AN ANALYSIS OF THE EFFECTIVENESS OF THE AUTOMATED REVENUE SYSTEM IN ETOSHA NATIONAL PARK NAMIBIA

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ABSTRACT

Revenue collection is an effective way in which governments can develop their economies. However, many developing countries like Namibia face challenges in their revenue collection. The Namibian government loses millions of dollars through fraud and errors related to the manual revenue collection system. This study was conducted with the purpose of ascertaining the effectiveness of the introduced automated revenue collection system in Etosha National Park, Namibia.

A Descriptive Research Design approach was used for this study. Quantitative and qualitative survey approaches were used where questionnaires and interviews were directed to the Ministry of Environment and Tourism (MET) staff members. In undertaking this research, both primary and secondary data sources of information were used.

The findings were presented in graphs, charts and tables, while explanation of the tables and figures was given in text. Challenges that were identified to influence implementation of an integrated revenue collection system included among others, resources, staff capacity and remoteness. The study established that the implementation of an automated revenue collection system by the MET has transformed revenue collection and improved service delivery in the Etosha National Park.

The study concluded that Etosha National Park effectively implemented its automated revenue collection system and the implemented system did impact on the revenue collection.

The researcher recommended that it is high time for the MET to put more effort into the adoption of an electronic revenue collection system as the findings show that it has reduced queuing and increased revenue. Finally, the study revealed the need for further training on usage of the system in all areas to improve user acceptance.

DECLARATION

I, Inamuvulwa Tukaleni Emvula, declares that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been attached. This work has not been submitted to any other university for another degree award.

Signature…… Date……

DEDICATION

I dedicate this study to my family for the support and encouragement while undertaking this course and certainly to my children so they may be inspired to achieve even more in future.

ACKNOWLEDGEMENT

I have the pleasure to acknowledge the contributions made by a number of persons that enabled me to accomplish my research report.

First and foremost, I would like to thank the Almighty God for giving me the strength and the resolve to make this project a success.

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I would like to thank the lecturers at the NBS for the vast knowledge they imparted on me and that has broadened my perspective of the world. I am deeply indebted to my mentor, Dr Greenfield, for his encouragement through the research. I would like to also acknowledge my supervisor, Dr Makura, for taking me through the project and ensuring that it met the desired standards.

I also acknowledge with gratitude the contribution made by the ENP management and the staff in the Ministry of Environment and Tourism for their willingness to provide the necessary information when I visited their offices. This study would have been impossible to accomplish without their involvement.

ABREVIATIONS

MET	Ministry of Environment and Tourism
ENP	Etosha National Park
DWNP	Directorate of Wildlife and National Parks
PA	Protected Areas
PASS	Protected Area System Strengthen
SPAN	Strengthening the Protected Area Network
GEF	Global Environment Facility
UNDP	United Nations Development Program
TANAPA	Tanzania National Parks
Zimra	Zimbabwe Revenue Authority
MCA	Millennium Challenge Account
CMT	Change Management Theory
TAM	Technology Acceptance Model
IS	Information Systems

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CHAPTER 1

1. INTRODUCTION

This study was concerned with determining the effectiveness of the automated revenue system in the Etosha National Park, within the Ministry of Environment and Tourism, Namibia. The thrust of this study discussed the problem and its setting; critically analysed selected literature relevant to the study; and discussed methods and strategies that were used in carrying out the study.

Effective revenue collection is the key to the success of any form of government or any revenue collecting agency. This is because it is one of the tools that is used by the government to obtain the finances which are used to fund very important government projects which are essential to the citizens of a country, for instance the county's government finances development projects using the revenues collected. The process of collecting revenue is made efficient by automation, the automated system of collecting revenues is able to detect fraud, can calculate the revenue collected and at an advanced level can be used to manage revenue collectors. This ensures transparency, accountability and integrity of the system (Visser & Erasmus, 2015).

Automation of a revenue collection system involves investing in modern technologies, e.g. ICT in order to upgrade the revenue system to achieve integration and information sharing so as to enhance efficiency and effectiveness of the system (Kirimi, 2015). An

automated way of collecting revenue eases the revenue collection, reduces the chances of manipulating the system and also reduces the cost of revenue collection (Gidisu, 2012). The automated systems for revenue collection must have financial manipulation capabilities, for example sorting data, developing trend analysis, creating budget expenses and must also be able to forecast the revenue to be collected by the collecting agency. They are very essential for planning as the expected revenue to be collected can easily be predicted. Predictor analysis that is done by a government helps the government to allocate funds to various county projects prior to the actual collection of the revenue (Kamolo, 2014).

1.1 Orientation of the Study

The Ministry of Environment and Tourism (MET) plays a vital role to Namibia's economic growth, for it generates much needed fluid capital. The mandate of the MET is to ensure the maintenance of ecosystems, ecological processes and biological diversity and the utilisation of living natural resources on a sustainable basis for the benefit of both present and future Namibians. The Ministry is ranked the second largest contributor to Gross Domestic Product (GDP) after mining, and it has potential for significant and sustained growth (MET Strategic Plan 2013 - 2017).

The protected areas contribute 3.8% of the Namibia's Gross National Income to the national economy, primarily in that it underpins a large portion of the national tourism industry, which is the second largest contributor to national income and the fastest growing economic sector. Park revenues continue to play a major role in demonstrating the economic potential of the Namibian protected area system. Tourism

is the main value of the protected areas, which has attracted a number of visitors; most were foreigners who undertook trips to national parks (Turpie, Barnes, de Longcamp, and Paxton (2010). These foreign tourists spend millions of dollars by viewing wildlife in protected areas.

Park entrance fees are charged per person per day. A permit is issued indicating the number of people (adults and children), the period intended to stay in the park and the registration number of the vehicle they are travelling in. If the payment was done in advance at the other office other than the one in the visited park, verification should be done on the number of people and days paid for and changes made when necessary.

MET has standard rates that were approved by Treasury in 2005 and reviewed in 2015. Clients can make payments in advance, or at the cash office on arrival at the visited park. The amount to be paid is determined by the number of people and the number of days that they are staying in the park. A receipt should be issued and the client is given a permit for entering the park.

The whole process is done manually, from issuing the receipts to reporting. At the end of every month, all revenue collection offices should send revenue reports to the MET Head Quarters. The reports are compiled manually and are taken by staff or by courier. They are usually not accurate and appear not to be submitted on time due to unavailability of the automated system.

During the visit to ENP by United Nations Development Program (UNDP) team, Jonas Heita (2015), a Protected Area System Strengthening (PASS) project manager,

stated that the ENP is faced with various capacity and development challenges, given the growth in tourism. The Protected Area Systems Strengthening (PASS) Project is a Project of the Ministry of Environment and Tourism that is funded by the Global Environment Facility (GEF) through the United Nations Development Program. The main aim of the PASS project is to ensure that the Protected Areas System of Namibia is strengthened and financed sustainably through, improving current systems for park entry and revenue generation mechanisms, improving law enforcement strategies and mechanisms to address poaching and other wildlife crimes and improving fire management in protected areas.

Kruger (2010) indicated that revenue collection is done by MET staff using tills or cash registers. These were not connected to any system and reconciliation and reporting was done manually. This system was having loopholes which led to fraud by some staff members and sub receivers of revenue. All other offices within the MET have been operating manually using cash registers. Deficiencies and surpluses have been experienced with the manual system due to miscalculations. In this traditional system, a significant amount of revenue was lost through fraudulent acts conducted by some staff, also the huge amount of hard cash transactions handled at the gate, which is believed to induce temptation to the cash staff to commit fraud. Furthermore, during peak seasons where tourists are coming in big numbers, there were many complaints from customers that they spent too much time at the entry gates for registration and payment.

According to Kruger (2010), Sympology Technology Services was contracted to conduct a design study of the Park Revenue System. The design study was conducted and the computerised fee collection system was recommended. The automated revenue

collection system was installed for testing at four gates in the ENP. The Etosha National Park is now running two systems in parallel, the manual one and the testing system with the regional server in the parks headquarters at Okaukuejo (Kruger 2010).

The system was designed in such a way as to ensure continued operation even in the event of power and/or telecommunication failures at the parks. Limited reporting and statistics are available centrally at the ENP offices. Secure access to this information is critical. An efficient way of confirming the nationality of a person at the point of entry was implemented (Kruger 2010).

The system is very easy to use and does not introduce excessive delays at the entry points at the parks. Issuing of permits should be done by the system; calculation of payments as well as capture of payments should be handled by the system. This research was motivated by the above background to conduct a study on the effectiveness of the electronic systems piloted in the Etosha National Park, more specifically in the area of efficient revenue collection.

1.2 Statement of the Problem

In today's competitive, fast-paced business landscape, getting the most out of available resources is not an option but rather a necessity. Organisations are taking a highly proactive approach to systems modernisation and operations in an effort to increase efficiency and effectiveness in their operations. System automation allows firms to automate new platforms of their revenue collection systems in order to reap maximum benefits (Bahwan, 2012).

The Ministry of Environment and Tourism's Manual Revenue System does not efficiently collect the revenue generated from tourism. It was recognised that the existing manual collection system is prone to errors and theft; and revenue can be increased by improving the efficiency and safety of the system. There are many problems inherent in the current method, including breach of established procedures by sub-receivers of revenue for the purpose of committing fraud or diverting collected revenue into staff private pockets. Hence, a need to develop an efficient park entrance fees collection system (Sustainable Financing Plan for Namibia's Protected Area System, 2010).

