states like South Africa, Namibia, Zimbabwe, Zambia and others.

To estimate the maximum willingness to pay of tourists, they were asked the following question:

"Considering your experience on this trip to Okavango Delta, and the total costs of this trip as stated earlier, what is the maximum increase in your total costs you would have accepted before you would decide not to come to the Okavango Delta?"

    a) 0%

    b) 10%

    c) 20%

    d) 30%

    e) 40%

    f) 50%

This percentage increase was considered as the consumer surplus of the tourists as it is the excess they are willing to pay more than they have already spent on their trips.

In their study, Kgathi *et al.* (2009) asked the tourists to state the number of countries visited; cost of the whole trip (travel and accommodation) including the cost to other countries and perceptions about the trip; estimation of the expenditure for the Okavango Delta part of the trip (travel and accommodation); the willingness to pay for a similar trip; the percentage value by

which the current cost should be increased so that it would be too expensive for tourists to undertake the trip; the percentage value by which the present cost should be reduced to induce the tourists to return. Their approach was similar to the one used by Barnes (1998) and Barnes *et al.* (1999). However, Barnes *et al.* (1999) used the payment card technique of contingent valuation method to determine the consumer surplus of tourists where the tourists were asked if they will be willing to make a comeback trip to Namibia. If they answered 'YES', they were asked to state the cost that would prevent them from returning. A similar question was used by Krug *et al.* (2002).

The tourist's consumer surplus is the difference between the maximum willingness to pay for the return trip and the actual trip expenditure. Total consumer surplus for the year 2012 was calculated by multiplying average consumer surplus per tourist by total tourist arrivals at NG/32 concession area in 2012.

3.2.3   Data analysis

Predictive Analytics Software (PASW) (then Statistical Package for Social Sciences (SPSS)) and LIMDEP 10/NLOGIT 5.0 were used as tools for analysis of preferences and consumer surplus of tourists. Descriptive statistics was used to describe the data of the tourists. The measures that were used to describe data set are measures of central tendency (mean, median and mode) and measures of variability (standard deviation or variance), the minimum and maximum values of the variables, kurtosis and skewness). Graphs and tables were also used to summarise the demographic data of tourists. Non-parametric inferential statistics were used on consumer surplus data because the data did not follow a normal distribution. Mostly non-parametric inferential statistics such as Mann-Whitney, Kruskal-Wallis, Friedman, and

others are used when data does not meet assumptions of parametric inferential statistics especially normality of data. They are used mostly when data is generally ranked or grouped (categorical data) and when there are definite outliers or when the outcome has clear limits of detection. In this study, Mann-Whitney and Kruskal-Wallis were used to explore the differences between socio-economic variables and consumer surplus of tourists. The study aimed to establish how and to what extent do socio-economic variables affect consumer surplus of tourists. Models were established for tourists' preferences using NLOGIT 5.0.

3.2.3.1   Tourists' Preferences using choice experiment method

The choice experiment models were estimated using the data collected from tourists visiting the Okavango Delta with LIMDEP 10/NLOGIT 5.0. The random parameter model was generated together with the multinomial logit model by the LIMDEP 10/NLOGIT 5.0. The multinomial logit model had three indirect utility functions, each representing the utility function generated for each option. The levels of attributes in the choice sets determine the utility for each of the functions. The last model was the extended random parameter logit model, that is, RPL model with interactions of socio-demographic variables.

Model 1: The Random Parameter Logit Model and the multinomial logit model

The indirect utility from the proposed attribute changes of ecotourism would take the following form:

$$V_i = ASC + \beta_1*management + \beta_2*landscape + \beta_3*wildlife + \beta_4*price \qquad \textbf{10}$$

Where: ASC = 0 for the *status quo* and 1 for option 1 and 2, and $\beta_1, \beta_2, \beta_3,$ and β_4 are the coefficients associated with each of the attributes, management of tourism enterprises, landscape, wildlife species and price of *mokoro* respectively. More specifically, the three indirect utility functions (i=1, 2, 3) can be represented as:

$$V_1 = ASC_1 + \beta_1\text{*}management + \beta_2\text{*}landscape + \beta_3\text{*}wildlife + \beta_4\text{*}price$$

$$V_2 = ASC_2 + \beta_1\text{*}management + \beta_2\text{*}landscape + \beta_3\text{*}wildlife + \beta_4\text{*}price$$

$$V_3 = \beta_1\text{*}management + \beta_2\text{*}landscape + \beta_3\text{*}wildlife + \beta_4\text{*}price$$

Where: ASC_1 and ASC_2 are two alternative specific constants for option 1 and 2.

The estimated the random parameter logit model with simulated maximum likelihood using Halton draws with 25 replications. Hensher, Rose, and Greene (2005b) note that

'*there is no agreed-upon prescription but experience suggest that a choice model with alternatives and one or two random parameters can produce a stable with as low as 25 intelligent draws (i.e. Halton sequences)*'.

All attributes were treated as random variables (management, landscape and wildlife) except the monetary attribute (price of *mokoro*) (Birol *et al.*, 2006; Carlsson, Frykblom, & Liljenstolpe, 2003; Revelt & Train, 1998) and a normal distribution was selected for all the random parameters. The monetary attribute was specified as fixed, and non-randomly distributed because: (i) the distribution of the marginal willingness to pay for an attribute is then simply the distribution of that attribute's coefficient; and (ii) we wish to restrict the price variable to be non-positive for all individuals.

Model 2: Extended RPL Model with Socio-Economic Characteristics

The most common solution to deal with the heterogeneity problem and the possible violation of the IIA assumption that underpin the MNL model is the interaction of the socio-economic variables with either the attributes or the ASC. Because respondent characteristics do not vary across alternatives, 'Hessian singularities' arise in the model unless the socio-economic

characteristics are introduced as interactions with either the attributes or the ASCs (Bennett & Blamey, 2001). Four socio-economic variables (age, gender, education, first visit) were included in this extended model as interactions with the ASCs, which enable one to capture the influence of the variables on the probability for a visitor to choose either option 1 or 2. The specification of this model is given as follows:

$$V_i = ASC + \beta_1*management + \beta_2*landscape + \beta_3*wildlife + \beta_4*price + \gamma_1*management_i*AGE + \gamma_2*management_i*gender + \gamma_3*management_i*EDU + \gamma_1*landscapet_i*AGE + \gamma_2*landscape_i*gender + \gamma_3*landscape_i*EDU + \gamma_1*wildlife_i*AGE + \gamma_2*wildlife_i*gender + \gamma_3*wildlife_i*EDU$$

3.2.3.2   Consumer surplus

The consumer surplus of tourists was estimated from the stated trip expenditure and the tourists' willingness to pay for wildlife viewing. As the tourists were asked to choose from a range of percentage increase that will make their trips expensive to make a return trip, these percentages were used to estimate the consumer surplus of tourists visiting the Okavango Delta. However, it is worth noting that there were some limitations that the researcher was faced with when calculating the consumer surplus of tourists. Some of these limitations include the issue of multi-destination and packaged tours of tourists. For tourists who were in packaged tours, it was difficult for them to estimate the amount of money they spent in the Okavango Delta, or Botswana. For instance, a tourist who bought a packaged tour to southern Africa had to visit Botswana, Namibia, South Africa, among others. When they were coming from their home countries, they landed in South Africa and also departed from South Africa going back home. So, coming to Botswana from South Africa meant that they were transported by their tour agents; a situation that made it difficult for them to estimate how

much was spent on, such as fuel from South Africa to Botswana and from Botswana to other countries; money spent on food and accommodation.

The issues of packaged tours are similar to those of multi-destination. If a tourist had to visit more than one country, it is difficult for him/her to estimate the amount of money spent in that country. Several studies had suggested that in such cases, travel costs should not be assigned to one destination (Kuosmanen, Nillesen, & Wesseler, 2004). This however, imposes difficulties in estimating the travel cost to one destination. Multi-destination trips can cause underestimation or overestimation of consumer surplus/benefits if they are treated the same way as single destination trips or eliminated from consumer surplus estimation.

Several suggestions have been mentioned by literature to overcome this problem. First ignoring or dropping multi-destination trips and use only single trip costs to calculate consumer surplus can be considered (Loomis, Yorizane, & Larson, 2000b; Loomis & Walsh, 1997; Smith & Kopp, 1980). This means the costs of a single trip will be applied as an approximation of the benefits received by these multi-destination visitors (Loomis *et al.*, 2000b). This approach is mostly used when there is limited number of multi-destination trips. However, his could lead to an underestimate of consumer surplus (Kuosmanen *et al.*, 2004; Parsons & Wilson, 1997). The advantage of this approach, however, is that omitting multi-destination trips yields an 'unbiased consumer surplus' (Loomis *et al.*, 2000b).

The second approach to deal with multi-destination problem is treating multi-destination trips as a single trip. The disadvantage of this approach gives an overestimation of the consumer surplus or benefits of a trip. Using this approach, Loomis *et al.* (2000b) found that the consumer surplus of a single trip is US$ 43.50 compared to US$ 52 of including multi-

destination trips in the estimation of consumer surplus, nonetheless, these two were found not to be statistically significant. They further suggested that the 'large variability in consumer surplus suggests that the benefit estimates are somewhat sensitive to inclusion of multi-destination visitors'. These two therefore are to be treated as two separate variables when estimating consumer surplus.

The third approach is to ask respondents (tourists) to estimate the proportion of time (Navrud & Mungatana, 1994) or trip costs (Barnes, 1998; Kgathi *et al.*, 2009) spent in the recreational site being assessed. For instance, Barnes (1998) and Kgathi *et al.* (2009) asked his respondents to disaggregate their travel cost by directly asking them to state the proportion of their travel costs allocated Botswana. Besides asking respondents to state the amount of money spent in a destination, they can be asked to state the time spent in their destination or percentage of time spent their destination compared to the rest of the trip (Navrud & Mungatana, 1994). This time will then be used to divide the total trip cost to get the costs in that particular destination.

The last approach is to take multi-destination trip as a dummy-variable, having the coefficient of cost as the consumer surplus. This approach was suggested by Parsons and Wilson (1997) and tested by Loomis *et al.* (2000b). Loomis *et al.* (2000b) noted that 'the dummy variable and its interaction with price capture the shift and rotation of the demand function, respectively, due to the existence of complement activities and or sites'. The consumer surplus of the multi-destination trip will be $(1/(\beta_1 + \beta_2))$ while that of single trip will be $(1/\beta_1)$. Loomis *et al.* (2000b) found that the consumer surplus of a single trip is almost the same as when treating multi-destination trip as a dummy-variable. The advantage of treating multi-destination trips as dummy variable is that one is able to estimate the consumer surplus of a

single trip and multi-destination/purpose trips, rather than omitting the multi-destination/purpose trips.

This study therefore adopted the first approach of eliminating all the trips where tourists were unable to estimate the amount of money spent in the Okavango Delta. This approach though it can give an underestimate of the consumer surplus, it does give an 'unbiased' consumer surplus (Loomis *et al.*, 2000b). The consumer surplus is therefore calculated from the estimated trip expenditure and the stated percentage increase selected by the tourist. Total consumer surplus for the year 2012 was calculated by multiplying average consumer surplus tourists by the total tourist arrivals in 2012 at OKMCT.

Literature has shown that consumer surplus of tourists is affected by socio-economic characteristics of respondents. Therefore, to explore the differences between socio-economic variables on consumer surplus of tourists, Mann-Whitney U test was used. Mann-Whitney was used on variables that had two levels (e.g. gender, number of visits, marital status). Education was divided into two categories (degree =bachelor, masters, PhD and non-degree = high school, certificate, diploma) and compared with consumer surplus of all tourists

3.3 Summary

The various method used to collect data in the chapter include; formal and informal interviews, and review of literature. Systematic sampling was used to select the sample population of 180 tourists. Data was analysed using PASW and NLOGIT 5.0. Three models were created from NLOGT 5.0, multinomial logit model, random parameter logit model and RPL model with interactions.

Various approaches where identified to deal with the issue of multi-destination, one approach is used in this study. This study opted to eliminate all the tourists who couldn't estimate the amount of trip expenditure they spent in the Okavango Delta and whose main destination was not the Delta. This approach was used as it gives 'unbiased' consumer surplus. The estimated trip expenditure was then subtracted from the willingness to pay of tourists to estimate their consumer surplus. Predictive Analytics Software was used to explore the influence of socio-economic variables on tourists' consumer surplus.

CHAPTER 4
PREFERENCES OF TOURISTS BASED ON THE ATTRIBUTES OF ECOTOURISM: AN APPLICATION OF CHOICE EXPERIMENT

4.0   Introduction

This chapter introduces the results of the choice experiment but first it analyses descriptive statistics of tourists. This will then be followed by the discussion of the estimated parameters of choice experiment. The chapter then ends with a summary.

4.1   Demographic Statistics of Tourists

General socio-economic characteristics of tourists who were interviewed are shown in Table 4.1 and 4.2 below. Among the 180 respondents, 94 (52%) were males and 86 (48%) were females (Table 4.1). The average age of the respondents was 38.34 ± 13.75 years, with 18 and 71 as the minimum and maximum ages, respectively.

Table 4.1: Gender, Education status, marital status and employment status of tourists

Socio-demographic information of tourists		Frequency	Percentage (%)
Gender	Male	94	52
	Female	86	48
Education Level	High school	17	9.4
	Diploma	23	12.8
	Bachelor	74	41.1
	Masters	53	29.4
	PhD	13	7.2
Marital status	Married	55	30.6
	Single	113	62.7
	Divorced	7	3.9
	Widow	5	2.8
Employment Status	Employed	129	71.7
	Unemployed	12	6.7
	Self-employed	14	7.8
	Student	14	7.8
	Pensioner	11	6.1

N= 180 respondents
Source: Fieldwork (2012)

The results of the study indicated that respondents with PhD were less than 10% (7.2%); while majority of the tourists (41%) had a Bachelor's degree (Table 4.1). Respondents with Diploma and High school or bellow were 13% and 9% respectively. Almost all respondents (70%) were employed, with 7.8% of respondents self-employed. Moreover, 7.8% of the respondents were students. The respondents' average income was US$ 74, 981.28 (BWP 681, 648) (standard deviation (SD) = 52, 152.23) per annum and their average expenditure for the trip was US$ 4, 300.67 (BWP 39, 097) (SD = $3,874.16) (Table 4.2).