The manual system for revenue generation and collection is inadequate. There is no automated system for revenue collection at the park gates and this leaves room for human errors. The collection is manual, is slow and in case of large tour groups, enabling significant numbers of people to enter the park at lower visitor fee than they should pay. Miscalculation is always taking place, which results in over/under charging.

The manual payment system has been found to be out-dated, inefficient and exposed to numerous security risks. Weaknesses in revenue collection at various entry points of the economic chain need to be urgently addressed to ensure Namibia's response to these challenges is adequate. The Ministry felt that it is better to introduce the automated system so that it can reduce these problems.

In response, MET with the assistance of the projects within the Ministry, developed and introduced a pilot computerised system in Etosha. The system was installed at all entrance gates to the Etosha National Park in 2014. The technology, which is very important to the growth of the country's economy, enables the ENP, which is one of the largest parks in Namibia, to collect revenue with little paper work. The service for entering ENP by tourists and tour operators is now operated electronically.

Therefore, one may ask, apart from banks, for the organisations that use automated revenue collection systems; does automation accelerate performance of the organisation? With the Etosha National Park, having adopted the electronic payment system; it was the researcher's intentions to find out whether the introduction of this system has brought any difference to the organisation's performance.

1.3 Objectives of the Study

The objectives of this study were to:

- Evaluate effectiveness of the newly introduced automated revenue collection system
- Examine challenges faced ENP during the implementation of automated revenue collection system
- Determine whether service delivery, revenue collection and reporting at the ENP have improved
- Recommend to the Ministry whether automated revenue system can be adopted at all revenue offices in the Ministry of Environment and Tourism

1.4 Significance of the Study

This study should be of great benefit to the MET, for it should help encourage it to adopt effective strategies in collecting revenue from its core business. The findings of this study should be resourceful to other ministries seeking to automate their systems, they stand to benefit with important information on the importance of automating revenue collection systems.

The study is concerned with determining the effectiveness of the automated revenue collection system in the Ministry of Environment and Tourism. The study was conducted in the Etosha National Park. The park is currently using the automated revenue collection system. This study focused on the electronic revenue collection systems in ENP and all revenue points in ENP were involved as the study needed to find if the system has brought some changes in the organisation's performance in terms of efficiency and collection. The study tried to establish the contribution of electronic systems to the organisation's performance. The major concern the researcher had in carrying out the study was on whether the system was efficient and effective in revenue collection at the Etosha National Park. With this concern in mind, this chapter reviewed past studies on automated revenue collection systems.

The findings of this study should increase the knowledge to the scholars and academicians, interested in revenue system automation. It should provide a basis for further research to future scholars and academicians on identified gaps. Indeed, the study should be of great interest to the Namibian Government as a whole, for it should encourage it to be more attentive to the need for efficiency in revenue collection.

The study aims to evaluate the effectiveness and establish solutions that can serve as best practice guidelines in the implementation of automated revenue collection systems. Hopefully, this study should give guidelines to facilitate future implementation of the automated revenue collection system in other revenue offices within the MET and other ministries as well. Users of the system should be in a position to enhance the adoption of the recommendations that were highlighted.

1.5 Limitation of the Study

A number of challenges were encountered by the researcher during the progression of the study. It was possible that this study might end up having certain imperfections arising from certain unavoidable factors, such as:

- Inability to access certain official information considered classified
- Inadequate funds to travel to ENP to get information would be an obstruction
- Time frame within which the work to be carried might be enough to gather information required for the study
- Busy schedules of respondents caused the late receipt of questionnaires and some of the respondents failed to return their questionnaires

These limitations were obviously foreseen, but other challenges were experienced during the primary data collection. Among them was unavailability of some revenue officers who should have responded to the questionnaires as they were working shifts and on rotational basis. Misplacement of questionnaires and the consequent failure to meet the deadline by some respondents were some of the major challenges that were experienced during the study.

1.6 Delimitation of the Study

The study focused on Etosha National Park only. This is because the automated revenue collection system is piloted in ENP. The study was only limited to determine the effectiveness of the automated revenue system that was implemented in the Etosha National Park. It did not concern with other aspects of the park, such as the nationality of the clients who visited the park.

1.7 Chapter Outline

Chapter one has been the introductory chapter to the study. The chapter covered an approach to the effectiveness of automated revenue systems in the Etosha National Park, within the Ministry of Environment and Tourism. The chapter also looked at the current system used in the Ministry. The chapter also clearly stated the problem of the study, justifying why the automated system is needed. In doing this, the researcher stated the purpose of the study which will be addressed by answering specific research questions.

Finally, the chapter presented the significance of the study together with anticipated limitations, delimitations and concluding with the perceived significance of the study.

CHAPTER 2

2. LITERATURE REVIEW

2.1 Introduction

The objective of this chapter is to present a theoretical framework and relevant empirical findings related to the current study.

This chapter presents a review of literature pertinent to the study as presented by various researchers, scholars and authors. It summarizes literature that has been reviewed for the purpose of the study with regards to automated revenue collection system. The literature covers an empirical review, which is an overview of the literature of past studies, findings and recommendation showing the research gap to be filled. It also has a review of theoretical literature (theoretical framework). Lastly, the conceptual framework of the study and summary is provided.

2.2 Overview of Etosha National Park (ENP)

The Etosha National Park is one of the most visited parks in Namibia. There are different animals including elephants, rhinos, lions, leopards and others that are attracting visitors from whom the Ministry of Environment and Tourism is generating revenue. Etosha is accessible through four gates, i.e. Anderson gate which is the main entrance to the park on the southern end of the park and it is near Okaukuejo camp where the cash office is situated. Von Lindequist gate is in the east next to Namutoni

camp, Galton gate on the south-west of the park and King Nehale lya Mpingana gate in the northern end of the park.

To enter the ENP through these gates, fees are payable. There are three categories of fees, namely; foreigners, SADC and Namibians. These fees are payable per person per day and are valid for 24 hours. Adults from foreign countries, the SADC and Namibia are paying N$80, N$60 and N$30 respectively. Fees can be paid in advance or on arrival at the office in the park (Etosha National Park Management Plan, 2013).

2.3 Revenue Collection System in ENP

The Ministry has adopted electronic system in the ENP on a piloting basis. The Electronic revenue system has been developed to replace the current manual system. The reasons for adopting the system of revenue collections among others are such as convenience and ease of use by ENP staff. The system is supposed to enhance yield revenues and eliminate fraud because the staff at the point of sale must log into the system with their passwords to be able to provide services to the clients. This system provides data security because data is replicated automatically to all four entries in the ENP. It enhances real-time data collection, information processing and analysis. Overstaying, missed payments and underpayments are automatically detected by the system. The system generates real time statistics and reports by identifying the number of visitors who paid for a visit at the ENP together with their nationality.

Park revenues continue to play a major role in demonstrating the economic potential of the Namibian protected area system (Aribeb *et al.*, 2016). Aribeb (2016) revealed that security risks and inefficacies were identified as key challenges to the previous

payment system. The Ministry has been faced with management challenges of inadequate revenue generation mechanisms due to the manual system for revenue collection at the gates that has caused incremental loss of the economic benefits accruing from biodiversity (Protected Area System Strengthen (PASS) project). In relation to the effectiveness of the automated system, Spring (2010) stated that most of the world's governments use automated systems as it is easy to collect revenue and the total cost of revenue collection is reduced thus making economic sense.

The current practice is that clients should have valid permits to enter the park. At the gate clients apply for the permit indicating the days they intend to spend in the park and they will proceed to the cash office for payment. Payment can be done in cash or by card.

According to a study by Kruger (2010), gathering of data has been done manually and followed various steps as to where it should be included in final reports for the park and the MET offices. Due to this process of gathering data, many discrepancies occurred and the data could not be seen as being accurate. There were several issues with the funds collection. Firstly, in some cases funds for permits were collected by third parties. There was no checking in place to ensure the accuracy of the amount owed by third parties and that payment was actually done by these third parties. At MET pay points in Etosha, tills and cash registers have been used. These were not connected to any system and reconciliation and reporting has been done manually. Again, inaccurate information can result because of this. No reconciliation was done between the financial reports and the number of permits issued. This is because the

way data was gathered by the MET pay points, was inadequate for it to be accurate. Various issues were identified at the gates around access and exit. Many would use different ways to exist to avoid paying, taking advantage of the current manual processes with the direct result of loss of income.

Turpie, Barnes, de Longcamp, and Paxton (2010) revealed that park entrance fees made up about 90% of non-tax revenue collected by the MET. Concession fees make up about 7% and other revenue sources made up the reminder. The latter included film fees, wildlife utilisation permits, wildlife registration and licences, registration of culling teams and professional hunters; and sales of trophies.

Despite important increases in the collection of park entrance fees, the capacity of the MET to effectively collect revenues is constrained by a number of factors which include:

- Weak capacity of staff in revenue management, including absence of computerised systems which causes delays in the transfer of information and data unreliability,
- Difficulty in estimating revenues due to absence of revenue forecasts and unpredictable events leading to poor planning and ad-hoc management of expenditures,
- Theft and corrupt practices by staff, and
- Insufficient incentives for the Directorate of Parks and Wildlife to implement a more efficient system for collecting entrance fees as there is no correlation between the amount of income generated and the allocated park management budget.