Table 4.2: Age, household income and trip expenditure of respondents, length of stay and number of people in a group

Socio-demographic information of tourists	Minimum	Maximum	Mean	Standard Deviation	N
Age	18	71	38.34	13.752	180
Household Income	$4,000[4]	$250,000	$74,981.28	52,152.23	129
Number of tourists in a group	1	36	9.89	8.681	179
Length of stay in the Delta	2	10	2.44	0.611	179
Expenditure of the trip	$145	$20,000	$4,300.07	3,874.16	118

N – Population

Source: Fieldwork (2012)

4.2 Results of Choice Experiment

Using 1440 observations elicited from 180 respondents (i.e. each respondent was provided with 8 choice sets), the multinomial logit and random parameter logit models were estimated using LIMDEP 10.0 NLOGIT 5.0.

4.2.1 Model 1: Random Parameter Logit Model Results

Table 4.3 provides the results of the random parameter logit model, along with the results for the Multinomial logit model. Both options one and two indicate a change in the attributes of ecotourism, relative to the *status quo*. In the random parameter logit model, the coefficient of each random parameter is the "average of parameters drawn over the *R* replications from the appropriate distribution" (Hensher *et al.*, 2005b). This implies that the parameter estimate of the landscape attribute (1.308) represents the mean of the *R* replications over the 25 Halton draws requested. The mean coefficients in the random parameter logit model are slightly higher than the fixed coefficients in the multinomial logit model. This reflects that the RPL model decomposes the unobserved portion of utility and normalises parameters on the basis

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[4] BWP 1 = US$ 0.11.

of part of the unobserved portion. In the RPL model, the likelihood ratio index rises substantially from allowing the parameters to vary, indicating that the explanatory power of the mixed logit is considerably greater than with multinomial logit. The log-likelihood ratio test (Log-likelihood ratio: 3.484) rejects the null hypothesis that the regression parameters are equal at 0.05 significant level. This indicates that the RPL model is better than the multinomial logit model.

From Table 4.3, the alternative specific constant coefficients (ASCs) pick up sources of variation between choices, which are not represented by the attributes (for instance, a bias in favour of the *status quo*). The ASCs were set equal to one when the *status quo* option was not chosen. The ASCs of both options/alternatives were negative and significant in the RPL and multinomial logit models. This imply that there is negative utility as one moves from the *status quo* hence respondents would prefer not to remain in the *status quo* situation.

All the coefficients of attributes were positive and statistically significant at 5% level of significance, except the coefficient of management of tourism enterprises which was negative (-0.219) in both the multinomial logit and the RPL models. The negative sign of the coefficient of management of tourism enterprise (-0.180) suggests that tourists prefer joint venture management, that is, partnership between local communities and private safari companies. This also implies that the attribute with a negative sign does not influence the selection of the Okavango Delta as a tourist destination. The parameter estimates (coefficients) of landscape and wildlife species were 1.308 and 1.031 respectively.

Table 4.3: Results of the multinomial logit model and random parameter model

Variables	Multinomial Logit Model			Random Parameter Logit Model					
	Coefficient	Z	Prob. |z|>Z*	Coefficient	Z	P(lZl>z)	Standard deviation of parameters	Z	P(lZl>z)
Random Parameters									
Management	-0.180** (0.089)	-2.03	0.043	-0.219* (0.115)	-1.90	0.057	0.837* (0.449)	1.86	0.062
Landscape	1.155*** (0.088)	13.16	0.000	1.308*** (0.143)	9.17	0.000	0.631 (0.545)	1.16	0.246
Wildlife	0.905*** (0.093)	9.79	0.000	1.031*** (0.147)	7.04	0.000	1.198** (0.475)	2.52	0.012
Non-random Parameters									
Price	-0.00340*** (0.00042)	-8.06	0.000	-0.00397*** (0.00064)	-6.22	0.000			
ASC_opt1	-0.774*** (0.126)	-6.15	0.000	-0.785*** (0.150)	-5.22	0.000			
ASC_opt2	-0.842*** (0.124)	-6.77	0.000	-0.842*** (0.146)	-5.81	0.000			
Summary Statistics									
Log-likelihood function	-1365.287			-1363.545					
McFadden Pseudo R²	0.137			0.138					
	432.154			436.913					
Chi-square	df = 4			df = 9					
	P=0.000			P=0.000					
Number of observations	1140			1140					

Note: ***, ** ==> Significance at 1%, 5% level.

Standard errors in parentheses

Source: Fieldwork (2012)

The coefficient of the *mokoro* excursion price however had the expected negative sign (-0.0034). The negative sign of the price coefficient implies that the respondent's utility was lower for an option with a higher price. The positive coefficients landscape and wildlife imply that a change from the *status quo* option to the corresponding attribute increases the probability of choosing improvement plans over the *status quo*. That is, the positive sign of

the coefficients for landscape and wildlife attributes indicates that an increase in their levels is considered as an improvement of the Delta's environmental quality.

All but one of the estimated standard deviations of the coefficients is significant. The standard deviations of management of tourism enterprises and wildlife species are significant, whereas the standard deviation of landscape is not significant ($p = 0.246$). The existence of heterogeneity in parameter estimates of sampled population is indicated by the statistically significant standard deviation of the parameter estimates (Hensher *et al.*, 2005b; Revelt & Train, 1998). The results, therefore, imply that there is considerable heterogeneity in the preferences of tourists for management of tourism enterprises and wildlife attributes while tourists' preferences are homogenous for the landscape of the Delta. Different tourists have different takes on the preferences of wildlife and management of tourism enterprises while their preferences for the landscape are the same across.

4.2.2 Model 2: Results of Random Parameter Logit Model with Socio-Demographic Characteristics (SDCs)

The results of the extended RPL model are shown in Table 4.4. The standard deviations of RPL model are at times not enough to establish the heterogeneity in the preferences of respondents, i.e. they do not indicate the direction of the heterogeneity of the respondents' preferences. To determine the possible sources of heterogeneity, the means of the random parameters are therefore interacted with socio-demographic variables (age, gender, education level, and first visit to the Okavango Delta). Age was the only continuous variable while other variables were assigned codes (e.g. gender was assigned 1 for males and 0 for females).

From Table 4.4, the interaction between landscape and the respondent's gender and 'landscape and education' of the respondents were the only significant interactions at 10% and 5% levels of significance. The coefficient of the 'interaction between landscape and gender' had a negative sign (-0.311) implying that females are more likely to choose the flooding landscape of the Okavango Delta than their counterparts. The 'interaction between landscape and education' has a positive sign (0.183), suggesting that the respondents with high education qualifications (e.g. PhD and Masters) are more likely to prefer the flooding landscape of the Okavango Delta.

Unlike in the first two models (i.e. the multinomial logit and RPL models), the coefficient of management of tourism enterprise is positive and not significant (0.067). The standard deviation of landscape is not significant (0.595), whereas the standard deviation of management (0.837) and wildlife (1.032) are significant like in the RPL model. It is surprising that the standard deviation of landscape indicates that the preferences of landscape is homogenous among respondents but when interacted with socio-demographic variables, it indicates that there is heterogeneity among respondents in relation to their gender and level of education.

Variable	Coefficient	Z	P(lZl>z)	Standard deviation of parameters	Z	P(lZl>z)
Random Parameters						
Management	0.06713 (0.59814)	0.11	0.9106	0.83716* (0.44393)	1.89	0.0593
Landscape	1.08897** (0.53386)	2.04	0.0414	0.59469 (0.62979)	0.94	0.3450
Wildlife	1.73714*** (0.60351)	2.88	0.0040	1.03247** (0.51535)	2.00	0.0451
Non-Random Parameters						
Price	-0.00391*** (0.00065)	-6.02	0.0000			
ASC_opt1	-0.79864*** (0.14899)	-5.36	0.0000			
ASC_opt2	-0.86326*** (0.14546)	-5.93	0.0000			
Heterogeneity in mean, Parameter: Variable						
Management: Age	-0.00547 (0.00746)	-0.73	0.4637			
Management: Gender	-0.33403 (0.20338)	-1.64	0.1005			
Management: Education	-0.02574 (0.09893)	-0.26	0.7948			
Management: First visit	0.52826 (0.42640)	1.24	0.2154			
Landscape: AGE	0.00500 (0.00642)	0.78	0.4357			
Landscape: Gender	-0.31055* (0.18267)	-1.70	0.0891			
Landscape: Education	0.18274** (0.09011)	2.03	0.0426			
Landscape: First visit	-0.10240 (0.37647)	-0.27	0.7856			
Wildlife: Age	-0.01036 (0.00708)	-1.46	0.1433			
Wildlife: Gender	0.04518 (0.19330)	0.23	0.8152			
Wildlife: Education	0.05946 (0.09700)	0.61	0.5399			
Wildlife: First visit	-0.61035 (0.40521)	-1.51	0.1320			
Summary Statistics						
Log-likelihood function	-1351.45647					
McFadden Pseudo R^2	0.1457301					
Chi-square	461.09046		X_{21}=461.090 46 p=0.0000			
N=1440						

Note: ***, **, * ==> Significance at 1%, 5%, 10% level
Source: Fieldwork (2012)

4.2.3 Marginal Willingness to Pay for Attributes (Or Implicit Prices)

Table 4.5 shows the marginal willingness to pay (WTP) results. The marginal WTP was calculated from the coefficients of multinomial logit model, where the coefficient of the attribute was divided by the coefficient of the monetary attribute. Implicit prices reflect individuals' willingness to pay for an additional unit of an attribute of interest, *ceteris paribus*. The implicit prices for all attributes are positive except for the management.

The marginal WTP for management of tourism enterprises in the Okavango Delta is BWP -53.03 (US$ -5.82). This implies that tourists are reluctant to accept changes in the management of tourism enterprises. That is, tourists are not willing to pay for a change from joint venture between local communities and private safari companies to non-joint venture (solely managed by communities). Tourists prefer joint venture management, where there is collaboration between local communities and private safari companies.

Respondents are willing to pay BWP266.23 (US$ 29.20) per trip for an increased chance to see preferred wildlife species, *ceteris paribus*. That is, respondents are willing to pay BWP266.23 (US$ 29.20) for each increase in the level of wildlife species from the *status quo* level. The marginal WTP of the landscape of the Okavango Delta is BWP339.61 (US$ 37.42). Respondents are willing to pay BWP339.61 (US$ 37.42) in order to move away from the *status quo* which is to visit the Okavango Delta when it is receiving less water. Tourists are willing to pay BWP266.23 and BWP339.61 more for their trips to contribute to the conservation of wildlife species and the preservation of the landscape, respectively. Higher marginal willingness to pay indicates that tourists prefer one attribute to others with lower

marginal WTP. This, therefore, implies that's tourists prefer the landscape of the Okavango

Delta to management of tourism enterprise and wildlife species.

Table 4.5: Marginal Willingness to pay of the ecotourism attributes

Variable	Coefficient	Marginal WTP (BWP)	Marginal WTP (US$)[5]
Management	-0.18031	-53.03	-5.82
Landscape	1.15466	339.61	37.24
Wildlife	0.90517	266.23	29.20

Source: Fieldwork (2012)

4.3   Discussion

4.3.1   Preferences of tourists for ecotourism in the Okavango Delta

The alternative specific constant (ASC) was included in the models to account for the

influence of the unobserved attributes not included in the model. The negative and significant

ASCs show that the tourists would not like to retain the *status quo*, they would like to adopt

the improvements made to the attributes. These negative and significant ASCs however, are

seen as a form of *status quo* bias (Birol & Cox, 2007). Some studies (Birol & Cox, 2007;

Shoyama, Managi, & Yamagata, 2013) also found a negative but significant ASC. Mostly

tourists choose the *status quo* because of their little understanding of the choice experiment

method and questionnaires. Hanley *et al.* (2006b) and Meyerhoff and Liebe (2009) noted that

the *status quo* is always chosen by respondents as a way to protest against the survey or due

to high choice task complexity.

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[5]BWP 1 = US$ 0.110

Most tourism enterprises in the Okavango Delta, especially accommodation facilities are owned and managed by private safari companies. However, the study has indicated that tourists prefer to use tourism enterprises managed by joint-venture partnerships between the private safari companies and local communities. The sentiment is shared with Barnes *et al.* (1999). The results also revealed that management of tourism enterprises does not affect the utility of the tourists from wildlife viewing as denoted by the negative coefficient of management of tourism enterprises. That is, the management of tourism enterprises may not be taken into account by tourists when deciding on the type of accommodation to use. This may be influenced by the fact that most tourists travelling to Botswana are on packaged tours, therefore tour agents are the ones deciding on the type of accommodation to use.

There is inadequate literature on tourists' preferences for tourism enterprise management in Botswana. Nonetheless, more attention has been given to tourists' preferences for accommodation facilities with environmental management programmes worldwide (Han, Hsu, & Lee, 2009; Mensah, 2006; Mensah & Mensah, 2013). Mensah and Mensah (2013) pointed out that tourists in Ghana were more willing to stay in hotels with a responsible environmental attitude while Kelly, Haider, Williams, and Englund (2007) noted that tourists tend to prefer resorts with higher percentages of protected landscape. This implies that some tourists consider environmental impacts accommodation facilities might have on protected areas.