From discussions with some of the staff members responsible for revenue collection at the MET Head Quarters, they highlighted some problems associated with the manual system as:

- Inability to quickly retrieve information due to the manual filing system.
- The manual system presents the possibility of human errors which can be costly to the Ministry
- Staff can issue receipts without recording and keep the money in their pockets

2.4 Tanzania National Parks Payment Systems

Briggs and Wildman (2009) indicated that the Tanzania National Parks (TANAPA) started using electronic payment systems at its revenue collection centres in parallel with the old system with effect from the 1st of October, 2007. Phase 1 of this system covered the Serengeti, Lake Manyara, Tarangire, Kilimanjaro and Arusha National Parks through CRDB and EXIM Banks who designed the systems. The system has already been installed at all gates and the payment of park fees can only be through Electronic Cards. Therefore, payment by cash and cheques cannot be accepted.

TANAPA has introduced an electronic payment system at the National Park gates aimed at improving financial transactions at the parks. The Manager for Revenue and Investment, Mr. Nassoro Mndeme said that the objectives of introducing an electronic payment system is to ensure security of cash collection both for parks, as well as to tourists visiting the parks who now need not walk with cash when entering the parks. The other objective is the control of the cash temptation among the staff at the parks and the tour guide officers. Mr. Mndeme indicated that before the system, some of the

staff and the tour guides were tempted to temper with the cash presented to them by the tourists as fees to enter in the National Parks. He said that through the new system, TANAPA is in a position of realising its money more efficiently. Before the take-off of this new system, workshops were conducted where TANAPA Management and the stakeholders such as tour operators had a time to listen to presentations.

He believes that this should in turn help the organisation to get away with the issues of making follow-ups on debtors, as well as cases regarding bounced cheques. Mr Mndeme further said that since the implementation of this new electronic system, TANAPA has experienced a good security of its money and that security officers at the parks are now comfortable as they don't deal with cash payments. Also, there are no claims on bouncing cheques, and there is absence of cash collusions at the gate collection points. The system has also helped parks get money on time.

Deogratias (2012) indicated that smart card systems are not only a payment system but also used to record visitors or tourists' statistics. The system is also used for paying park-entry fees for visitors and vehicles visiting Ngorongoro Conservation Area and other special services available in the area like camping, bush lunch, walking safari. The main purpose of implementing smart card systems was to minimise and or eliminate the weaknesses of the paper ticketing system such as fraud, operating costs and so on.

2.5 Kenya Revenue Collection System

Based on a study conducted in Kenya, five counties have upgraded their systems to the automated revenue collection systems. During the launching of the system, the Governor of Kiambu County in Kenya, Honourable William Kabogo said,

"Automation of revenue collection was simply adopted by the county government of Kiambu in a bid to curb the shortcomings that came with the manual process of collecting money where lots of it was lost and the results are now tangible and can be seen by everyone" (@iLabAfrica, 11 March 2016).

According to Fredrick (2013) during her study on the effect of information systems on revenue collection by local authorities in Kenya, there is a relationship between Internal Control Systems and both efficiency and effectiveness in revenue collection. She indicated that it is very important to invest in ICT. This is because computerised information systems have a positive effect on revenue collection. She further stated that computerisation of activities such as revenue collection, enhances efficiency as a result of timely revenue collection, enhancing management integrity, provision of clear records among other factors. In March 2004, the Government of Kenya launched an ambitious three year (2004 – 2007) E-government Strategy, (GoK Strategy). The strategy was designed to achieve goals and objectives to efficiently deliver government information and services to citizens and promote productivity among public servants.

2.6 Automated Fee Collection Technology Used by the Indian National Parks

Many National Parks have installed automated fee machines. These machines have the capabilities to collect cash or credit card transactions. The majority of automated machines within National Parks operate on a receipt distribution system whereby visitors pay a variety of fees, such as entrance, campground, or boat launch fees, and the machines issue receipts showing the fees that was paid. Visitors then show the

receipt to the Visitor Use Assistants at the entrance booth. Some parks also have machines that can issue actual passes (Assatteague Island National Seashore Fee Structure Analysis, 2017).

Indian National Park managers identified several advantages and issues regarding automated fee machines:

2.6.1 Advantages

- Improve the safety and security of employees collecting the fees. Automated fee machines, which dispense entrance and recreational fee permits along with credit card option transactions at entrance booths, can decrease the amount of cash held at fee entrance booths.
- Important Automated Systems can reduce personnel costs and collection costs. The majority of parks stated that they were able to reduce personnel costs by using the machines to collect during shoulder times and off-season hours.
- Increase revenue by collecting entrance fees during after-hours and offseason. Nearly all the parks stated that they experienced an increase in fee collection after the installation of an automated fee machine.
- Improve visitor convenience. Several parks stated that this feature improves visitor convenience by providing more opportunities for visitors to purchase the passes they need and get into the park as efficiently as possible.
- Automated Fee Machines often pay for themselves in a relatively short period of time.
- Turn-key contracts can be developed for a percentage of the total revenue collected. This option can cut the amount of time required to manage the fee

collection and reduce the number of staff since the park would not have to do the accounting, maintenance or service on the machines.

- Credit card-only automated machines are the easiest to maintain and less expensive than automated machines that dispense change. This option has worked well for some parks in remote locations.

2.6.2 Issues and concerns

- Automated systems may not reduce personnel costs. Maintenance and upkeep costs will be required to maintain the added conveniences for visitors. The reduction in staff time may be overestimated. Staff will need to collect the fees from the machines and they will need to be trained and able to repair and maintain the machines.
- The upfront costs may be significant.
- Automated fee machines may not be practical or cost-effective at all demonstration sites, such as those with low visitation or remote access. Automated fee machines and credit card transactions require adequate infrastructure, such as on-site power or phone lines, to maximize their effectiveness.
- Remotely located machines may experience vandalism. Several parks mentioned attempted vandalism. In the majority of instances, the vandals did not disable or damage the machines.
- Installation requires coordination with maintenance staff. Maintenance staffs should be included early on in the planning process to ensure that the surrounding structures are built to specifications and support the new machines.

- Technology can be difficult for older generations to use.
- The automated screens may not withstand environmental conditions. Screens may fade from the sun, making them difficult for visitors to read.
- Lack of enforcement can lead to noncompliance and reduction in fees collected.
- Installation costs can be high when needing to add power and/or a phone line.

2.7 Significance of the Automated Revenue Collection System

It is relatively easy to utilise ICT to sustain and improve current organisational constructs and approaches, making useful but incremental progress. Automated systems can save both money and time. Automating operations can be surprisingly easy and can reap major benefits. Primary benefits are cost reduction, productivity, availability, reliability and performance. The greatest opportunity is to increase service to the end user while systematically reducing cost. Automation results in high productivity and increased performance; and can reduce operating costs (Cameron, 2016).

Research into the role of ICT within revenue administration has revealed positive effects on revenue collection. Gidisu (2012) provided evidence on this positive effect in Ghana due to the introduction of automation systems reducing the cost of tax administration and increasing the effectiveness of revenue collection. Njenga and Sevilla (2017) did a survey of effectiveness of automated revenue collection Systems in County Governments in Kenya. The research found that the automation of the

information system was instrumental in enhancing the proper management of revenue sources in the local authorities.

The main purpose of an automated system is to help speed up the process. Tasks that are time-consuming or inconvenient are often incorporated into systems. Automated systems can handle a wide range of tasks that would be difficult for a human to do (Allan, 2008). Sohne (2009) highlighted that for the government to match in performance with the growth and expectation of its constituents, it must dramatically increase its fiscal depth. Automated system has been proven to be capable of introducing massive efficiency to business processes that can result in increased revenue.

Automated system allows timely access to information that would take too much time and effort from the unreliable hard copy record. Implementing an automated revenue system aims at bringing more accuracy and consistency to successfully achieve revenue targets. Automation is the best option for eliminating all the leakages in the revenue collection and management process (Ayegba, 2013).

Automated systems have been proven to be capable of introducing massive efficiencies to business processes that can result in increased revenue. Applying technological solutions towards the strategic goals for government will be a key step towards transforming government into an entity that can keep abreast of the needs, requirements and expectations of today's modern world. To date, the use of ICT is prominent in business and revenue settings. Notably, revenue authorities around the world are using electronic revenue administration systems to interact clients in revenue

collection, administration and compliance settings. Technology has influenced the way we work, play, and interact with others. Governments worldwide have invested heavily in electronic systems for the past two decades. These range from registration services (birth, car, company) to licence or document applications, tax and social welfare services. As already noted, when looking at progress to date, it is not surprising to find that the aspect of e-government which tends to be most developed and most widely used is electronic revenue system (Makokha and Namusonge, 2017).

Gideon and Alouis (2013) wrote that an efficient national revenue collection system is the hub of every public administration system and the cornerstone of sound fiscal management. It enables governments to finance budget deficits from domestic sources, thus dissuading recourse to offshore financing. Basing their study on public revenue collection in Zimbabwe, the two argued that there is need to review the structural and operational frameworks governing the national revenue authority, tighten treasury control over all national revenue sources, strengthen legislative oversight and the public audit functions, plug loose areas in income tax frameworks as well as instituting transparency in national revenue remittance processes. One of their recommendations included the introduction of an electronic system which the national revenue collector, the Zimbabwe Revenue Authority (Zimra) introduced in 2015. Kenya Revenue Authority is one such organisation that relies heavily on electronic systems strategy in order to deliver on its core responsibility of collecting revenue on behalf of the Government of Kenya.