Preferences of tourists have also been established for the type and location of accommodation facilities (Agyeiwaah, Akyeampong, Amenumey, & Boakye, 2014; Chaminuka *et al.*, 2012; Dumitras & Dragoi, 2007; Hearne & Santos, 2005; Li *et al.*, 2015). Some tourists prefer to

stay in accommodation facilities that are located within protected areas (Chaminuka *et al.*, 2012) while others prefer accommodation outside protected areas, as they believe camping within protected areas pollutes and diminishes the naturalness of protected areas (Dumitras & Dragoi, 2007). This therefore calls for establishment of tourists' preferences for accommodation facilities and their management in the Okavango Delta. The relationship between accommodation preferences and tourism activities needs to be established in order to meet the demands of tourists (Lejarraja & Walkenhorst, 2007).

A beautiful landscape may or may not be natural and healthy; in other words, the term 'landscape' can be considered independently of its degree of naturalness (Farizo, Louviere, & Soliño, 2014). It has much broader and more ambiguous meaning, with some people restricting its meaning just to the beauty of nature. The natural landscape of wetlands is one of the pull factors of nature-based tourism and one of the key motivations for outdoor recreation (Tyrväinen, Uusitalo, Silvennoinen, & Hasu, 2014). The coefficient of the landscape was the largest among all variables, which implies that the landscape of the Okavango Delta is the most attracting factor of tourists to the area. This sentiment is shared by Kaffashi *et al.* (2012), Kaffashi *et al.* (2013) and Meyerhoff *et al.* (2009). Meyerhoff *et al.* (2009) noted that 'landscape diversity' was the most important attribute in studies that valued wetlands. Tourists prefer the Okavango Delta to be flooded when they visit it with high chances of seeing wildlife species. However, the water levels at any point in the Delta depend mainly on three variables: the local rainfall; the height of the seasonal flood and the location within the Delta – the further north the tourists are in the Okavango Delta, the more water they were likely to have. Andersson *et al.* (2006) noted that water was a valuable good to sustain valuable ecosystems hence the tourism sector in the Okavango Delta.

The level of the water in the Delta determines the nature of tourism activities tourists can partake in and where they can go within the Delta. During the high floods, tourists are likely to be involved in water-based activities like recreational fishing, *mokoro* and boat excursions along channels and floodplains. High floods are an advantage for local communities that are involved in water-based activities like NG/32 communities. Mbaiwa and Mmopelwa (2009) noted that tourism enterprises depend on flooding patterns of the Okavango Delta. However, changes in the flooding patterns of the Delta due to various reasons including climatic change may have both positive and negative impacts on tourism enterprises (Mbaiwa & Mmopelwa, 2009; Moswete & Dube, 2013).

The availability of water or the level of water in the Delta also determines the movement and availability of wildlife species. During low floods, wildlife and bird species migrate to areas that have plenty of water. Therefore, water quality and quantity are an important aspect of the Okavango Delta, in maintaining its landscape's naturalness and scenery. The preferences of tourists on the aesthetic quality and the place of recreational activities should be considered as a means of achieving sustainable utilization of resources. Open water surface area and the natural scenes associated with wetlands are expected to create benefits through feelings of serenity and tranquillity (Birol *et al.*, 2006). Barnes *et al.* (1999) found that main attractions from tourists visiting Namibia were the 'unique, unspoiled nature/landscape' and wildlife but landscape was chosen by more countries (26%).

Tourists noted that they prefer to see a lot of wildlife species that are compensated by the Department of Wildlife and National parks when they visit the Okavango Delta. Studies (Di Minin, Fraser, Slotow, & MacMillan, 2013; Kerley *et al.*, 2003; Lindsey *et al.*, 2007;

Maciejewski & Kerley, 2014; Mladenov *et al.*, 2007; Moswete & Dube, 2013; Naidoo & Adamowicz, 2005) noted that tourists are mostly interested in wildlife when visiting their tourist destination in Africa. Though they are interested in wildlife, Kerley *et al.* (2003) highlighted that tourists are most interested in 'mega charismatic' fauna also known as the 'big five'. On contrary, Di Minin *et al.* (2013) noted that the preferences of tourists for charismatic species can lead to an under appreciation of other biodiversity. Tourism revenue of most developing countries is largely dependent upon the presence of wildlife (Cerda, 2013).

Even though many studies have indicated that tourists are interested in viewing wildlife, some have noted that tourists are also interested in the landscape of their tourist destinations. For instance, Barnes *et al.* (1999) noted that tourists were attracted to the unique naturalness of Namibia, unspoiled landscape which was highly rated by tourists above wildlife.

4.3.2   Interaction of Attributes with Socio-Demographic Variables

Interaction of attributes with socio-demographic variables accounts for heterogeneity among tourists. Establishing the heterogeneity of tourists enables the development and implementation of certain policies related to tourism development and wetlands management. This also develops tourism products looking at the different needs and demands of tourists visiting the tourist destination. Inclusion of interactions with attributes enables accounting for preference heterogeneity across respondents.

According to model two (Table 4.4), the interaction between landscape and gender was negative and significant. This implies that the probability of females taking a trip to the

flooding Okavango Delta is higher than males, *ceteris paribus*. Meanwhile Kaffashi *et al.* (2013) noted that men with higher education and higher income are more concerned with higher levels of biodiversity, water quality, natural scenery, and ecological functions of wetland. The tourists with higher levels of education preferred to visit the Okavango Delta during high floods seasons as indicated by the interaction between landscape and education. The sentiment is shared by Biénabe and Hearne (2006) who noted that more educated Costa Ricans to prefer increased environmental services. Though the interaction of age and all the attributes were insignificant in this study, Carlsson *et al.* (2003), Kaffashi *et al.* (2013) and Shoyama *et al.* (2013) found age to be negatively and significantly related to ecological functions of wetlands, indicating that older people are less willing than younger people to contribute to improved ecological functions wetlands.

Tourists may have difference preferences influenced by their ages, therefore, it is essential that tourism products are developed taking into consideration the age differences of tourists, their income differences, education difference and country of origin. Several studies have segmented the tourism sector using these attributes of tourists (demographic and geographical segmentation) (Dolnicar & Kemp, 2008; Rid, Ezeuduji, & Pröbstl-Haider, 2014; Saayman & Dieske, 2015). This study however, did not establish the preferences of tourists according to their countries of origin. The interaction of attributes with socio-economic variables can be used to establish price discrimination of tourism products in the Okavango Delta. Chaminuka *et al.* (2012) noted that the domestic and international tourists might not have significant differences in terms of preferences but it is worth noting that their willingness to pay is different in terms of magnitude. It might thus, be worthwhile to charge different rates for different tours for domestic and international tourists.

4.3.3   Marginal Willingness to Pay for attributes

A positive (negative) coefficient shows that decision makers prefer a quantitative increase (decrease) or a qualitative improvement (deterioration) of the attribute. Tourists are willing to pay BWP 339.61 (US$ 37.24) per trip to preserve the landscape and scenery of the Okavango Delta (Table 4.5). Marginal rates of substitution can be used to calculate the relative importance respondents place on each of the wetland management programme attributes (Morrison, Bennett, & Blamey, 1999). A higher marginal willingness to pay of tourists indicates that the attribute is more preferred by tourists than the one with lower marginal WTP. The landscape of the Okavango Delta had the highest marginal WTP compared to wildlife species and management of tourism enterprises. This highlights that tourists visiting the Okavango Delta are mostly attracted by its unique landscape. Thus, the landscape of the Delta depends mainly on the water that comes from Angolan Highlands.

In their study, Yan *et al.* (2007) noted that respondents were willing to pay 2, 167RMB (US$ 386.47, adjusted for inflation) for an improvement in natural attractions (wildlife and landscape) and also noted that the landscape had a higher marginal WTP of 3, 456RMB (US$ 616.36) compared to 1, 940RMB (US$ 345.98) of wildlife attraction. This is higher than the marginal willingness to pay found in this study when prices were adjusted for inflation using 2012 as the base year. Aminzadeh and Ghorashi (2007) noted that tourists preferred wild landscape for their recreational activities like picnicking, and camping verbally, due to landscape structural diversity, plant species richness and wilderness compared to designed and intermediate landscapes.

Mladenov *et al.* (2007) found the willingness to pay for biodiversity in the Okavango Delta to be US$ 315.59/visitor/annum in 2002 using travel cost (TC) and contingent valuation (CV) methods. Our estimates of the WPT for biodiversity differ from that of Mladenov *et al.* (2007) and this could be attested to different use of valuation methods, type of tourists interviewed and the study area. Mladenov *et al.* (2007) attempted to engage tourists taking all types of trips into the Delta: high-end safaris, budget overland tours, boat tours and self-drive safaris while this study attempted to engage tourists going for *mokoro* excursion in the Delta.

4.4   Summary

The study revealed that tourists prefer the landscape of the Okavango Delta over the wildlife species and management of tourism enterprises. The landscape of the Delta is kept unique by the waters coming from the highlands of Angola annually. These waters are therefore an important aspect of the ecotourism sector of the Okavango Delta. The tourists have also shown a higher marginal willingness to pay towards conservation of the landscape and wildlife species of the Okavango Delta. However, they may not be willing to pay for a change in the management of tourism enterprises in the Okavango Delta as they prefer the enterprises that are in joint-venture between private safari companies and communities.

CHAPTER 5
PERCEPTIONS AND CONSUMER SURPLUS OF TOURISTS IN THE OKAVANGO DELTA

5.0   Introduction

The previous chapter established the preferences of tourists for ecotourism attributes in the Okavango Delta and marginal willingness to pay for attributes of ecotourism. In this chapter however, the following aspects are examined: 1) the travel behaviour of tourists, 2) consumer surplus of tourists, and 3) the perceptions of tourists about tourism and rural development in the Okavango Delta. The travel behaviour of tourists discussed includes; reasons for travelling, sources of attraction, frequency of visits and others places visited. The chapter starts by presenting the results which are followed by the discussion and the summary of the chapter.

5.1   Results

5.1.1   Travel Behaviour of Tourists

The majority of the respondents (93%) were visiting the Okavango Delta for the first time while, only 7% of them have visited the Okavango Delta before (Table 5.1). Tourists were visiting the Okavango Delta for various purposes; 96.1% were in the Delta for leisure, 1.7% for studies while, 2.2% were in the Delta for business and leisure. The mean length of time on camping in the Delta was 2.44±0.611 nights. Africans tended to spend more nights in the Delta (4.75) than other people from other continents, who on average spent two nights in the Delta. The majority of the respondents (61%) were travelling in group tours and pre-packaged tours with an average of 9.89 ± 8.681 people per group (Table 5.1). Most tourists from Africa travelled in small groups (3), mostly as family units whereas Europeans travelled in groups of about 10 people while on average, Australians and Asians travelled in groups of 11.65 and 12.13 people, respectively.

Table 5.1: Number of Visits, primary purpose of the trip, length of stay and number of people travelling with as reported by tourists

		Overall (%)	Africa (%)	Europe (%)	America (%)	Australia (%)	Asia (%)
Number of visits	First time	168 (93)	4 (100)	115 (96)	13 (93)	28 (82)	8 (100)
	Return	12 (7)	0	5 (4)	1 (7)	6 (18)	0
Primary purpose of the trip	Leisure	173 (96.1)	3 (75)	116 (96.7)	13 (93)	33 (97)	8 (100)
	Leisure and Business	4 (2.2)	0	3 (2.5)	0	1 (3)	0
	Studies	3 (1.7)	1 (25)	1 (0.8)	1 (7)	0	0
Length of stay	Mean	2.44	4.75	2.54	2.29	2.74	2.38
	Standard deviation	0.611	3.594	0.928	0.469	1.399	0.518
Number of people travelling with	Mean	9.89	3.00	9.71	8.64	11.65	12.13
	Standard deviation	8.681	1.414	8.006	5.746	10.407	10.723

Source: Fieldwork (2012)

Tourists were asked to indicate the attributes of the Okavango Delta that induced them to visit the site (pull factors). They were asked to choose more than one source of attraction to the Okavango Delta because the attributes were not independent of each other. A significant number of tourists (66%) said wildlife viewing was their main source of attraction in the Okavango Delta (Figure 5.1). The landscape (48%) was mentioned as the second most important attribute attracting tourists to the Delta and was selected mostly by European (67%), followed by Australians (22%) and Americans (8%) (Table 5.2). The third most important attributes according to the tourists was naturalness of the Delta (46%) and *mokoro* excursion (46%) followed by culture (32%) and birds (22%). Plant diversity (11%) and quietness of the Delta (16%) were the least preferred attributes of the Okavango Delta.

Attractions of the Okavango Delta to tourists	Origins of tourists					
	All tourists (%)	Africa (%)	Europe (%)	America (%)	Asia (%)	Australia (%)
Culture	57 (32)	0	37 (65)	7 (12)	1 (2)	12 (21)
Mokoro	81(46)	1 (1)	55 (68)	8 (10)	2 (2)	15 (19)
Plants	19 (11)	0	13 (68.42)	1 (5.26)	0	5 (26.31)
Birds	39 (22)	0	29 (74)	2 (5)	1 (3)	7 (18)
Wild Animals	118 (66)	1 (0.8)	80 (67.8)	10 (8.5)	4 (3.4)	23 (19.5)
Landscape	86 (48)	0	58 (67.44)	7 (8.14)	2 (2.33)	19 (22.09)
Quietness	29 (16)	0	20 (69)	2 (7)	1 (3)	6 (21)
Naturalness	82 (46)	2 (2)	54 (66)	8 (10)	6 (7)	12 (15)

Source: Fieldwork (2012)

5.1.2 Tourists' perceptions and satisfaction

Tourists' satisfaction about their experience in the Okavango Delta

Table 5.3 below shows the sentiments of tourists about their trip to the Okavango Delta. With reference to the experience of *mokoro* excursion, 98% of tourists said that they enjoyed the excursion. Of the tourists who enjoyed *mokoro* excursion, 56% were females while 44% were males. Furthermore, 24% and 27% of tourists indicated that they were happy to have seen their preferred wild animals and bird species, respectively. Overall, most tourists indicated that they had enjoyed their overall trip to the Okavango Delta and the majority (83%) pointed out that they would recommend the Okavango Delta to their relatives and friends (Table 5.3). They described their trip experiences as *'unique, amazing and beautiful experience'; 'peaceful and magnificent'* and 'completely *different from other experiences.* In their opinion, the Okavango Delta was *'unique and beautiful scenery'* and one respondent commented that he was *"shocked by the beauty of the Delta'.*

The respondents also said they were satisfied with the services they received from the local guides/polers. They described the polers/local guides as *'knowledgeable'* and *'excellent'.* However, few tourists showed dissatisfaction and noted that *'Accommodation was expensive'*

and that *'the Delta was crowded and noisy'*. This concern about the expensive accommodation suggests that the local communities have an opportunity to invest in cheaper accommodation that tourists can use before they get into the Delta. Mostly, the accommodation facilities that tourists use before going to the Delta are owned by private safari companies. These facilities can be tented camps or traditional thatched roofed houses.