An automated system is cost effective. Purchasing of automation tools can be costly in the short term but they save money in the long term. They can do more than the

human can in a given space of time. Implementation of automated systems may eliminate the diversion of generated revenue by the staff members into their own pockets. The application of the computerised revenue system could also reduce travelling and related costs to MET Head office to submit monthly reports. Computerised systems can also reduce calculation errors.

2.8 Challenges in the implementation of Automated Revenue Collection System in the ENP

In spite the successful implementation of the automated revenue system in the ENP, a number of challenges are being encountered in the automation process:

2.8.1 Resource Constraints

There is a significant challenge in adequately planning and financing the use of ICT in development programs. With cyclical donor funding and pressure to minimise administrative and management costs, it is often difficult for the Ministry to properly plan and resource financial and human investments in ICT as a core capacity for development programs. Resource limitations have made MET dependent on its partners for implementing the automation program; i.e. MCA, PASS, NAMPARKS, GIZ. Various requirements were identified that will ensure the sustainable success of this system. The Ministry found it difficult to acquire, maintain and service the computer logistics and to provide constant power in the park on time. It was for this reason that Galton gate was not connected to the national electricity grid as its power source was a diesel generator which is unreliable and often faulty, resulting in frequent power outages and disruption to the park entry and payment system. Later the solar

powered system was installed at this gate that provided a reliable and sustainable power supply.

Kruger (2010) indicated that during the implementation funded by the Millennium Challenge Account (MCA) a limited amount of funding was made available for the implantation and installation of the Wireless Data network. Subsequently the design of this network excluded redundancy and to control costs, 2 ‘weak’ links was implemented. The result of this is that Galton, Namutoni and Von Lindequist gates have extremely slow response times and are slowing down the entry, exit and payment processes to a point where the systems is almost unusable. The software was later changed to speed up the processing of permits and payments at the effected points.

2.8.2 Resistance at individual and institutional levels

It is incredibly difficult to conceive of new ways of working with organisational constructs that are fundamentally different from the status quo and require a shift in terms of strategy, competence, skills, and organisational structure. The progress has been hampered by unavailability of skilled personnel to operate the system and the reluctance to change posed the foremost challenge that constrained the automation implementation. Whilst the computer skills of the users of the system were limited, a number of them showed no interest to learn and change to the new skills. When attempting to change a business culture, managers frequently must deal with employee resistance. Most employees are comfortable with the way they operate and do not want change (Kaplan and Orlikowski, 2013).

The management must continually reinforce the new behaviours and seek to keep employees from reverting to the old ways of doing business for example accountability (Spencer & Casey, 2014).

The other potential problem with implementing organisational change is the training requirements that come with it. The management needs to develop a plan that acts as a guide to the new change, process and procedures they intend to put in place to implement the change. Organisational change requires a comprehensive plan (Simonson & Schlosser, 2015). Most organisations make the mistake of implementing change without seeing it all the way through. The management requires developing a step-by-step plan for the organisational change and then enforcing it. Simonson & Schlosser (2015) noted that when you want to change the behaviour of an entire company, you have to invest in considerable amounts of training for everyone. This can be expensive and can significantly reduce productivity.

2.9 Theoretical Literature Review

It is appropriate to lay out the theoretical underpinnings of this study. This is henceforth undertaken in the sections hereunder.

2.9.1 Change Management Theory (CMT)

The study was guided by change management theory which was founded by Lewins. The theory states that the approach to transitioning individuals, teams, and organisations uses methods which are intended to re-direct the use of resources, business processes, budget allocations, or other modes of operation that significantly reshape a company or organisation (Kogila,2016).

Today change is constant and organisational leaders who anticipate change and react rapidly and responsibly are successful. However, the organisational leaders who anticipate and invent the future are even more successful because those who initiate change are the leaders in their industry (Hussain, *et.al, 2016*).

Hussain, *et.al,* (2016) stated that other organisations are followers that adapt to change; still others are the organisations that do not survive. There are many models that can be used for successful organisational change. Winners respond to the pace and complexity of change they adapt, learn and act quickly. Losers try to control and master change in the environment. It is important for organisational leaders to identify and use a model for transformation that will help their organisations survive the dynamics in the external environment.

In the change management process, the critical aspect is the organisation's ability to win the buy-in of their organisation's employees on the change. Effectively managing organisational change involve a four-step process which include recognising the changes in the broader business environment, developing the necessary adjustments for their company's needs, training their employees on the appropriate changes and winning the support of the employees with the persuasiveness of the appropriate adjustments (Hussain, *et.al, 2016*).

As a visible track on transformation projects, Organisational Change Management aligns groups' expectations, communicates, integrates teams and manages people training. It makes use of performance metrics, such as financial results, operational efficiency, leadership commitment, communication effectiveness, and the perceived

need for change to design appropriate strategies, in order to avoid change failures or resolve troubled change projects (Beerel, 2009).

The theory relates to this study because ENP wishes to change how it collects its revenue. It is the change that is needed to get an automated system which has the capability to handle data so that it can do major financial computation. The Ministry will be guided by the principles of change management theory in adapting an automated system that is capable of handling financial data to be used in forecasting and planning for revenue to be collected in the Ministry.

2.9.2 System Theory

The study adopted the system theory proposed by Ludwig (2010) and furthered by Ashby (2013). The theory stated that real systems are open to, and interact with their environments, and they can acquire qualitatively new properties through emergence, resulting in continual evolution.

Systems theory is the trans-disciplinary study of the abstract organisation of phenomena, independent of their substance, type or spatial or temporal scale existence. It investigates both the principles common to all complex entities and the models which can be used to describe them. Rather than reducing an entity the properties of its parts or elements. Systems theory focuses on the arrangement of and relations between the parts which connect them into a whole. Systems analysis developed independently of systems theory, applies systems principles to aid a decision maker with problems or identifying, reconstruction, optimizing and controlling a system

while taking into account multiple objectives, constraints and resources. It aims to specify possible courses of action, together with their risks, costs and benefits (Nanyumba, 2010).

Systems theory provides that organisations such as governments are like other open systems which of necessity engage in various modes of exchange with the environment. Systems theory emphasises the considerations of the relationships between organisations and its environment as well as what goes on within organisations. The systems theory is mainly concerned with the problems of relationships of structures and the constant attributes of objects (Gabrielsson, 2017)

In relation to revenue collection through automated systems, the system theory is applicable in understanding the segmentation of revenue sources in the automated revenue collection systems. An automated system uses principles that aid in revenue collection.

2.9.3 Technology Acceptance Model (TAM)

According to Atambo and Maisiba (2016) during their study on Effects of Electronic Tax System on the Revenue Collection Efficiency of Kenya Revenue Authority, stated that TAM theorizes that an individual's intention towards using a system is jointly determined by perceived usefulness, the user's subjective probability that using a specific application system will increase his or her job performance and perceived ease of use (PEOU), the degree to which the user expects the target system to be free of effort. The effects of external variables (e.g., system design characteristics) on

behavioural intention are mediated by these beliefs. According the PEOU also has a direct effect on PU. In predicting usage; TAM models might be useful within and across organisations for evaluating applications or technologies, or to make comparisons between user groups or applications. However, TAM has limitations in being applied beyond the work place because its fundamental constructs do not fully reflect the variety of user task environment and constraints. They further indicated that TAM is a useful model but has to be integrated into a broader one which would include variables related to both human and social factors.

This research utilised the Technology Acceptance Model (TAM) for revenue collection system since it is an information systems theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it.

2.10 Empirical Literature Review

This section presents various studies on effectiveness of automated revenue collection system reviewed by this study.

Otieno *et al.* (2013) study found that there is a relationship between Information Systems (IS) and both efficiency and effectiveness in revenue collection, there is a strong positive relationship between Internal Control Systems and revenue collection. However, resistance to change by the staff was derailing the full implementation of IS. The study is useful to the present study for full implementation of automation and more specifically in revenue collection.

Mtasiwa (2013) did a research on factors causing inefficiency in tax revenue in Tanzania. The study found that Tanzania Revenue Authority is facing revenue collection challenges due to tax evasion and misuse of tax exemption extended to business traders by tax officials. Tax officials also faced challenges in administrating tax laws. Mtasiwa (2013) concluded that staff competences affect revenue collection in Tanzania. Low competent staff are not familiar with the existing tax legislation. This leads to low collection of revenue.

A study by Ndunda *et al.* (2015) revealed that revenue clerks and tax officials were corrupt and the staff lacked adequate training facilities and opportunities led to inexperienced employees in the County Government. The recommendations by the study were that county governments needed to increase competence of revenue clerks and other County officials and attract skilled and competitive employees for the purpose of increasing revenue collection performance.

Kayaga (2010) study showed that new technology alone is not sufficient if the government does not recognize the need for skilled tax officials. The scholar further avers that, effective tax administration requires qualified tax personnel with requisite skills to maintain these systems and operate them to their fullest potential. Ndunda *et al.* (2015) and Kayaga (2010) studies contributed to the current study for the sub-receivers of revenue to be well equipped with computer skills for the purpose of increasing revenue collection performance.

A study by Nyongesa (2014) revealed that the use of automation of revenue collection system widely increase the revenue collection. The study recommends that the County

Government of Mombasa needs to automate its revenue collection, through partnering with the regional banks whereby the tax payers will be given option of paying county fees through mobile money or branded credit cards via new revenue collection system. The study also recommends the development of revenue management capacity by training qualified personnel, established proper revenue management mechanisms), so as for the County to provide quality services to the people.

Ataro (2016) researched on factors affecting revenue collection efficiency in Kenyan Counties. The research was carried out in Trans-Nzoia County. The study found that motivation and training of staff enhance efficiency of revenue collection, employing strong audit systems and controls in managing revenue collected minimizes on loss of revenue collected.

2.11 Conceptual Framework

According to Adam and Kamuzora (2008) Theoretical/Conceptual framework is a model of how one theory makes logical sense of the relationship among the factors that have been identified as important to the problem.

There two types of variables in this conceptual model, the dependent variable and independent variables. The dependent variable of this study is the revenue collection which was measured by effectiveness. In the other side electronic revenue collection system in this study is an independent variable. To measure contribution of electronic revenue collection system to the revenue performance, the researcher measured the effectiveness of the system. The effectiveness of electronic revenue collection system

was measured using comparison between revenue collected before and after the implementation of the system.

The conceptual framework of the study is summarized in the figure below. It shows the relationship between independent variable and dependent variable. Furthermore it shows other factors, moderating variables that can play in and affect both independent and dependent variables in this study. The conceptual framework of this study showed how the independent variable, electronic revenue collection system, influence effectiveness, revenue collected and service delivery which are dependent variables. It is presumed that independent variable affects revenue collection in ENP.

Independent Variable	**Dependent Variables**
Automated Revenue Collection System	Effectiveness Revenue collected Service delivery

Figure 2.1

Automated revenue collection system is attributed to loss of revenue collected through manual system and enhances the operations in revenue collection.

2.12 Knowledge Gap

Although literature has been reviewed on automation of revenue collection showing how its various aspects assist in enhancing revenue performance, most of these studies are done in other countries whose strategic approach and financial footing is different from that of Namibia. Most of them focus on either publicly owned or privately owned institutions. None of them focused on how this is done in the Namibia government.

There is therefore a literature gap on the relationship between automation of revenue collection on organizational performance. This study therefore sought to fill this gap by focusing on the influence of automation of revenue collection system on revenue performance with reference to the Etosha National Park, Namibia.

2.13 Summary of Literature Review

An overview of the ENP was provided in this chapter. The previous and the current systems used in ENP were also discussed in this chapter. The study went through literature on revenue collection systems of different parks. Benefits of the system were identified. During the study, challenges on implementation of the system were established.

The study reviewed various literature on theories relate to automated systems and revenue collection. The reviewed theories were found useful to the present study. CMT indicates that there is a positive effect of the strategies adopted in raising revenues, such as the electronic system. The TAM shows that the adoption of modern systems in revenue collection, such as E-Systems, adequately improves the country's collection performance. This theory indicated that efficient administrative set ups, such as adoption of an effective and efficient e-system, highly boosts revenue collection performance.

The reviewed studies provided very useful information for the present study on electronic systems and revenue collection. The next Chapter looks at the Research Methods applied for this research.

CHAPTER 3

3. RESEARCH METHODS

3.1 Introduction

This chapter discusses the way in which the study was undertaken. It provides an explanation of the research design appropriate for the study and the methodology that was applied in carrying out the research study and justification for using a particular research design. This section looks at the methods used in this study. It also describes the characteristics of the population which was used in the study, a detailed description of sampling methods used, procedures, data collection instruments and the procedure of data collection and finally covers the appropriate data analysis methods.

The chapter outlines the methodology employed by the researcher for the study which included the administration of questionnaires to officials with specific duties in Etosha National Park. A Descriptive Research Design approach was used for this study. This kind of study enabled the researcher to provide answers to the questions of who, what, when, where, and how effective the automated revenue collection system has been in ENP. Quantitative and qualitative survey approaches were used where questionnaires and interviews were directed to MET staff members. The respondents for this study included accountants, revenue officers, cashiers and gate officers.

In undertaking this research, both primary and secondary data sources of information were used. With secondary data, information was extracted from textbooks, journals, magazines and other print media as well as the electronic media and the internet.

Primary data was collected by the use of a questionnaire with structured and unstructured questions and also by interviewing those who had adequate knowledge of the topic. This chapter further observed the research design, sampling techniques, data collection tools as well as the method of data analysis.

3.2 Research Design

Research design is a clear plan used by the researcher for taking action of collecting data, organising and analysing it with the objective of combining the relevance of the research (Simpson, 2015). The main aim of this research study was to examine the effectiveness of the automation system in revenue collection in the ENP.

Many entities in Namibia are not that familiar with electronic revenue collection systems and many transactions are done by traditional methods of payments. This does not mean that, there are no organisations and institutions using electronic systems for payments. It would be difficult to study all organisations within Namibia that are using computerised systems; hence a case study research design was appropriate for the study. The case study design allowed the researcher to deal with a particular individual organisation within the group and in conclusion not to generalise the findings (McQueen & Knussen 2013). This study used the Case Study Research Design that allowed the researcher to carry out an in-depth study of the problem under investigation.

Due to the use of the descriptive survey and case study, this study applied the mixed method approach. This allowed the researcher to use aspects of both quantitative and qualitative research designs. The quantitative research design enabled the researcher

to collect data using questionnaires and convert them into numerical form so that statistical analyses can be made and conclusions drawn. The qualitative research design enabled the researcher to gather data through interviews.

An extensive research of this nature would require an approach bearing in mind the population, hence a descriptive survey process of collecting data was used in testing the research questions concerning the status of the subject under study. For the purpose of the study, this approach was considered suitable as a method of producing information needed in drawing useful conclusions from the research study. Other tools such as interviews were also employed considering the subject under study.

3.3 Population

Population is the broader group of people to whom the researcher intends to generalize the results of your study (Korb, 2012). Although there were many stakeholders within the MET, for convenience purposes, only employees of different categories were involved in the study. The total population involved in this study included the permanent employees of the Directorate of Wildlife and National Parks (DWNP).

MET has a staff establishment of about 1400 employees of which 900 of the workforce is for the Directorate of Wildlife and National Parks and 500 employees are from other directorates. Three hundred (300) employees are responsible for park management of which eighty (80) are responsible for revenue management. For the purpose of this study 80 staff members that were responsible for revenue management were considered as the population of the study.

Main categories of the staff in this study were classified as managers, accountants, receiver of revenue and park wardens. The other key group involved in this study but not workers of ENP were the park visitors, who were the customers to ENP and regarded as crucial to the study.

3.4 Sample

According to Korb (2012), sample is the group of individuals who actually participate in the study. These are the individuals who the researcher end up interviewing in a qualitative study or who actually complete the researcher' survey in a quantitative study.

Random sampling was employed among revenue employees to select respondents for the study. This technique was used to ensure that all respondents were given the same opportunity of being selected. The goal of this method was applied to obtain a sample that represented the population. The sample size for the research was limited to ENP officials responsible for revenue. However, views and opinions from stakeholders were also considered to effectively contribute greatly in the research.

For the purpose of this study, a sample of 67 from the population was drawn. Since the researcher did not have access to the system, staff members with the information were contacted. The researcher used Slovin's formula to calculate the sample size from a population. It is impossible to survey every member of a population because of money or time. Slovin's formula was used because the behaviour of population is not known. Slovin's Formula calculates the number of samples required when the population is too large to directly sample every member (Stephanie, 2018).

$$n = \frac{N}{1+N(e^2)} = \frac{80}{1+80(0.05^2)}$$

$$= 67$$

Where, n= Sample Size

N= Total Population

e= Margin of error (5% or 0.05).

3.5 Research Instruments

The researcher used a Questionnaire and Interview Guide for gathering data. Primary data was obtained through self-administered questionnaires. DWNP staff members were contacted to give information by responding to the questionnaires that were distributed to them. For this study, a combination of quantitative and qualitative approach was used. The Interview was done through structured questions while questionnaire had both structured and non-structured questions.

3.6 Procedure

Data collection is very crucial and time involving activity. Authorisation to do the research in the Ministry of Environment and Tourism was first obtained from the Permanent Secretary. In this connection, due to the fact that the system is in ENP, the researcher travelled more than 400km to deliver questionnaires to the respondents and collected them. A method of hand delivery and collection on the same day was used.

The study used both primary and secondary data. Primary data are those which are collected afresh and for the first time, and thus happen to be original in character (Dhawan, 2010). Primary data was collected through questionnaires and conducting individual interviews. The researcher went to the ENP to conduct interviews with sampled respondents.

The questionnaires included structured and non-structured questions and were administered through the drop and pick method to all respondents. The personal interviews were a face to face interaction. This approach was firmly selected so that the researcher could interact on a personal level with all staff. The questionnaire was personally administered by the researcher and contained a series of questions which were related to the research work and directed to respondents with the aim of gaining first-hand information.

Managers were interviewed and questionnaires were sent to other staff members. Respondents were given reasonable time, sufficient enough to complete the questionnaire. The questionnaire consisted of both non-structured and structured questions. Thus, in some cases, respondents were to choose the option that best reflected their opinions. The respondents were afforded much flexibility and privacy in answering the questions without any undue influence. The questionnaire was in simple and unambiguous language and as such, did not pose any problems regarding interpretation.