Table 5.3: Opinions of tourists about their experience in the Okavango Delta

Statement	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
I find *Mokoro* excursion to be enjoyable	112 (62.2)	64 (35.6)	2 (1.1)	2 (1.1)	0
I have seen my most preferred bird species	6 (3.3)	43 (23.9)	90 (50)	28 (15.6)	13 (7.2)
I have seen my most preferred wild animals species	9 (5)	35 (19.4)	49 (27.2)	59 (32.8)	28 (15.6)
I will recommend the Okavango Delta to others	68 (37.8)	82 (45.6)	25 (13.9)	2 (1.1)	3 (1.7)

Source: Fieldwork (2012)

From informal interviews, tourists noted that during the day, they have plenty of time without having any activities to do in their respective campsites. This could be an opportunity for polers/CBOs to engage tourists in cultural activities during these times (e.g. storytelling and cooking traditional food). Kelly *et al.* (2007) noted that overnight visitors generally prefer to have an opportunity to participate in cultural activities with locals. However, not all tourists are interested in participating in cultural activities, others want to relax as noted by Park, Lee, and Yoon (2014).

Perceptions of tourists about wildlife conservation and rural development

The tourists were asked to indicate their views on whether *'rural development is more important than conservation'*. The response of most of the tourists was negative (>50% of tourists) thought rural development could not be sustainable without conservation (49%) (Table 5.4). The majority of tourists (90%) held the view that *'tourism should contribute to the development of local communities'* because they believe that such a practice is consistent with what is globally considered responsible tourism. Tourists also suggested that the revenue earned from tourism could be used for both rural development and wildlife conservation. They thought that unless the local communities benefit and take part in wildlife conservation, protected areas are doomed. The foregoing suggests that tourists are not only concerned about the image of the Okavango Delta but are also concerned about the welfare of local communities.

A significant proportion of tourists (53%) said that they were '*willing to contribute to the enhancement of a fund for compensating farmers for the loss of their property*' while 19% were not willing. It is therefore likely that majority of tourists visiting the Okavango Delta would make a contribution to enhance the compensation fund in order to promote coexistence of local farmers with wildlife in the Okavango Delta. Even though majority of tourists were willing to contribute to this compensation fund, some of them (33%) said *"communities around the delta should contribute to compensation of their damaged property"* while 43% were neutral about the statement.

Table 5.4: Perceptions of tourists about wildlife conservation and rural development

Statements	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
I believe tourism should contribute to the development of local communities	86 (47.8)	74 (41.1)	15 (8.3)	2 (1.1)	5 (1.7)
I believe that rural development in more important than wildlife conservation	4 (2.2)	10 (5.6)	61 (33.9)	71 (39.4)	34 (18.9)
Wildlife conservation will be sustainable if it contributes to rural development of communities in the Delta	23 (12.6)	65 (36.1)	63 (35)	22 (12.2)	7 (3.9)
Communities around the delta should contribute to compensation of their damaged property	9 (5)	50 (27.8)	78 (43.3)	33 (18.3)	10 (5.6)
I am willing to contribute to the enhancement of the compensation fund for farmers	16 (8.9)	80 (44.4)	55 (30.6)	25 (13.9)	4 (2.2)
I am willing to pay more to take part in cultural activities of local communities	19 (10.6)	57 (31.7)	53 (29.4)	38 (21.1)	13 (7.2)

Source: Fieldwork (2012)

A Mann-Whitney U test revealed a statistical significant difference between the perceptions of tourists by gender with regard to the statement of whether *'communities should contribute to the compensation of their damaged property by wildlife'* at 5% level of significance ($U = 3299$, $Z = -2.254$, $p = .024$) with effect size of 0.15. There was also a statistical significant difference between the perception of tourists on whether *'communities should contribute to the compensation of their damaged property by wildlife'* and employment status at 5% level of significance *($U = 2114$, $Z = -1.993$, $p = .046$)* at a small effect size of 24%. Tourists who were unemployed had the highest mean rank (101.35) compared to those who were employed (87.69). This suggests that unemployed tourists believed that local communities should have a contribution towards protection of their property.

Table 5.5: Mann-Whitney results comparing socio-demographic variables with the perceptions of tourists

Statements		Gender		Education		Marriage		Employment		First visit	
		Males (94)	Females (86)	Degree (140)	Non-degree (40)	Married (55)	Not married (125)	Employed (143)	Unemployed (37)	First visit (168)	Return trip (12)
I believe tourism should contribute to the development of local communities	Mean rank	93.36	87.38	87.44	101.23	88.43	91.41	90.71	89.69	91	83.50
	Mann-Whitney U	3773.50		2371.000		3323.500		2615.500		924.000	
	Z	-.849		-1.629		-.391		-.117		-.532	
	p	.396		.103		.696		.907		.595	
I believe that rural development in more important than wildlife conservation	Mean rank	90.99	89.97	92.27	84.30	99.72	86.44	90.56	90.28	89.96	98.04
	Mann-Whitney U	3996.000		2552.000		2930.500		2637.500		917.500	
	Z	-.139		-.903		-1.666		-.030		-.549	
	p	.889		.366		.096		.976		.583	
Wildlife conservation will be sustainable if it contributes to rural development of communities in the Delta	Mean rank	89.57	91.52	88.66	96.93	100.54	86.08	87.69	101.35	89.81	100.13
	Mann-Whitney U	3954.500		2543.000		2885.500		2244.000		892.500	
	Z	-.263		-.929		-1.801		-1.493		-.696	
	p	.792		.353		.072		.135		.487	

*Population in parentheses

Source: Fieldwork (2012)

Table 5.5 (continue)

Statements		Variables									
		Gender		Education		Marriage		Employment		First visit	
		Males (94)	Females (86)	Degree (140)	Non-degree (40)	Married (55)	Not married (125)	Employed (143)	Unemployed (37)	First visit (168)	Return trip (12)
Communities should contribute to the compensation of their damaged property by wildlife	Mean rank	82.60	99.14	88.44	97.7	85.12	92.87	86.78	104.86	90.64	88.58
	Mann-Whitney U	3299.000		2512.000		3141.500		2114.000		985.000	
	Z	-2.254		-1.050		-.974		-1.993		-.140	
	p	.024*		.294		.330		.046*		.889	
I am willing to contribute to the enhancement of the compensation fund for farmers	Mean rank	90.17	90.86	92.28	84.26	98.61	86.93	86.91	104.39	89.52	104.17
	Mann-Whitney U	4011.000		2550.500		2991.500		2131.500		844.000	
	Z	-.095		-.915		-1.476		-1.939		-1.002	
	p	.925		.360		.140		.052		.316	
I am willing to pay more to take part in cultural activities of local communities	Mean rank	89.97	91.08	91.74	86.15	85.85	92.55	87.72	101.23	91.75	72.96
	Mann-Whitney U	3992.000		2626.000		3181.500		2248.500		797.500	
	Z	-.148		-.620		-.824		-1.456		-1.251	
	p	.882		.535		.410		.145		.211	

*Population in parentheses

Source: Fieldwork (2012)

Kruskal-Wallis test revealed that there were no statistical differences in all statements except the statement that '*tourism should contribute to the development of local communities*' where there was a significant difference between the statement and age χ^2 (2) = 7.936, p = 0.19 with mean rank of 2.71 for Group 1, 98.44 for Group 2 and 69.89 for Group 3 (Table 5.6). The inspection of mean ranks for the groups suggests that the middle aged (36-55 years) had the highest mean rank, compared to Group 1 and 3. Because Kruskal-Wallis is omnibus, post-hoc tests, using Gabriel were done to establish where the difference is among the groups. The post-hoc test revealed that there is statistical significant difference between Group 2 and Group 3 (F (2) = 28.549, p= .018), while there was no statistical significant difference between Group 1 and 3 F (2) = 22.82, p = .057) and Group 1 and 2 (F (2) = -5.729, p= 1.00). This suggests that tourists of middle age (36-55 years) agree more than other groups that tourism should contribute to rural development of local communities in and around the Delta.

Table 5.6: Kruskal-Wallis H test results comparing socio-economic variables with the perceptions of tourists

Statements		Age groups of tourists		
		18-35 **(90)**	**36-55** **(58)**	**56+** **(32)**
I believe tourism should contribute to the development of local communities	Mean rank	92.71	98.44	69.89
	Chi-square	7.936		
	df	2		
	p	.019*		
I believe that rural development in more important than wildlife conservation	Mean rank	83.98	96.39	98.16
	Chi-square	3.180		
	df	2		
	p	.204		
Wildlife conservation will be sustainable if it contributes to rural development of communities in the Delta	Mean rank	89.51	89.98	94.22
	Chi-square	.222		
	df	2		
	p	.895		
Communities should contribute to the compensation of their damaged property by wildlife	Mean rank	97.24	77.73	94.67
	Chi-square	5.832		
	df	2		
	p	.054		
I am willing to contribute to the established compensation fund for farmers	Mean rank	91.95	82.08	101.69
	Chi-square	3.476		
	df	2		
	p	.176		
I am willing to pay more to take part in cultural activities of local communities	Mean rank	92.94	90.13	84.31
	Chi-square	.699		
	df	2		
	p	.705		

Source: Fieldwork (2012)

5.1.3 Consumer surplus of Tourists

The number of tourists willing to make return trips to the Okavango Delta despite an increase in the trip expenditure is shown in Table 5.7. Of all tourists interviewed, 85% indicated that they are willing to make return trips when their expenditure is increased by a certain percentage while, 15% indicated that they are not willing to make trip trips when their return trips are increased. More tourists (33.9% and 30.6%) are willing to make a return when their trip expenditure is increased by 10% and 20%. As the percentage of the trip expenditure increases, tourists tended to decline the return trips. The results are consistent with the theoretical expectation that as a given price increases, the number of respondents willing to take return trips decreases. This is consistent with the predictions of the law of demand which states that as "the price of a good or service increases, the quantity purchased declines".

Table 5.7: Number of tourists willing to pay an increased price for a return trip to the Okavango Delta

Bid Percentage Increase	All tourists	Africa (%)	Europe (%)	America (%)	Australia (%)	Asia (%)
10	61 (33.9)	2 (50)	42 (35)	3 (21.43)	12 (35.29)	2 (25)
20	55 (30.6)	2 (50)	31 (25.83)	6 (42.86)	10 (29.41)	6 (75)
3	25 (13.9)	0	16 (13.33)	4 (28.51)	5 (14.71)	0
40	6 (3.3)	0	1 (0.83)	1 (7.14)	4 (11.76)	0
50	6 (3.3)	0	6 (5)	0	0	0
No increase (0%)	27 (15)	0	24 (20)	0	3 (8.82)	0
Total	180 (100)	4	120	14	34	8

*Percentage in parentheses

Source: Fieldwork (2012)

Tourists were asked to indicate their main destination in their trips and 40% of them mentioned the Okavango Delta as their main destination. Even if tourists had the Okavango Delta as their main destination, some of the tourists mentioned that they had intensions of visiting other places within Botswana and southern Africa. Tourists visited places like Chobe National Park, Makgadikgadi National Park, and Khama Rhino Sanctuary while in Botswana. Within southern Africa, they also travelled to tourist destinations like South Africa, Namibia, Zambia and Zimbabwe.

Table 5.8 shows the annual income, trip costs and estimated consumer surpluses of tourists visiting the Okavango Delta. The tourists who were not able to estimate the amount of their trip expenditure in the Okavango Delta were dropped from the consumer surplus calculation as a way of controlling for multi-destination issue. The results of the study showed that the average annual income and trip expenditure of tourists whose main destination was the Okavango Delta were US$ 60, 148.57 (BWP 546, 805.18) (standard deviation (SD) = 37, 483.28) and US$ 1, 470.85 (BWP 13, 371.36) (SD = 771.88) respectively (Table 5.8). The aggregate differences between the willingness to pay for a return trip and the actual trip cost were taken as the estimate for consumer surplus of tourists visiting the Okavango Delta. Therefore, the average consumer surplus of tourists who had the Okavango Delta as their main destination was estimated at US$ 266.51 (BWP 2, 422.82) (SD = 193.27).

	Income, trip expenditure and consumer surplus of tourists			
			Average	
	US$	Pula[6]	US$	Pula
Annual income	2, 105, 200	19, 138, 181.82	60, 148.57 (37, 483.28)	546, 805.18
Sample no	35			
Number of nights			2.25	
Whole trip				
Trip expenditure	69, 130.00	628, 454.55	1, 470.85 (771.88)	13, 371.36
Sample no	47			
Consumer surplus	12, 526.00	113, 872.73	266.51 (193.27)	2, 422.82
Sample no	47			
Consumer surplus as % of trip expenditure			18 %	
Willingness to pay	81, 656.00	742, 327.27	1, 737.36 (916.38)	15, 794.18

*() standard deviation

Source: Fieldwork (2012)

To estimate the aggregate consumer surplus in NG/32 concession, the average consumer surplus was multiplied by the total number of tourists who visited the site. In 2012, NG/32 concession under the management of Okavango Kopano Mokoro Community Trust, received a total of 2, 900 tourists for *mokoro* excursion. The aggregate consumer surplus of 2, 900 tourists visiting NG/32 in the Okavango Delta was estimated at US$ 772, 879 (BWP 7, 026, 172.73) with the mean consumer surplus of US$ 266.51 (BWP 2, 422.82).