Secondary data is that which has already been collected by someone else and which has already been passed through the statistical process (Dhawan, 2010). Secondary

data was obtained from the past records and reports of the manual system of the ENP and records of the tested system. Data was also collected from academic journals and papers that featured articles on the automation system on revenue collection and a number of research works that have been published in the electronic media on the subject.

3.7 Data Analysis

Qualitative data was analysed manually by summarising information in different themes, categorising and coding them. The narrative analysis technique was used to analyse complex textual descriptions of data that had been gathered from secondary sources and open-ended questions.

Quantitative data was descriptively analysed in graphs, bar and pie charts and percentages using Microsoft excel. Comparison of data before and after the testing of automation of the revenue collection system was done. Trend analysis was used to bring out the comparison between the period before and after the automation of revenue collection in the ENP.

3.8 Research Ethics

Ethics as noted by Minja (2009) is referred to, as norms governing human conduct which have a significant impact on human welfare. In this study, confidentiality was of concern as the information relevant to the study was of strategic importance to the ENP. In this regard, the names of the respondents were not disclosed. The researcher also focused on the aspects such as protection of the documents of the

Ministry. The researcher did not interfere with the working environment of the staff. Only the researcher had access to the data and the respondents answered questions willingly. The interview was purely for academic purposes and the information was treated with utmost confidentiality. The data is being kept in the researcher's locked safe at home and will be destroyed by burning after five years.

3.9 Chapter Summary

This chapter has presented the research methodology that was used to answer the research questions in order to achieve the research objectives. The chapter presented the population of the study, sampling techniques, research design, sample size, filed work procedures, data collection and data analysis procedures. These were done in line with the research objectives and the guiding research questions.

In conclusion, this chapter introduces chapter four which presents the actual research findings. It is in this chapter that each research question was discussed in detail in relation to the responses obtained from the respondents before inferences and conclusions are arrived at. In addition, the chapter begins by presenting an analysis of the response rates and the characteristics of the respondents in relation to the various aspects which the researcher feels added value to the study findings.

CHAPTER 4

4. RESULTS AND DISCUSSION

4.1 Introduction

This chapter outlines the analysis of data, its interpretation and presentation of findings based on the objectives of the study. The study sought to examine the effectiveness of the electronic automated revenue system in Etosha national park in the Ministry of Environment and Tourism in Namibia. It was guided by four objectives first to determine the effectiveness of the newly introduced automated revenue collection system in the ENP. Secondly, to examine challenges faced ENP during the implementation of automated revenue collection system. Thirdly, to assess whether the automated revenue system tested at ENP has improved revenue collection and reporting; and lastly to recommend to the Ministry whether automated revenue system can be adopted at all revenue offices in the Ministry of Environment and Tourism.

The chapter examines and analyses data collected on the sampled respondents in the analysis of the effectiveness of the automated revenue system in Etosha national park, Namibia. The study presents data on the effectiveness of an automated revenue collection system that was obtained in the analysis, using the methodology that was discussed in chapter three above. Both primary and secondary data were used during the study. Primary data was gathered through the interview guide and questionnaires and analysis was done through content analysis in order to establish the challenges faced by the revenue management in the park

at the implementation stage and to establish approaches adopted to alleviate these challenges. Revenue collected in Etosha National Park, before and after the implementation of the automated revenue collection system was used as secondary data. All data for last two years was available for ease of understanding.

The researcher drew conclusions and recommendations from these findings. Moreover, the findings of this study were the answers and views from respondents who were asked different questions by the researcher.

4.2 Entry and Revenue System in Etosha National Park

Before the introduction of automated systems of revenue collection, the Ministry of Environment and Tourism used a manual system of collection by using manual receipts and manual recording.

The study established that the activity to develop and put in place a modern and computerised integrated ENP Entry and Revenue System, was initiated and started already in early 2010 by the MET through its SPAN (Strengthening the Protected Area Network) Project. SPAN was a project of the Ministry of Environment and Tourism, funded by UNDP/GEF which was aimed at improving the effectiveness of the management of the nationally owned protected areas (PAs) in Namibia. The need to develop and put in place an automated and streamlined Park Entry and Park Fees Collection System was identified and was aimed at enabling the MET to fulfil its responsibility of effectively and efficiently managing the Parks and Park charges collected from the public and tour operators and to control access of employees, residents and their visitors to the Park. Due to a lack of funds and the

limited timeframe of the SPAN project, MET only managed to develop the desired system concept and not the actual design and development of a system that could be implemented.

It was learned through the study that the Millennium Challenge Account-Namibia (MCA-N) decided to support the final development and installation of the computerised access system. This was since it was deemed important for the successful implementation of the housing policy for the new staff villages and for the ENP management to have proper records of the movement of employees, residents and their visitors through the gates. The MCA-Namibia thus made provision on the Multi Year Financial Plan for a computerised system with automated scanners, which would scan the visitor's identity documents. The system comprises of four park entry systems, one at each of the four park entry gates and three pay points where revenue is collected. There are only three pay points as two gates share one pay point.

During the gathering of data, it was learnt that the information of the visitor is entered into the system on the arrival at the gate of the ENP. The permit is generated at the gate with a bar code within which the period of stay and the amount to be paid are built. The guest should then proceed to the pay point where the permit will be scanned to retrieve the client's information. The information should be verified and the payment processed. Thereafter the client will be issued with a receipt.

At the exit point, the permit should also be scanned to determine whether it was paid and if it is not expired. If expired, the client would be sent back to the pay

point to pay the dues or extend the permit. All the gates are linked to Okaukuejo, the main server. Therefore, the information can be retrieved at any gate in ENP and the permit can be traced at any pay point if lost.

When the power is down at one of the offices, information can be retrieved at any pay point in ENP or at the main server. If the power is down in the whole Etosha National Park, then the operation can be done manually because the system is still at the piloting stage and it operates in parallel, both manual and electronic system; and the capacity of power back up is small.

Each sub-receiver of revenue is allocated with a password for accessing the system. At handing and taking over, staff on duty should open the cash up and the staff who is taking over should verify the cash taken over. If there is a difference, it should be handled first, as per regulations, before finally handing over.

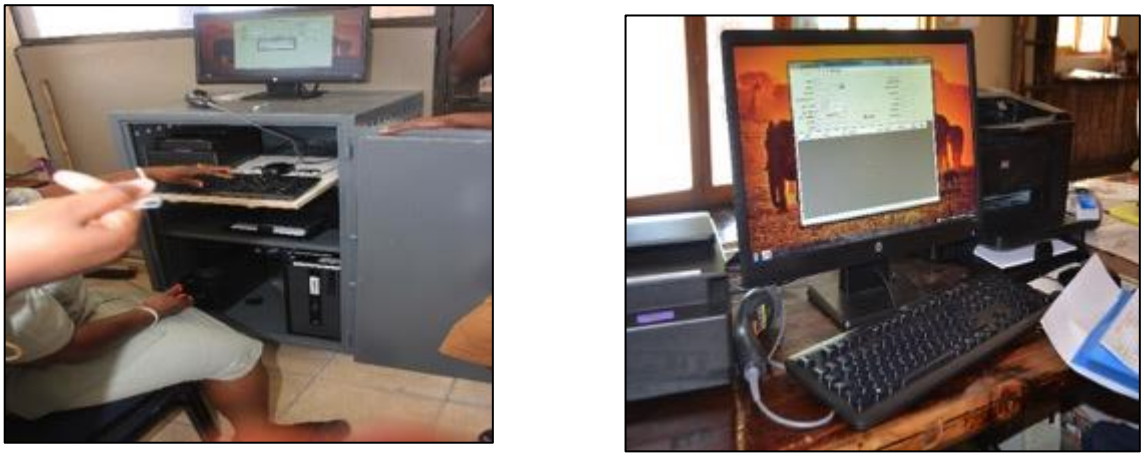

Figure 4.1: Park entry system (left) and pay point system (right)

Data is automatically transmitted between the park entry gates where park entry permits are issued and the pay points where park entry fees are paid via a network. The system also transmits the data to the regional server at the Park Headquarters

at Okaukuejo. Once the national server is set up in Windhoek, the information will be transmitted from the regional servers across the country to the national server in Windhoek.

Galton Gate was not connected to the national electricity grid and its power source was a diesel generator which was unreliable and often faulty, resulting in frequent power outages and disruption to the park entry and payment systems. Therefore, a solar-powered system was installed at the Galton Gate and it now provides a reliable and sustainable power supply.

Figure 4.2: Solar-powered system for Galton Gate

Discussions with clients who visited Etosha before and after the implementation of the automated system revealed some frustration on the old system from their point of view. They expressed their displeasure especially around the exit process when they have to return to the MET pay points if any outstanding amounts are payable. The clients articulated their appreciation on the implementation of the new system. They stated that the system did not eliminate standing in queues for a long time but it has improved on the correctness of the fees to be charged.

4.3 System Maintenance

System maintenance is critical to keeping systems running smoothly and preventing unplanned disruptions. Being an electronic system with multiple devices, the system requires routine maintenance to ensure its sustainability. A number of defects and technical issues were diagnosed on the system after installation. For this reason, a maintenance contract was entered into with the service provider. Since then, normal malfunctions have been avoided and the system has been operating without problems.

A complex system such as this will require various levels of maintenance to ensure its sustainability and daily operation of the system. The system should be entrenched, for it to form a critical part of effective revenue collection for MET as well as a critical management tool for the parks and other functions within MET. Funding will be needed to maintain the system and to train MET employees to take over the maintenance responsibility at a point in time.