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[6] BWP 1 = US$ 0.110

Effects of socio-economic variables on consumer surplus of tourists

A Mann-Whitney U test in Table 5.9 revealed that there was a statistical significant difference between consumer surpluses of male and female tourists who had the Okavango Delta as their main destination at 5% level of significance (U = 149; Z = -2.613; *p* = .009; r= .38), with an effect size of 38%. The mean rank average for male tourists was 28.48 while female tourists had the mean rank average of 17.95. This suggests that male tourists had a higher consumer surplus than their counterparts (females). The average consumer surplus of male tourists is US$ 330.33 (BWP 3, 303; n= 27) while the consumer surplus of females tourists was US$ 180.35 (BWP 1, 639.55; n= 20).

The Mann-Whitney U test also revealed that there was a statistical significant difference between tourists coming for the first time and returning tourists (U = 39; Z = -2.285; p = .021) with an effect size (eta squared) of .033 (Table 5.9). Returning tourists had a higher consumer surplus (mean rank = 37.2) than the first-time visiting tourists (mean rank = 22.43). This suggests that returning tourists know what to expect in their destinations, hence they were willing to pay more than they spent in their current trips. This could also be because first-time visiting tourists were not aware of what to expect in the Okavango Delta but returning tourists were aware of the Delta and knew what to expect as they had visited it before. The returning visitors are destination-aware tourists, as their willingness to pay is based on their previous experiences, while first-time visitors are mostly relying on sources of information including those who had visited the area before.

Table 5.9: The effects of different socio-economic variables (gender, education, marital status, employment status and number of visits,) on consumer surplus of tourists using Mann- Whitney U test

Variables	Levels of variables	Mean Rank	Mann-Whitney U	Z	p	Eta squared
		Consumer surplus of tourists with Okavango Delta as main destination				
Gender	Males	28.48	149.00	-2.613	.009*	.381
	Females	17.95				
Education	Degree-holders	24.28	160.5	-2.85	.776	.416
	Non-degree holders	22.83				
Employment	Employed	25.77	119.5	-1.709	.087	.249
	Unemployed	17.45				
Marital status	Married	23.04	217.50	-.315	.753	.046
	Not married	24.41				
Number of visits	First time visitors	22.43	39.00	-2.285	.022*	.333
	Returning visitors	37.20				

*significant at .05

Source: Fieldwork (2012)

5.2   Discussion

5.2.1   Tourists' satisfaction and perceptions in the Okavango Delta

The study has revealed that most tourists visiting the Okavango Delta are first time tourists travelling to various destinations in a single trip (multi-destination trips). Tourism operators and institutions are therefore faced with the responsibility to market the image of the Delta to the tourists. Establishing the travelling behaviour of tourists is vital for tourism development as well

as to meet the interests and expectations of tourists (Chaminuka *et al.*, 2012; Lejarraja & Walkenhorst, 2007; Liu, 2003). This information can assist policy makers in determining the type of activities that tourists prefer in order to engage local communities in establishing activities or availing the locations preferred by tourists.

Tourists' satisfaction is seen as a vital economic mechanism to market the tourism industry and the image of tourism destinations (Akama & Kieti, 2003; Okello & Yerian, 2009). Tourist satisfaction is determined by tourists' experiences in a destination visited and expectations about the destination. It is believed that the tranquil image of the Okavango Delta is what attracted tourists to the area over the past years. What the tourists see is what they convey to other people. Satisfaction of tourists has also been seen as the driving goal in the management of protected areas (Maciejewski & Kerley, 2014; Song, Li, van der Veen, & Chen, 2011). Tourist satisfaction is influenced by various attributes of the tourist destination.

The image of the destination and the quality if services offered at the destination (Hasegawa, 2010; Prayag & Ryan, 2012; Veasna, Wu, & Huang, 2013); physical infrastructure; and tour programs (Cho, Byun, & Shin, 2014) may have an influence on the satisfaction of tourists. Mohamad, Ali, and Ab Ghani (2011) noted that destination image is the originator of tourists' satisfaction which in turn has an effect on destination loyalty. As noted previously in chapter four, tourists indicated that they prefer the landscape of the Okavango Delta which constitutes its naturalness, scenic and image. The landscape needs to be conserved for the benefit of tourists who take delight in it. This is because the scenery and naturalness of the landscape are the most

influential factors on the satisfaction of tourists (Barnes *et al.*, 1999; Chen, 2014; Hasegawa, 2010; Mohamad *et al.*, 2011). Tourists who are unemployed have significant difference in satisfaction of natural landscape (Chen, 2014).

5.2.2   Consumer surplus

Just like several studies (Barnes, 1998; Barnes *et al.*, 1999; Kgathi *et al.*, 2009; Krug *et al.*, 2002; Mladenov *et al.*, 2007; Mmopelwa *et al.*, 2007; Navrud & Mungatana, 1994) of protected areas in southern Africa, this study revealed an untapped consumer surplus of US\$ 266.51 (BWP 2, 466.82) per tourist visiting NG/32 concession in the Okavango Delta. This consumer surplus of tourists accounts for 18% of the trip expenditure of tourists to the Delta. Extrapolated to the 2, 900 annual pool of visitors to NG/32 concession in the Delta in 2012, this translates to US\$ 772, 879 (BWP 7, 026, 172.73). When compared to other studies, this 18% of trip expenditure is comparable to the 17% found in Botswana in 1992 (Barnes, 1998) but Namibia had a higher expenditure spent locally by tourists, where the expenditure was 26% of the total trip cost (Barnes *et al.*, 1999). Barnes *et al.* (1999) account this difference between Botswana and Namibia's consumer surplus to the 'relatively high prices of accommodation and entrance fee into protected areas in Botswana'.

The consumer surplus of other studies done in Africa and elsewhere were adjusted for inflation using 2012 as the base year to enable their comparison. The average and total consumer surplus of tourists visiting the Okavango Delta were US\$ 266.51 (BWP 2, 466.82) and US\$ 772, 879 (BWP 7, 026, 172.73) for 2, 900 tourists respectively. These results are similar to those estimated

by Kgathi *et al.* (2009) and Mladenov *et al.* (2007) for tourists visiting Moremi Game Reserve in Botswana. Mladenov *et al.* (2007), in 2001, estimated an average consumer surplus of US$ 291 (BWP 2, 645.45) for tourists visiting the Okavango Delta using travel cost method. Similarly, Kgathi *et al.* (2009) also estimated average consumer surplus of US$ 261 (BWP 2, 372.73) for tourists visiting the Okavango Delta.

In Namibia, Barnes *et al.* (1999) estimated an average consumer surplus of N$1295 (US$ 92.62)7 for wildlife viewing using the contingent valuation method. This is less than the average consumer surplus estimated by this study. In the United States of America, Wieland and Horowitz (2007), found a higher average recreational consumer surplus for three recreational sites ranging from US$ 369 to US$ 434 for overnight visitors using the travel cost method. From the estimated consumer surplus by various studies (Barnes, 1998; Barnes *et al.*, 1999; Kgathi *et al.*, 2009; Mladenov *et al.*, 2007; Mmopelwa *et al.*, 2007; Moran, 1994), it can be assumed that tourism is under-priced. The suggestion is that the Government of Botswana through Ministry of Environment, Wildlife and Tourism (MEWT) and community-based organisations (CBOs) could increase the prices of tourism products to capture this consumer surplus. Some of the tourism services and products that can increase their prices include cultural activities, *mekoro* excursions among others. Local spending should also be encouraged among tourists. As much as some private safari companies liaise with CBOs for the tourists to be engaged in some cultural activities, this should be encouraged and more activities introduced by local communities.

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[7] N$ 1 = US$ 0.072

Consumer surplus of tourists visiting the Okavango Delta was significantly different in gender of tourists and the number of visit they made to the Delta. Male tourists had a higher consumer surplus compared to female tourists. Males travel more than females, hence more males were interviewed (52%) compared to females in this study. Social obligations, such as looking after children tend to influence travelling behaviour of tourists, hence men travel more than women. Therefore, men who have less social obligations can be willing to pay more than what they currently spend in their trips and make more return trips.

There is also a statistical difference between consumer surpluses of first-time visitors and repeat visitors. One of the factors influencing the difference in the consumer surpluses might be that the risks associated with a destination decline. Tourists on repeated visits are more aware of what to expect at the destination compared to the first-time visitors. It should be noted that a repeated visit or a return visit is associated with destination-related issues and overall satisfaction of the tourist about the destination. Therefore, returning tourists are expected to have a higher consumer surplus as they already know what to expect at the tourist destination. Understating the travelling behaviour of both first-time and repeat/returning tourists can provide valuable information and insight about the positioning of the Okavango Delta as a tourist destination in the market place. This provides tourism planners with the opportunity to develop programs aimed at converting first-time visitors into repeat visitors. Familiarity of the Okavango Delta by the returning tourists gives them the confidence to return to the Delta and a greater willingness to purchase the tourism products offered in the area again.

Studies undertaken to estimate the consumer surpluses of tourists from different parts of the world, found that the average consumer surpluses of tourists vary a great deal. For instance, consumer surpluses of African tourists tend to be less than those of tourists from other continents (i.e. America, Asia, Australia, and Europe) (Barnes, 1998; Kgathi *et al.*, 2009). The disparities between consumer surpluses of overseas tourists and local or regional tourists are due to the differentials in prices of tourism products; some tourism products are charged differently. For instance, park and camping fees of African and overseas tourists are different. Krug *et al.* (2002) confirm that the number of tourists visiting destinations are may be responsible for the disparity of consumer surpluses between regional tourists and oversea tourists.

Mechanisms to capture consumer surplus
Consumer surplus has no economic value until it is captured and used. However, Kgathi *et al.* (2009) noted that there are no mechanisms put in place to capture consumer surplus in Botswana. This is therefore a challenge faced by local communities and tourism planners. The consumer surplus can be used to support and finance several conservation initiatives including compensation of local communities and contribute to rural development. The use of consumer surplus is discussed further in chapter six. To capture the consumer surplus of tourists, studies have suggested differentiation in pricing tourism products and services (Krug *et al.*, 2002), for various tourists in terms of their nationality, income, gender and their willingness to pay for the products and services. Price discrimination is the practice of charging different buyers/consumers differently for the same/similar products/service.

In tourism, price discrimination is used to capture more returns from tourists and it's usually done in terms of tourists' nationality that is, domestic tourists pay a different price from the international tourists. For instance, the pricing of national parks in Botswana is based on whether a visitor is a citizen, resident or non-resident (Mmopelwa *et al.*, 2007). However, price discrimination can be a disadvantage for protected areas that set prices based on costs of their services. It is therefore vital to price tourism products taking into consideration the benefits of local communities (social equity), biodiversity and protection of ecosystem services (environmental sustainability) and at the same time ensuring that viable costs of managing and operating protected areas are met (economic efficiency) (Wells, 1997). Moreover, the pricing of tourism products should not deter other users from benefiting from them. Park fees in Botswana discriminate according to age (children and adults above the age 18), origin (local, regional and international tourists), only the idea could be extended to other tourism products to capture their consumer surplus.

Most safari companies found in the Okavango Delta are owned by foreign companies and investors (Mbaiwa, 2005a, 2011c). Mbaiwa (2005a) noted that these companies have influence in about 82% accommodation facilities in the Okavango Delta. According to Chirenje *et al.* (2013), 87% of the tourists spending go to the service providers and 13% to local communities, while Sandbrook (2010), noted that three quarter of tourists spending is leaked in Uganda. In Botswana, 29% of tourism revenue is retained locally (Mbaiwa, 2011c). This is because majority of bookings and purchase are done through travel agencies or tour operators which mostly are based in South Africa. Mbaiwa (2005a) noted that majority of the tourists visiting the Okavango Delta have less contact with local communities as they are directly picked from the airport to

their respective accommodation facilities by tour operators. This however eliminates chances of tourists spending money in Maun and other villages in the Okavango Delta region To retain or reduce revenue leakages, in the long run consumer surplus (tourism benefits), countries like Botswana can 1) encourage tourism investment locally, 2) encourage joint-venture between local communities and private safari companies as tourists in chapter four have indicated that they preferred to use tourism enterprises that are managed in joint-venture; 3) encourage production of tourism products by local communities in their areas (Chirenje *et al.*, 2013) 4) stimulate more visitor spending ('pocket spending') (Chirenje *et al.*, 2013; Sandbrook, 2010) and 5) establish strong linkages between tourism and other economic sectors especially agriculture (Gurung & Seeland, 2008; Meyer, 2007).

Other mechanisms and institutions suggested by literature include; establishing conservation and community funds (Barnes *et al.*, 1999; Kgathi *et al.*, 2009; Krug *et al.*, 2002). Krug *et al.* (2002) noted that tourists are willing to contribute more if an independent organisation is put in place to establish ways in which their consumer surplus can be utilised to maximise their satisfaction. According to Krug *et al.* (2002) tourists are more likely to contribute to a fund if the consumer surplus is 'used for biodiversity conservation and park maintenance, than if government collected the revenues and managed parks and conservation'. Barnes *et al.* (1999) suggested that prices of accommodation facilities should be increased to market level to help capture the consumer surplus of international tourists. Humavindu (2002) and Kirchner, Sakko, and Barnes (2000) furthermore suggested taxing of tourism goods and services to capture consumer surplus of tourists.