4.4 Revenue Collection Performance before and after the automated system

The study assessed the performance of revenue collection before and after the introduction of the electronic system. The study sought to establish whether there was a significant change in the performance of revenue collection due to the introduction of the electronic system. The researcher went further and consulted financial reports to investigate the trend of actual revenue collected. This was in an effort to establish whether the dependent variable, the performance of revenue collection in ENP was affected by the electronic revenue collection system. The study analysed the

performance of revenue collection data for each financial year 2014/2015 and 2015/2016.

The information on revenue collected was extracted from the Ministerial Main Cash book. According to this Cash book, park entrance fees were collected from revenue collection points using manual systems. The protected area system was estimated to generate more millions of dollars from entry fees during the 2014/2015 financial year, but the accuracy of this estimation was hampered by the poor park entry system.

Table 4.1 Collected park entrance fees for ENP in two years 14/15 and 15/16

2014/2015

Office	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	Total
Namutoni	523 980	537 290	390 090	675 100	876 200	719 750	747 720	627 040	556 160	302 220	295 710	402 940	**6 654 200**
Okaukuejo	1 323 360	1 288 860	1 162 430	1 699 460	2 275 008	1 724 150	1 779 350	1 410 500	974 480	630 850	591 050	806 020	**15 665 518**
Otjovasandu	129 080	155 560	152 830	164 540	233 300	213 350	241 650	197 290	131 060	88 430	80 820	106 000	**1 893 910**
Total	**1 976 420**	**1 981 710**	**1 705 350**	**2 539 100**	**3 384 508**	**2 657 250**	**2 768 720**	**2 234 830**	**1 661 700**	**1 021 500**	**967 580**	**1 314 960**	**24 213 628**

2015/2016

Office	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	Total
Namutoni	532 550	583 010	465 820	784 070	943 750	738 530	892 860	777 960	562 360	382 300	376 730	530 180	**7 570 120**
Okaukuejo	1 201 420	1 253 690	1 027 220	1 693 370	2 037 180	1 678 620	1 719 720	1 366 710	917 720	727 160	737 140	1 165 390	**15 525 340**
Otjovasandu	182 870	226 720	183 070	307 300	438 840	316 470	37 830	271 380	1 329 190	113 090	124 610	148 370	**3 679 740**
Total	**1 916 840**	**2 063 420**	**1 676 110**	**2 784 740**	**3 419 770**	**2 733 620**	**2 650 410**	**2 416 050**	**2 809 270**	**1 222 550**	**1 238 480**	**1 843 940**	**26 775 200**

The table above shows that on average, the performance of revenue collection was higher in Financial Year 2014-2015 than in 2015-2016 Financial Years. From these results it was also determined that the performance of revenue collection increased by 9.56% in 2015/2016 Financial Year. The results above indicate that the automated

system considerably influenced the revenue collection performance in Etosha National Park between 2014/2015 and 2015/2016 financial years. However, in some months, the revenue source performed poorly after introduction of electronic system, a situation attributable to low return of guests who visited the park.

Otieno *et al.,* (2013) during their study, found that there exists a relationship between Information Systems (IS) and both efficiency and effectiveness in revenue collection. They also found that there is a strong positive relationship between Internal Control Systems and revenue collection. In agreement with the findings in the study by Otieno *et al.,* (2013) the present study established that electronic systems significantly improve the revenue collection performance.

4.5 Analysis of findings

4.5.1 Study Response Rate

Response rate involves the percentage of the response acquired from the field. The analysis shows the responses received from officials with the responsibility of revenue management in Etosha National Park within the Ministry of Environment and Tourism in Namibia. The study targeted a sample size of 67 respondents. A total number of 67 officials from ENP were selected for the study. The respondents were selected to provide reasons for their choice of answers and they were given a chance to elaborate their responses.

Questionnaires were distributed to the sample of 67 in order to achieve the intended study. In most cases, the researcher asked the respondents to complete the

questionnaire while getting some elaborations on the requirements of the questions when needed. 67 questionnaires were acceptably filled and returned which represents a 100% response rate which was brilliant for the study. This response rate was an excellent representative for analysing the study.

Among the respondents interviewed were two managers responsible for ENP, Accountants, Park Wardens and Sub-receivers of revenue responsible for collecting revenue. The researcher also interacted with some of the clients who willingly and positively responded to the questions posed to them. The information obtained from the interview was used to enrich the discussion. The findings show that the response rate was adequate and fair, it indicated that the findings of the study would be representative.

4.5.2. Demographic Characteristics of Respondents

The study pursued the background information of participants in respect of gender. Respondents' gender was considered important to discuss, unfortunately ENP was found not to be favourable to male as most of the workers are female. The total number of 67 staff was given questionnaires to fill. The demographic characteristics of the study sample is presented in the pie chart below.

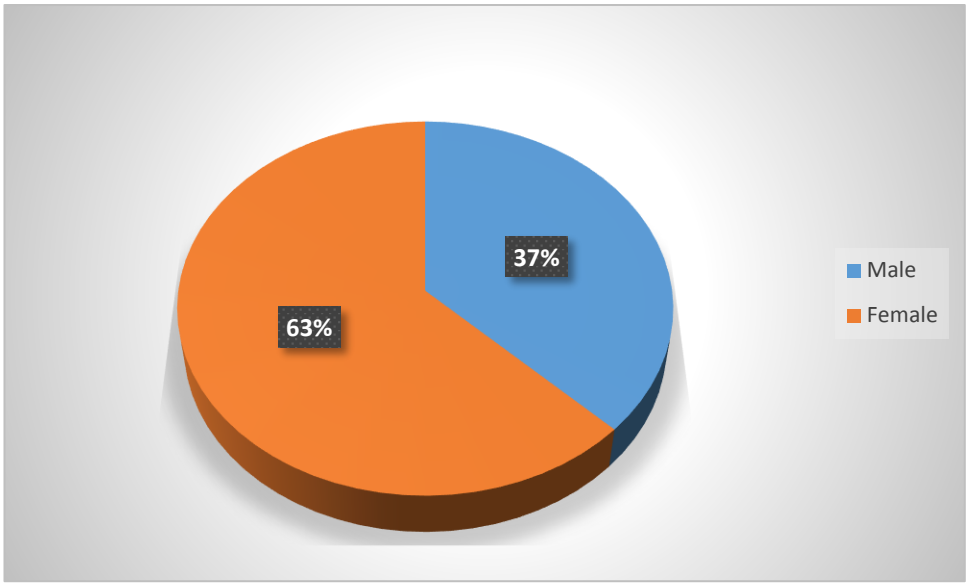

Figure 4.3 Genders of Respondents

Figure 4.3 shows that 63% of the officials sampled in ENP were females while 37% of them were males. This is an indication that representation of females is higher than that of the males. Even though the study could not achieve a 50/50 percent gender representation, the views of both genders were well represented in this study.

4.5.3 Working experience

The researcher found to be of important to discuss the experience of respondents in working as a sub-receiver of revenue in ENP as the more experience is assumed to have more knowledge of an organisation hence provision of realistic information. The research pursued to establish the information on the respondents employed in the study with regards to the time they have been working for revenue collection in ENP. The investigation process started with managers in charge with revenue management and the supervisors who are directly involved in revenue activities on a daily basis.

The study revealed that the interviewees worked for revenue collection between 2 and more than 10 years. It indicated that the majority has worked for more than 5 years

and was in a position to offer reliable information needed by the researcher. This clearly demonstrated that they were in appropriate position to give accurate information about the revenue processes in the park. The chart below presents the findings in percentage.

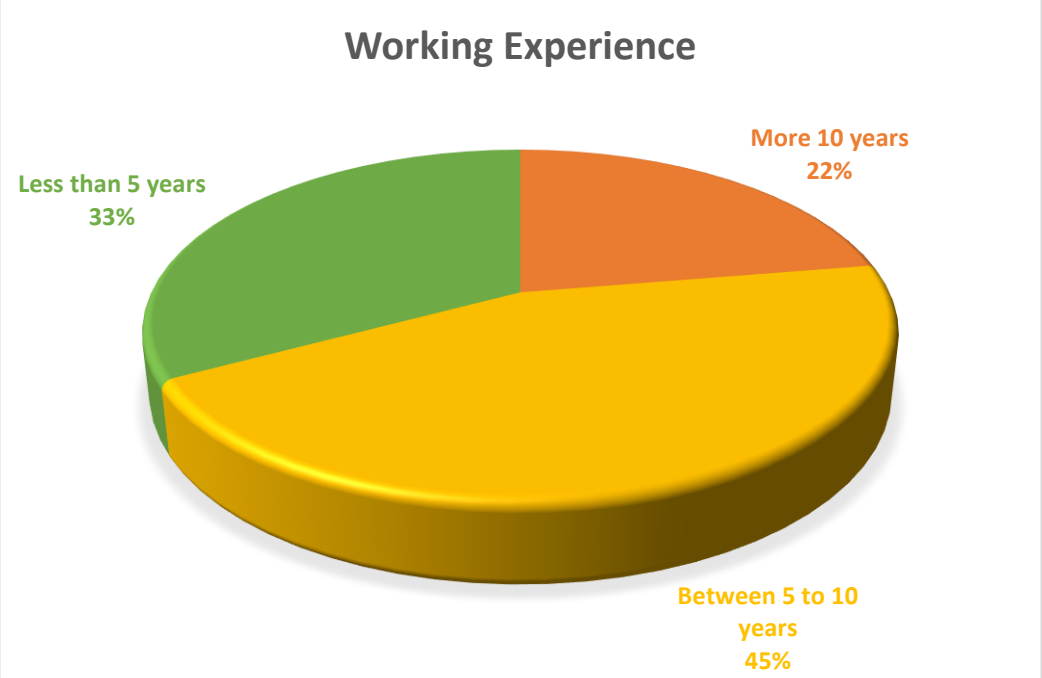

Figure 4.4 Working experience

Table above indicates the number of years the respondents have worked for revenue management in ENP. Responses showed that 45% of the respondents worked as sub-receivers of revenue between 5 and 10 years, 33% worked for less than 5 years while 22% worked for more than 10years. It has been observed that almost half of the population tested have worked with the revenue management for more than 5 years. This data shows majority of the respondents have gained experience in collecting the government revenues and have ability to compare the past and present systems and hence shows appropriateness to answer survey questions. This did not only show the capability they have to improve revenue collection through the skills and experience that they have but it also improves the reliability of the data collected from them.