5.3   Summary

The tourists visiting the Okavango Delta revealed their satisfaction with the status of the Delta and services they received from local communities. Tourists also indicated their willingness to returns to the Okavango Delta and recommend the Delta to other people. The average consumer surplus was estimated at US$ 266.51 (BWP 2, 422.82) per tourist in the Okavango Delta that accrues to wildlife viewing tourists; this accumulates to US$ 772, 879 (BWP 7, 026, 172.73) total consumer surplus for 2, 900 tourists who visited NG/32 in 2012. There was statistical significant difference between male and female tourists and first-time visiting and returning tourists to the Okavango Delta. In order to capture this consumer surplus, the Government of Botswana through local communities can: establish new tourism products especially cultural activities; charger tourists differently in terms of their origin and age (price discrimination); encourage tourism invest in the Okavango Delta and establish organisations and initiatives to capture and distribute consumer surplus. The use of consumer surplus and its impact on rural development are discussed further in chapter six.

CHAPTER 6
IMPLICATIONS OF TOURISTS' PREFERENCES AND CONSUMER SURPLUS FOR RURAL DEVELOPMENT

6.0 Introduction

In the previous chapters, chapter four and five, the preferences of tourists', perceptions and consumer surplus of tourists in the Okavango Delta were discussed. In chapter four, it is revealed that tourists prefer the flooded landscape of the Delta, high chances of seeing wildlife species and use tourism enterprises managed in partnership between local communities and private safari companies. The consumer surplus of tourists was estimated and various mechanisms for capturing consumer surplus were suggested in chapter five. In this chapter, an attempt is made to examine the implications of the results of tourists' preferences and the estimated consumer surplus on rural development in the Okavango Delta. The implementation of tourists' preferences can have both positive and negative impacts on local communities, the tourism industry, the tourist destination and management of the destination areas. It is, therefore, important to make a critical assessment of the implications of tourists' preferences and consumer surplus of tourists on the well-being of local communities in the Okavango Delta.

6.1 Implications of tourists' preferences and consumer surplus for rural development in the Okavango Delta

According to Elands and Wiersum (2001), rural development is defined as *'the process of reaching the desired futures of the countryside'*. It is promoted with the aim to distribute resources, reduce poverty and unemployment and demands that *'a holistic approach is adopted in implementing projects that enhance the quality of rural life'* (Kolawole, 2014b). To achieve sustainable rural development, economic benefits of tourism should be used for environmental protection, social equity and cultural preservation and awareness of the area to the local

communities and visitors. It is therefore the aim of this study to establish the impacts of tourists'

preferences and consumer surplus on rural development in the Okavango Delta. The aim of rural

development is to improve livelihoods of the rural people, and eradicate poverty. The World

Bank Report (2001) indicated that poverty and well-being are at opposite ends of a multi-

dimensional continuum and the former (poverty) is defined as "the most deprived form of well-

being".

In Botswana, poverty incidence is one of the most critical concerns and the Government has

resolved to reduce this problem and ensure that every citizen lives in a dignified and acceptable

condition. Poverty is high in rural areas of the country, where a large segment of the population

lives (about 65%). Prevalence of poverty, measured in terms of the proportion of people who live

below the poverty datum line, is high in northwest (49.7%) and southwest (41.5%) of Botswana,

followed by northeast (37.8%) and lastly southeast (28.9%) (Government of Botswana, 2007).

Despite the booming tourism sector in northern Botswana, high prevalence of poverty is

witnessed in the area. The Government of Botswana aims at promoting tourism in rural areas

with the intension to promote rural development and reduce poverty. Tourism development in

rural areas is taken as an economic diversification initiative, income and employment generator

(Saarinen & Lenao, 2014).

As stated, one of the key findings of this study is that the tourists interviewed preferred visiting

the Okavango Delta during the flooding seasons. This suggests that local communities need to be

innovative and establish or promote tourism activities especially cultural activities that will

conserve the landscape of the Delta and water. On average, the Okavango Delta receives 9.3 million cubic meters of water from Angolan Highlands (Mendelsohn & El Obeid, 2004). One might think that flooding may be a hindrance to the attainment of the livelihoods of all the local communities in the Okavango Delta. However, Kolawole (2014a) notes that some of the local communities do not see floods as a threat but a as *'blessing'*. The floods provide locals with opportunities to use dug-out canoes as the mode of transporting tourists and community members into the Delta and other places across the Delta. The floods also bring sediments that enrich the soils of flood recession (*molapo*) farms and also bring fish consumed by some of the locals and also sold by others. There is also an opportunity for locals and tourism operators to promote recreational fishing, and the revenue obtained from it could be used to improve the livelihoods of local communities. Other water-related recreational activities (canoeing) can also be introduced as sport and leisure activities to attract more tourists.

The magnitude of the estimated marginal willingness to pay by tourists for the attributes of ecotourism (wildlife (BWP266.23) and landscape (BWP339.61)) estimated in chapter four (Table 4.6) suggests that there is an opportunity for local communities to engage in sustainable tourism. Partnership of community tourism enterprises with the private sector is perceived to be a good thing by tourists as indicated in chapter four. Joint-venture is highlighted as one of the benefits for CBNRM; though there is need to implement the right partnership that will benefit all parties involved.

In addition, the estimated consumer surplus of tourists in the Okavango Delta, if captured, can be used to implement and support rural development initiatives that the village development committees (VDCs) and community based organisations (CBOs) have planned. Projects like building houses for the needy, community entertainment centres, establishing vegetable gardens like NG/32 desires to have a horticulture project, bridges, roads and boat stations can be supported by (eco) tourism. VDCs can work with CBOs to formulate the development plans of communities. However, Blaikie (2006) has noted that some VDCs and CBOs do not have a working relationship. To establish this working relationship, one member from the VDC especially the chairperson, can be a member of the board of trustees for the CBO. In this regard, the VDC chairperson will pass the suggested development plans to the board and the CBO can know which plans to finance.

In Kenya, Manyara and Jones (2007) reported that community based enterprise initiatives led *'to improved educational and health services, access to clean water and development of transport and communication infrastructure – all indications of improved standards of living'*. Locals can be encouraged to start small tourism enterprises and the government can fund them using the captured consumer surplus. However, the challenge has been that local developments are not aligned with rural tourism or community-based natural resource management activities. This, therefore, makes it difficult for CBOs to implement development plans of VDCs. CBOs have been supporting locals with skill development through scholarships. The captured consumer surplus can be used to train more locals on management and entrepreneurial skills relating to the identified preferences of tourists. This is because tourism is a *'non-traditional rural development strategy, provides opportunities for entrepreneurship'* (Látková & Vogt, 2012). The captured

consumer surplus can also be used as a start-up capital for communities engaged in CBNRM as mostly they do not have funds to set up high-cost tourism enterprises on their own and partnership with the private sector can be encouraged.

Part of the captured consumer surplus could be used to enhance compensation scheme for the loss and damage of local communities' property by wildlife. Compensation schemes have been introduced with the aim to resolve the problem of human-wildlife conflicts (Kgathi, Mmopelwa, Mashabe, & Mosepele, 2012; Mmopelwa & Mpolokeng, 2008). The current compensation policy in Botswana is perceived by farmers to be ineffective due to 'low compensation payments, the slow payment process and the exclusion of predator species from the list of compensable species' (Mmopelwa & Mpolokeng, 2008). Even though the compensation is always perceived by beneficiaries as 'never enough', the captured consumer surplus can assist to fund the scheme in tourism oriented areas like the Okavango Delta.

In some cases, compensation is considered a financial burden to the government; the consumer surpluses estimated can therefore aid the government of this burden. The consumer surplus estimated will not be taking over the current compensation scheme but will be enhancing it as tourism is prone to be affected by many factors that may disrupt the scheme. Many of the highlighted initiatives need the empowerment and participation of local communities to be integrated into rural development plans of communities. It is worth noting that this process is often a challenging task in general.

In chapter five, it was mentioned that the interviewed tourists were willing to contribute to the enhanced compensation fund for local communities in the Okavango Delta (Table 5.5). The Department of Wildlife and National Parks can collaborate with Department of Tourism and communities on the use of consumer surplus for compensation of local communities. The money from this fund could be given to local communities through CBOs in their areas for compensation of the loss of their property. Because CBO committees and boards are based in local communities, compensating communities with their assistance can be effective as assessment of damage will be quickly done by people based in the area.

6.2 Implications of tourists' preferences and consumer surplus for the management of the Okavango Delta

Like in other developing countries, policy-makers in Botswana, are faced with the trade-offs of the dual goals of nature conservation and development. Conservation of the Okavango Delta is the responsibility of all stakeholders (i.e. the government, local communities, tourists, tourism sector) especially resources managers and tourism planners. However, tourist arrivals depend on the image of the Delta and the marketing strategies. In turn the marketing of the tourist destination depends on its characteristics and the characteristics of tourists (Dhami *et al.*, 2014). Kelly *et al.* (2007) note that the management of tourist destinations can be influenced by preferences of tourists that is, what tourists prefer can be implemented as a conservation strategy for the tourist destination areas. The results of this study indicated that tourists prefer the landscape of the Delta (Table 4.4) and viewing wildlife species in their natural environment. It is therefore the responsibility of protected areas management to implement policies and strategies that will ensure conservation of biodiversity and ecosystem services. The fund generated from the consumer surplus of tourists can also be used to finance the conservation of the Delta.

However, it should be noted that implementing the preferences of tourists is limited by the social and economic needs of local communities and environmental needs of the Delta.

Moreover, the preferences and the captured consumer surplus of tourists could be used to rehabilitate degraded areas for tourism development or implement new recreational sites in the Delta. This is because the preferences of tourists with GPS can be used to map new reactional sites. The preferences of tourists are known; in this case, the landscape of the Delta and viewing wildlife species. The behavioural and psychographic variables of tourists can be used to segment the Okavango Delta according to their preferences. The segmentation will promote marketing of the Okavango Delta according to the preferences of tourists and their interested for various recreational sites. Areas with the potential for tourism can be rehabilitated and marketed to attract the targeted tourists to the Delta. This can be areas that are adjacent to local communities; hence, more revenue for them and improvement of their livelihoods.

Several areas in Botswana have been declared protected areas and wildlife management areas. Some of them are meant to protect and conserve endangered wildlife species and birds (important bird areas such as Moremi Game Reserve). Preferences of tourists for certain attributes of the Okavango Delta or ecotourism can be used to lessen pressure in certain parts of the Delta. For instance, if tourists are interested in viewing wildlife, then they can be taken to Moremi Game Reserve, but if their motive is to relax, then areas adjacent to Moremi Game Reserve like NG/32 will be ideal. NG/32 is rich with birds and therefore can be ideal for bird watchers.

Tourists visiting the Okavango Delta have indicated that they prefer to visit the Delta when it is flooded with high chances of seeing wildlife species. However, information about predicting flooding in the Okavango Delta is needed to assist tourism operators with the knowledge of where to take tourists and the mode of transport needed (Gumbricht, Wolski, Frost, & McCarthy, 2004). This is because some places in the Delta are not accessible without 4x4 vehicles when the Delta is flooded. For instance, Boro boat station can be accessed with *mokoro* or motorised boats when the delta is flooded. Not only is flood prediction data important for identification of tourism sites, it is also important for establishing tourism products for tourists. Water quantity and quality are vital to sustain the landscape of the Delta. This therefore calls for the Government of Botswana to establish mechanisms and policies that can enhance the protection of the Okavango Delta's water quality for all tourism stakeholders. Water quality is not only essential and crucial for the tourism industry; but other economic sectors like agriculture.

Joint venture between local communities and private safari companies does not only have benefits to the livelihoods of the local communities and the private sector. It also has benefits in the management of the Okavango Delta as a recreational site or a tourism destination. Indigenous knowledge on management of natural resources can be used to manage the Delta. Integrated natural resource management should be promoted. This approach focuses on sustainability as well as involving all stakeholders in the planning and usage of resources. Collaboration of local communities and the private sector in some cases can reduce conflicts between the two parties and promote tourism in their areas.

6.3 The constraints of implementing the preferences of tourists in the Okavango Delta

The sustainability of tourism in the Okavango Delta depends on several factors. These includes water usage/demand upstream by Angola and Namibia, local communities not accepting the preferences of tourists and conflicting policies and strategies, 'changing exchange rates, political instability, crime rates, impact of air travel on climate change and the costs associated with this, as well as the needs and constantly changing desires of tourists' (Snyman, 2012). This therefore suggests that water is crucial in the ecotourism sector of Botswana and withdrawal of water from the Okavango River by the upstream countries of Angola and Namibia may result in reduced water flow and therefore adversely affect the Okavango ecosystem and its services. This will have a negative impact on ecotourism of the country as revealed by our results on the preferences and perceptions of tourists in the Okavango Delta. There is need to use water resources in a sustainable way in the riparian states of Angola, Botswana and Namibia and protocols (e.g. the Revised Protocol on Shared Watercourses (2000)) signed between these states should be strictly followed by these states. For instance, the Permanent Okavango River Basin Water Commission (OKACOM) promotes the conservation of biodiversity in the Okavango Basin states of Angola, Botswana and Namibia through activities like awareness campaigns, advocacy at policy-making level and implementation of conservation plans among these states.

One of the issues related to the forgoing is the relationship between climate change and tourism. The literature suggests that the relationship between climate change and tourism is still unclear and not clearly understood (Moswete & Dube, 2013). Climate change has the potential to affect the global patterns of tourism in the world, including Botswana, as it mainly relies on the environmental factors of tourist destinations and they influence the holiday-choice and activities

of tourists. It is therefore not easy to predict the impacts of climate change on tourism if the relationship between the two is still not clear. Changes in environmental factors such as the landscape, presence of wildlife and trees, due to changing climate conditions can alter the appearance of tourist destinations. The question therefore remains whether tourists will be willing to make return trips or pay more than they are currently paying with these changes on tourist destinations.

Scenarios of climate change and their impacts on tourism need to be developed to assess the likely impacts on tourism and the economy of the country. However, this is beyond the scope of this study. One scenario of climate change can be based on the assumption of less rainfall and high temperatures in Botswana and other riparian states of the Okavango Basin. Less rainfall means less water in the Okavango Basin. The implications are that tourists interested in the landscape and naturalness of the Delta may not be interested in visiting the Okavango Delta. Reduced levels of water in the Okavango River can have adverse effects on the tourism sector and the economy of Botswana through the alterations of the environmental attributes of the Delta. Andersson *et al.* (2006) noted that climate change is likely to affect the variability of the Okavango River discharge and the mean annual river flow may reduce by 0.1% and the monthly minimum flow by 0.16% over a 20 year period.

The second scenario can be assumed to increase rainfall in Angola, Botswana and Namibia. In the future, increased desiccation of river channels is likely be one of the impacts of climate change according to models of climate change (Wolski, 2009). Milzow, Burg, and Kinzelbach

(2010) further noted that, drier conditions are expected in the future and aquatic vegetation zones are likely to reduce in size. Reduction in water supply will adversely affect the supply of river-based tourism activities.

Murray-Hudson, Wolski, and Ringrose (2006) noted that downstream tourists' facilities will be affected by a reduction or an increase in flooding of the Okavango Delta. Self-drives will be affected by too much water in the Delta as they will not be able to access their destinations. Mbaiwa and Mmopelwa (2007) did a study in the Okavango Delta assessing the impacts of climate change on tourism activities and they noted that accommodation facilities that are deep in the Delta may be affected negatively by climate change as tourists will not be able to reach them. Wildlife species could also be affected by shortage of water, and this could force them to migrate to areas with water and forage hence competition with livestock (Andersson *et al.*, 2006). Uyarra *et al.* (2005) noted that 80% of tourists visiting Bonaire and Barbados were unwilling to revisit the places if they were adversely affected by climate change and their environmental attributes altered, paying the same price. However, it should be noted that climate change could result in conditions that are favourable and having the potential to be attract more tourists.

Attitudes of locals can hinder the implementation of tourists' preferences in the Okavango Delta. If local communities feel that conflicts will arise due to implementation of tourists' preferences, they may not allow them to be implemented in their area. That is, if locals feel they will not benefit from the conservation of the Okavango Delta landscape and wildlife species, they may

not have an incentive to conserve them and may do anything to distract them. Local communities may also refuse to create opportunities for tourists e.g. to undertake *mekoro* tours if the activity is likely to have an adverse effect on their fishing activities. Concu and Atzeni (2012) note that if there are conflicting prefernecs between locals and tourists, there will be a msismatch in supply and tourists' demand of recreational services.

6.4   Summary

This chapter addressed the implications of tourists' preferences and consumer surplus on rural development and management of the Okavango Delta. The fundamental principles of ecotourism emphasise that tourism should be nature-friendly, ecologically sustainable, environmentally educative and economically beneficial to the local community. Therefore, the identified preferences of tourists in this study can be a guide to tourism planners and marketers to implement favourable policies and strategies that suit the Okavango Delta (nature-friendly), enhance utilisation of natural resources (ecologically sustainable) and also benefit the local communities. The consumer surplus of tourists can be used to finance the initiative meant to promote conservation of the Okavango Delta as well as contribute to the development of local communities. Part of the consumer surplus could be used to finance the compensation scheme for loss and damage of their property caused wildlife species. In addition, the captured consumer surplus can assist in financing building of schools, clinics, and roads in rural areas adjacent to protected areas. Consumer surplus could also be used to rehabilitate degraded areas in the Delta, protection of endangered wildlife and bird species as well as maintenance of the protected areas.

CHAPTER 7
CONCLUSION AND POLICY IMPLICATIONS

7.1 Summary

The Okavango Delta is perceived as the world's international tourism destination and represents one of the most wonderful natural areas due to its naturally endowed resources. The main spectacular attractions of the Delta include its rich biodiversity, high number of endemic species, paramount bio-physical features such as the landscape and the unchanged traditional life of the local people. However, the Delta is said to be under threats due to agricultural encroachment and human settlement, loss of biodiversity, grazing and increased water demand in Angola and Namibia (Andersson *et al.*, 2006; Arntzen, 2005; Mbaiwa, 2004a). These threats to the Delta can be prevented or avoided by understanding the importance of the Okavango Delta's ecosystem and services through its economic valuation. The value of these ecosystem services can be estimated by identifying the preferences of tourists for the attributes of the ecotourism. Therefore the aim of the study was to establish and analyse the preferences of tourists on ecotourism attributes and their marginal willingness to pay for these attributes that characterise ecotourism. The study also sought to estimate the consumer surplus of tourists in the Okavango Delta.

Using the choice experiment method, the preferences of tourists visiting the Okavango Delta were assessed on three attributes that characterises ecotourism in the Okavango Delta: i) landscape, ii) wildlife species and iii) management of community tourism enterprises. The price of *mokoro* excursion was taken as a payment vehicle. Two models were crated from the data collected from the tourist interviews; multinomial logit and random parameter logit models. From the multinomial logit model, marginal willingness to pay of tourists for the attributes was estimated. The results showed that the tourists were willing to visit the Okavango Delta when it

was highly flooded because they had higher chances of viewing wildlife species. The landscape of the Delta was the most important attribute, as revealed by the high value of marginal willingness to pay (Table 4.5). The tourists were willing to pay BWP339.61 to preserve the uniqueness of the Delta's landscape. As the landscape of the Delta is an important attribute to the utility of tourists, their preference was homogenous (shown by insignificant standard deviation in Table 4.4). The unique landscape of NG/32 preferred by tourists has suitable vegetation that provide suitable habitat for variety of wildlife, hence great game viewing experience during game drives and guided walks and the water provides opportunities for mokoro and boat cruises.

Tourists also indicated that they preferred to use tourism enterprises that are in a joint-venture management between the private safari companies and local communities. The negative marginal willingness to pay of tourists (US$ -5.82/ BWP-53.03) from a change in management indicates that management of tourism enterprises do not add utility to their trips when visiting the Okavango Delta. If the attribute does not add utility to the choice of a trip, it implies that tourists do not take this into consideration when they plan their trips. This could also mean the current management is preferred and the negative marginal WTP is a protest to the change. This therefore implies that the collaboration between the private sector and the local communities should be encouraged as they there are skills and knowledge to exchange and to benefit from.

It is worth noting that the availability of some natural resources in the Okavango Delta is not always a guarantee that tourists will choose it as a tourist destination. Montaguti and Mingotto (2015) noted that, 'it is a matter of tourism attractiveness, which depends on many different

aspects and not only on the intrinsic natural value of the resource itself'. Simply put, successful attraction of tourists depends on specific resources that satisfy the needs of tourists and its tourist destination's uniqueness compared to other areas. Competition from other tourist destinations could hamper the tourism development of the Okavango Delta; hence compromise the aims and principles of ecotourism as an income diversifier and employment generator for the locals. It is important to diversify the tourism products in the Okavango Delta, however, before implementing new tourism activities, it is vital to assess and determine the preferences of tourists (tourism demand) so to attract the rightful tourists (eco-tourists).

The valuation of ecosystem services assists policy makers with allocation of scarce resources and formulation of relevant policies and programmes to conserve these services. The preferences of tourists have provided information on the attributes of ecotourism that attract tourists to the area and this can be used by policy-makers to determine the elements of ecotourism they may conserve or promote to attract tourists and meet tourism demand of the Okavango Delta. Despite an increase in the number of tourist arrivals in the Okavango Delta, there is still need to determine the preferences and expectations of tourists in order to have sufficient information to entice them to make return trips to the Okavango Delta.

The study also determined the consumer surplus of tourists. The average consumer surplus was estimated at US$ 266.51 (BWP 2, 422.82) per tourist per trip (Table 5.8). This translates into a total consumer surplus of US$ 772, 879 (BWP 7, 026, 172.73) for 2, 900 tourists who visited NG/32 concession in 2012. The estimated consumer surplus of this study slightly differs from

the consumer surpluses estimated by other studies in different parts of Botswana. For instance, Kgathi *et al.* (2009) and Mladenov *et al.* (2007) estimated consumer surplus of US$ 291 and US$ 261 per tourist respectively. The consumer surplus estimated by this study is less than the consumer surplus of Kgathi *et al.* (2009) and Mladenov *et al.* (2007). This is anticipated to be due to the differences in the type of tourists interviewed, study sites and mode of transport used. This study was done in an area adjacent to the protected area (Moremi Game Reserve), while Mladenov *et al.* (2007) did their study at Moremi Game Reserve. This means that Mladenov *et al.* (2007) interviewed lot of self-drive tourists while this study interviewed tourists in pre-packaged tours.

A number of studies done in Botswana and other African countries suggest that the estimated consumer surplus in many cases is left uncaptured, therefore institutions and mechanisms need to be established and put in place to capture this consumer surplus (Barnes *et al*., 1999; Kgathi *et al*., 2009; Navrud & Mungatana, 1994). Mechanisms for capturing of the estimated consumer surplus were suggested as follows; production of tourism products and their diversification by local communities; increase of the prices of some tourism products; encouragement of international investment and building of headquarters in Botswana; charging different prices on tourists looking at their socio-economic characteristics As a result of the establishment of conservation areas, the adjacent communities bear the costs of damage to their crops and properties by wildlife and the opportunity costs forgone of alternative land-uses.

The consumer surplus can be used to compensate farmers adjacent to protected areas for the loss of their property to wildlife. Community-based organisations could be given the responsibility to manage the compensation of the local communities alongside the Department of Wildlife and National Parks. The tapped consumer surplus may be used for rural development projects such as building of schools, health facilities, telecommunications, airstrips and roads. In respect to the development of local communities, the consumer surplus could be used to finance some of the development projects through community-based organisations in collaboration with village development committees (VDCs). The VDCs are responsible for identification of potential projects to be implemented in villages, which are then sent to the District council. Because VDCs are aware of the projects and CBOs are the custodians of finances of tourism or CBNRM, the two organisations are in a better position to implement the developments of villages together.

Marginal willingness to pay is the additional amount the tourist is willing to pay for one more unit of environmental attributes of ecotourism. That is, marginal WTP of the landscape is US$ 37.24 (BWP 339.61) for an additional unit to enjoy the landscapes. According to the Law of diminishing marginal utility, the more a tourist enjoys or consumes the landscape, the less satisfaction he/she gets from any additional trip to the Delta to enjoy the landscape. This therefore means that the tourists at one point will stop coming to the Delta as their utilities will have decreased. The tourists will cease to visit the Delta as they will know what to expect in the Okavango Delta. A decline in the number of trips to the Delta will in turn affect the consumer surplus of tourists. The consumer surplus will decline. An increase in the price of tourism goods and services due to consumer surplus can have an impact on other economic sectors, that is,

tourism activity can increase the overall price level in the economy. Therefore precaution should be taken when prices of tourism products.

The study has revealed that there is consumer surplus and one mechanism to capture it is to increase the price of tourism products. However, policy makers and tourism planners should be careful when considering increasing prices. Price increase will influence tourists to choose choice sets that have lower prices or costs hence a decline in the marginal willingness to pay and consumer surplus. When the price of ecotourism in Botswana increases, two things take place; the surplus of tourists who were to pay above the prices declines and less people are willing to buy the product as the price is high; and also those who would have been interested to visit the dealt will decline due to high prices. It is therefore important for all tourism stakeholders to have adequate information about the sector, both the preferences and demands of tourists and supply of attributes of ecotourism. The availability of information will promote market efficiency in the tourism sector, hence implementation of necessary and tourism activities and products desired and preferred by tourists.

This study has contributed to the literature on economic valuation of ecosystem services in the Okavango Delta, Botswana. Firstly, the choice experiment method was used for the first time to estimate the value of tourism and ecosystem services in the Okavango Delta. Studies have used other valuation methods, like the travel cost method (Mladenov *et al.*, 2007) and the contingent valuation method (Barnes *et al.*, 1999; Mmopelwa *et al.*, 2007) to estimate the value of tourism and other natural resources in the Delta. The successful use of the method implies that it can be

used throughout the Delta to estimate the value of various attributes of ecosystem services in order to promote their conservation. The method can also be used for allocation of limited resources as well as allocate land for various land-uses. Secondly, the study estimated the marginal willingness to pay of the attributes of ecotourism in the Okavango Delta. Other studies had estimated the willingness to pay of tourists for wildlife viewing using camping and park entrance fees (Barnes *et al.*, 1999; Kgathi *et al.*, 2009; Mladenov *et al.*, 2007; Mmopelwa *et al.*, 2007; Turpie *et al.*, 2006). This implies that the choice experiment method can be used to estimate the value of management changes in national parks as well as conservation of the Delta. Thirdly, the study established that tourists are not only interested in wildlife while planning trips to the Okavango Delta; their preferences for wildlife are heterogeneous. This implies that the tourists who are not much interested into wildlife can be offered other tourism products and this proves that tourism has the potential to be diversified using the preferences of tourists. Therefore, tourists interested in the landscape of the Delta can be taken to areas like NG/32 where they can enjoy the unspoiled scenery of the Delta.

7.2 Policy implications

The results of this study have several policy implications. Firstly, the study has shown that tourists are not only interested in the wildlife species in Botswana but are also interested in the landscape of the Okavango Delta and they are willing to pay more for the conservation of the Delta. As tourists value the Okavango Delta for its landscape, which is based on water dynamics, the continuing water flow from the Angolan highlands is crucial for the Botswana tourism sector. The Government of Botswana therefore needs to work with the Permanent Okavango River Basin Water Commission (OKACOM) and other riparian states about the efficient utilisation of

water resources in the Okavango River Basin. OKACOM needs to establish an initiative that governs the use of water between the states, so that all the states benefit equally and efficiently.

Secondly, the study also revealed that tourists preferred community-based tourism enterprises that are in joint-venture with the private sector. Moreover, the CBNRM policy is encouraging this form of management. The findings suggest that international tourists are of the view that tourism development projects should benefit local communities in the Okavango Delta and therefore the government should take this into consideration when formulating development policies.

Thirdly, the results of this study also suggest that the Government of Botswana and all tourism stakeholders including local communities could establish mechanisms to capture consumer surpluses of tourists visiting Botswana. For instance, price discrimination strategy can be used to capture consumer surplus of tourists. This could be expanded to other tourism products like cultural activities. That is, segment the tourism sector and identify tourists willing to pay more for these activities. The sector can be segmented using psychographic and behavioural variables of tourists. There are several activities that could benefit from these consumer surpluses if captured. Some of them include supporting rural development projects in local communities. Communities adjacent to protected areas could use these consumer surpluses to pay-off the costs of damage of their crops and properties by wildlife and the opportunity costs forgone for other alternative land-uses.

7.3 Recommendations for future studies

This study was only limited to three attributes of ecotourism, in future, more attributes can be included to promote tourism product diversification in the Okavango Delta. Some of the attributes that can be considered include cultural activities of local communities and even cover a wider area of the Okavango Delta.

Only international tourists were interviewed, in future, domestic tourists can be included to compare the preferences of international tourists and domestic tourists. Other types of tourists can also be considered; e.g. self-drives. The preferences of tourists can be determined and used to map potential tourism sites in the Okavango Delta to cater for various forms of tourists visiting the Delta. This will diversify tourism products and make it a year-round activity.

7.4 Limitations of the study

Some of the limitations of this study include:

- The study only interviewed tourists who went for *mokoro* excursion and camped in the Delta for more than one night. The day-trip tourists were not considered. This has hindered the comparison of tourists in terms of their preferences and consumer surplus. The preferences of day-trip tourists might be different from the preferences of the interviewed tourists.

- The study interviews tourists referred to as 'independent (private) tourists to estimate consumer surplus. These are also known as 'low budget' tourists. This might have had an

impact on the estimated consumer surplus. If the study is to be carried on other types of tourists, the consumer surplus might be higher than the estimated.

- The study also did not interview domestic tourists (tourists from Botswana) and tourists who visited other parts of the Delta, e.g. Moremi Game Reserve and upper Okavango Delta. This reduced the scope of the analysis and comparison with other tourists. Tourists who went to Moremi Game Reserve might have different preferences and consumer surplus with the interviewed tourists. Therefore it will not be reasonable to generalise the results of the study. Interviewing tourists at Moremi Game Reserve would have been vital as other studied have been done there so comparison who have been much easier.

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Questionnaire

RESEARCH TITLE:

Economic analysis of the preferences and perceptions of tourists in the Okavango Delta, Botswana: implications on rural development

My name is Dimpho M. Matlhola, an MPhil (in Natural Resource Management) student at the Okavango Research Institute (University of Botswana). One of the requirements to complete the programme is to produce a thesis. Therefore I am carrying out an investigation on tourist's preferences on ecotourism in the Okavango Delta and their implication on rural development. The aim of the research is to identify and analyze tourist's preferences and estimate the economic value of ecotourism in the Okavango Delta. This information will be vital in the improvement of tourist's experience in the Okavango Delta.

Please note that some of the questions I would pose to you may sound personal but they are very important for this study. All information provided during the interview will be treated confidentially and shall be used solely for scientific research. Please feel free to ask me any question where you do not understand.

Your participation is highly appreciated in this investigation.

Questionnaire No: _____

Date of Enumeration: _____

Starting Time: _____

Ending Time: _____

Section A: Demographic and Socio-Economic Characteristics of the Respondent

Firstly we require that you provide us with some information about yourself. Please note that the information provided here will be treated with confidentiality and will be used for the purpose of this study.

	Question	Response (tick the appropriate)				
1.	Gender	Male[1]		Female[2]		
2.	Age					
3.	Education level	High school or less[1]	Diploma[2]	Bachelor[3]	Masters[4]	PhD or above[5]
4.	Marital Status	Single[1]		Married[2]		Others (specify)[3]
5.	Nationality					
6.	Country of origin					
7.	Employment Status	Employed[1]	Self-employed[2]	Pensioner[3]	Others (specify)[4]	
8.	Please approximate your household income per year in US$					

Section B: Visit to the Okavango Delta

This section covers your visit to the Okavango Delta; the purpose of the trip and what prompted the visit.

	Question	Response (tick the appropriate)				
1.	Is this the first time visiting the Okavango Delta?	Yes[1]			No[2]	
2.	What prompted your visit to the delta?	Naturalness[1]	Quietness[2]	Landscape[3]	To see wildlife[4]	To see birds[5]
		To see plants[6]	*Mokoro* trip[7]	Culture[8]	Others (specify)[9]	
3.	What is the purpose of your current trip in the Okavango Delta?	Leisure[1]	Business[2]	Studies[3]	Business + leisure[4]	Others (specify)[5]
4.	Number of people you are visiting the delta with?					
5.	How many days did you spent in the delta?					
6.	Are there any places that you will visit from Maun in Botswana?	Yes[1]			No[2]	
7.	If YES, please mention them					
8.	Name wild animals that you have seen during your visit to the Okavango Delta?					
9.	Name bird species that you have seen during your visit to the Okavango Delta?					

Section C: Expenses of the Trip

In this section, you are requested to estimate your trip costs.

	Question	Response (tick the appropriate)					
1.	Have you visited any place outside Botswana as part of this trip?	Yes[1]			No[2]		
	If YES, please state them						
2.	Have you visited any place in Botswana before coming to the Okavango Delta as part of this trip?	Yes[1]			No[2]		
	If YES, please state them						
3.	Do you have a main destination for this trip?	Yes[1]			No[2]		
4.	If YES which is your main destination for the trip?						
5.	If your main destination was the Okavango Delta, please approximate the total costs of the return trip (including travelling, accommodation, food, etc.)	US$[8]					
6.	If your main destination was not Maun, please approximate the total costs of the return trip (including return air ticket, fuel, accommodation, food, etc.).	US$					
7.	Assuming now that you would like to return on a similar trip in the future to the delta. Taking into account your budget constraints, please suggest a percentage increase to the current costs level that you would consider too expensive to return	10%[1]	20%[2]	30%[3]	40%[4]	50%[5]	Others (specify)[6]

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[8] 1 US$= BWP8.03

Section D: Choice Experiments Questions

Tourists are never given an opportunity to express their preferences while visiting tourism destinations to improve their experiences. Environmental economists have therefore seen it appropriate to value the preferences of tourists while visiting tourist destinations. They used choice experiments method. In these experiments, respondents are presented with choices of scenarios described in terms of characteristics (attributes) of environmental goods and their associated levels. For each choice respondents are asked to choose their preferred scenario. **In this section we are going to present you with choice sets from which you will choose an option that best represents your maximum utility or satisfaction.** There are three alternatives; two of which are described by four different attributes and third alternative being the *status quo* (the current situation). The attributes and their levels are discussed further in Table 1 below.

Attributes of Ecotourism and their levels

Attribute	Description	Levels
Management of tourism enterprise (Lodge)	Management of the tourism enterprise encompasses joint venture and non-joint venture. In joint venture, the community is in partnership with a safari company. Non joint venture is when the enterprise is run solely by the community trust.	1. Joint venture [BL9] 2. Non-joint venture
Landscape	Landscape of the Okavango Delta can be affected by various factors including flow of water from upstream (i.e. Angola). If there is reduction in flows, less water will be received downstream due to upstream abstraction, the scope and value of tourism might diminish. Some channels of the delta may dry up and wildlife and birds might even migrate to other places.	1. High floods in the delta 2. Low floods in the delta [BL]
Wildlife species	Tourists are interested in different viewing wildlife species when visiting the Okavango Delta. Some of the preferred wildlife species cause damage to the farmers' crops and livestock. For defense farmers might kill these species.	1. High chances of seeing a wildlife species for which damage to farmers' property is compensated 2. Less chances of seeing a wildlife species for which damage to farmers' property is compensated [BL]
Price of *mokoro* trip	The current price of a *mokoro* trip into the delta offered by OKMCT is BWP1, 680 ($221)[10] per person per day. This price may be changed as per choice combination in scenarios of your preferences. The price increases are 10% and 15%.	4. 0% increase [BL] 5. 10% increase 6. 15% increase

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[9] BL= Basic Level

[10] US$1 = BWP 8.03

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Choice set 1: *What would you choose if you were given the following options? You also have an alternative to choose none of the two options by not taking any trip.*

	OPTION 1	OPTION 2	STATUS QUO
Management of the tourism enterprise	Non Joint venture	Joint venture	
Landscape	Flooding channels of the delta	Drying channels of the delta	No, I would not choose any of the options
Wildlife species	High chances of seeing compensated wildlife species	Less chances of seeing compensated wildlife species	
Price of mokoro tour	0% increase	15% increase	
Tick your choice	☐	☐	☐

Choice set 2: *What would you choose if you were given the following options? You also have an alternative to choose none of the two options by not taking any trip.*

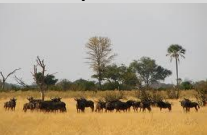|	OPTION 1	OPTION 2	STATUS QUO
Management of the tourism enterprise	Non Joint venture	Joint venture	
Landscape	Drying channels of the delta	Flooding channels of the delta	
Wildlife species	High chances of seeing compensated wildlife species	High chances of seeing compensated wildlife species	No, I would not choose any of the options
Price of mokoro tour	0% increase	0% increase	
Tick your choice	☐	☐	☐

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Choice Set 3: *What would you choose if you were given the following options? You also have an alternative to choose none of the two options by not taking any trip.*

	OPTION 1	OPTION 2	STATUS QUO
Management of the tourism enterprise	Joint venture	Joint venture	
Landscape	Drying channels of the delta	Flooding channels of the delta	No, I would not choose any of the options
Wildlife species	High chances of seeing compensated wildlife species	Less chances of seeing compensated wildlife species	
Price of mokoro tour	10% increase	0% increase	
Tick your choice	☐	☐	☐

Choice set 4: *What would you choose if you were given the following options? You also have an alternative to choose none of the two options by not taking any trip.*

	OPTION 1	OPTION 2	STATUS QUO
Management of the tourism enterprise	Non Joint venture	Non Joint venture	
Landscape	Drying channels of the delta	Drying channels of the delta	No, I would not choose any of the options
Wildlife species	High chances of seeing compensated wildlife species	Less chances of seeing compensated wildlife species	
Price of mokoro tour	0% increase	15% increase	
Tick your choice	☐	☐	☐

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Choice Set 5: *What would you choose if you were given the following options? You also have an alternative to choose none of the two options by not taking any trip.*

	OPTION 1	OPTION 2	*STATUS QUO*
Management of the tourism enterprise	Non Joint venture	Joint venture	
Landscape	Flooding channels of the delta	Flooding channels of the delta	No, I would not choose any of the options
Wildlife species	Less chances of seeing compensated wildlife species	High chances of seeing compensated wildlife species	
Price of mokoro tour	10% increase	15% increase	
Tick your choice			

Choice Set 6: *What would you choose if you were given the following options? You also have an alternative to choose none of the two options by not taking any trip.*

	OPTION 1	OPTION 2	*STATUS QUO*
Management of the tourism enterprise	Non Joint venture	Joint venture	
Landscape	Drying channels of the delta	Flooding channels of the delta	No, I would not choose any of the options
Wildlife species	Less chances of seeing compensated wildlife species	High chances of seeing compensated wildlife species	
Price of mokoro tour	10% increase	0% increase	
Tick your choice			

Choice Set 7: *What would you choose if you were given the following options? You also have an alternative to choose none of the two options by not taking any trip.*

	OPTION 1	OPTION 2	STATUS QUO
Management of the tourism enterprise	Non Joint venture	Non Joint venture	
Landscape	Flooding channels of the delta	Drying channels of the delta	No, I would not choose any of the options
Wildlife species	High chances of seeing compensated wildlife species	Less chances of seeing compensated wildlife species	
Price of mokoro tour	15% increase	10% increase	
Tick your choice			

Choice Set 8: *What would you choose if you were given the following options? You also have an alternative to choose none of the two options by not taking any trip.*

	OPTION 1	OPTION 2	STATUS QUO
Management of the tourism enterprise	Non Joint venture	Joint venture	
Landscape	Flooding channels of the delta	Drying channels of the delta	No, I would not choose any of the options
Wildlife species	Less chances of seeing compensated wildlife species	Less chances of seeing compensated wildlife species	
Price of mokoro tour	15% increase	10% increase	
Tick your choice			

For the next statements please indicate your opinion about your experience in the Okavango Delta. Rate them according how you enjoyed them

1-Strongly Agree   2- Agree   3- Neutral   4- Disagree   5-Srongly Disagree

	TICK THE APPROPRIATE BOX	(1)	(2)	(3)	(4)	(5)
1.	I find the time I spent travelling in *mokoro* to be enjoyable					
2.	There are definitely too many people visiting the delta. It is too congested					
3.	There are places in Botswana I would like to visit because they offer better tourist experiences than Maun.					
4.	I have seen my most preferred wildlife species in the delta					
5.	I have seen my most preferred bird species					
6.	There is a great diversity of plants in the Okavango Delta					
7.	The delta is seriously littered					
8.	I would recommend the Maun to other tourists.					

9. How would describe your overall experience in Okavango Delta?

_____

_____

Section F: Rural Development

It has been argued that conservation efforts need to be more inclusive of rural communities that live in areas within wildlife management areas (WMAs). They often have high levels of poverty and unemployment and at times have problems with wild animals that destroy their crops and livestock. Please indicate, for each of the following statements that relate to this debate whether you agree or not;

1-Strongly Agree   2- Agree   3- Neutral   4- Disagree   5-Srongly Disagree

	TICK THE APPROPRIATE BOX	(1)	(2)	(3)	(4)	(5)
1.	When I come to the Okavango Delta, I am only interested in wildlife and birds.					
2.	Tourism should contribute to the development of communities around the delta.					
3.	Rural development is more important than wildlife conservation.					
4.	Conservation of wildlife will not be sustainable if there is no rural development in communities around the delta.					
5.	Communities around the delta should contribute to compensation of damage caused by wildlife to their property.					
6.	I would contribute to the compensation fund founded to compensate farmers for the damage caused by wildlife.					
7.	I would pay more to engage in village tourism activities such as tours and crafting than the current *mokoro* fees.					

Thank you