4.5.4 Introduction of Automation System

The respondents were asked whether they were in agreement and happy with the introduction of computerised system for revenue collection. The table below displays the results on respondents' views on the introduction of automation system.

Response	**Frequency**	**Percentage %**
Yes	67	100
No	0	0
Total	**67**	**100**

Table 4.2: Introduction of Automation System

The table 4.5.2.3 indicated the responses on the question whether staff members were in agreement with introduction of automation system, whereby all respondents have indicated that they agreed with the introduction. They stated that collecting the revenue through the electronic system is far better than the manual system. It is evident from the table above that all respondents were happy and agreed with the introduction of computerised systems.

4.5.5 Significant improvement with the automation system in the future

The participants were tested on their expectation of the introduced system. All respondents representing 100% have indicated that they were expecting significant improvement in ENP operations with the introduction of the automated system. They further indicated that technology is good at grinding down problems and performing repetitive tasks without getting bored. They believe that automation can effectively remove the need for paper storage.

Response	Frequency	Percentage %
Yes	67	100
No	0	0
Total	**67**	**100**

Table 4.3: Significant improvement with the automation system in the future

4.5.6 Respondents' Trust of the Introduction of Automated System

The participants were tested on their trust of the introduced system. Their responses are presented on the table below.

Response	Frequency	Percentage %
Yes	66	99
No	1	1
Total	**67**	**100**

Table 4.4: Respondents' Trust of the Introduction of Automated System

Analysis from the question above displays that 99% of the respondents responsible for revenue collection believed that introduction of automated system has improved revenue collection in ENP, with only 1% of respondents pointed out that no improvement in revenue collection was brought by the introduced system. The respondents agreed that computerised system on revenue collection efficiency increase revenue collection which in turn increase operational performance. The performance. The majority agreed with this statement citing that revenue collection has been enhanced by having this system in place. This implies that the revenue automated system is effective and has improved revenue collection.

4.5.7 Satisfaction level of the system

The satisfaction level of automated system was measured by whether the users are satisfied or unsatisfied with the system. The satisfaction level was ranked by the option chosen and reasons given by the respondents. The findings are presented in table below.

Response	**Frequency**	**Percentage %**
Satisfied	63	94
Unsatisfied	4	6
Total	**67**	**100**

Table 4.5: Satisfaction level of the system

The table above displays responses on whether officials were satisfied with performance of the automated system in revenue collection in Etosha National Park. 94% of respondents demonstrated that they were satisfied with its performance whilst 6% which represents few respondents, indicated that they were disappointed by the system and were not satisfied with its performance. Unsatisfied respondents indicated that they feel uncomfortable using the electronic system as compared to the old manual system. They related to the computer illiteracy as the biggest challenge.

The majority of the respondents strongly agreed that the system is efficient in terms of helping them save time and that the new system served them better than the old system. In general interviewee indicated that the automated system is efficient and more preferable than other system used before. This was done in comparison to the older system. They confirmed that automated system significantly reduced the amount of

time staff attending to the client. The observation shows that few respondents are not predominantly satisfied with the performance of the introduced system.

The researcher with the interaction to some of the clients, they have indicated that they are completely satisfied with the system and they have commented by introducing the system.

4.5.8 Benefits of Automated Revenue System

The pie chart below presents the responses provided by staffs in ENP as to which gain is the government likely to benefit from automated system usage in revenue collection.

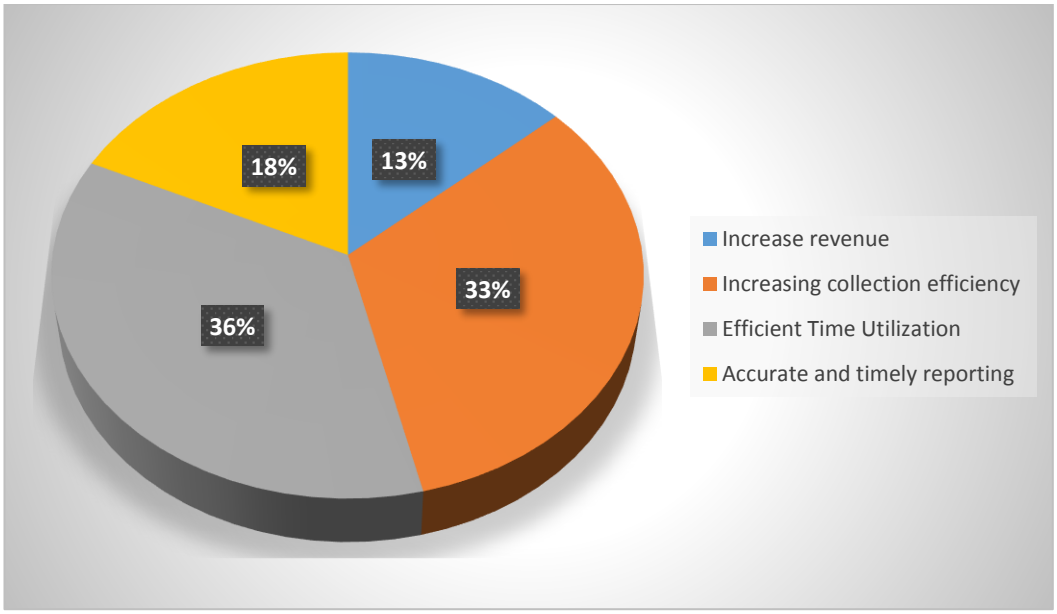

Figure 4.5 Benefits of Automated Revenue System

The chart above indicated that 36% of respondents stated that the government would benefit from efficient time utilisation. 32% were of the view that it would contribute to increase collection efficiency. 18% show that the government would benefit from accurate and timely reporting while 14% demonstrate that the state would benefit from

increase revenue. With this observation, it can be concluded that automation has led to increase in collection efficiency.

4.5.9 Key objectives of automation system which have been realised

It can be established from the observation below that improved revenue collection processes are the key objective of the automation system. According to the findings tabled above, the respondents agreed that automation of revenue collection system improved revenue collection processes as represented by 48%. Additionally, other respondents indicated that the key objective of the automated system is that the process of revenue collection is tightly controlled to avoid fraud, evasion and under-collection as shown by score of30%. Further, 22% of the respondents said that improved revenue receipts for government is the key objective of the automated system.

Response	**Frequency**	**Percentage %**
Improved revenue collection processes	32	48%
Improved revenue receipts for government	15	22%
The process of revenue collection is tightly controlled to avoid fraud, evasion and under-collection	20	30%
Total	**67**	**100**

Table 4.6: Key objectives of automation system which have been realized

4.5.10 Extent to what automated system influences revenue collection in the Ministry

The respondents were asked to indicate the extent to which they thought an automation of revenue collection processes influence performance in your office.

Objectives of Automation System	Frequency	
Very great extent	16	24%
Great extent	35	52%
Moderate extent	16	24%
Little extent	0	0%
Total	**67**	**100**

Table 4.7: Extent automated system influences revenue collection in the Ministry

The table above displays the views expressed by the respondents as to which extent they thought the system could influenced the revenue collection in the Ministry of Environment and Tourism. According to the findings, 52% of respondents revealed that the system has influenced revenue collection to the great extent with 24% each stated that the system has influenced revenue collection to very great extent and moderate extent. There was no response for little extent.

It is observed that more than half of respondents were of the opinion that the system has influenced revenue collection to the great extent. They have indicated that the newly introduced system has facilitated an increase in revenues. From these findings it can be deduced that automation of revenue collection processes influence performance in the Ministry to a great extent.

4.5.11 Challenges experienced with the automated revenue system

The study highlighted that they are various challenges that are faced in the revenue collection efforts by ENP in MET. Respondents pointed out that the system has

numerous malfunctions such as duplication of permit numbers. The impact of bad weather on the network and the power outage causes inconvenience on the performance of the system including off line and running slow. The capacity of UPS batteries is small that they do not last longer and the backup power is poor.

Staff members with the supervisory functions are able to see sub-receivers' passwords. Therefore, there should be internal control system to enable proper functioning and ensures quality performance in ENP. Weaker internal control gives dishonest official a loophole to manipulate various functions for their personal benefits. High revenue collection therefore depends on the effective control system and vice versa Customers' details are also not reflecting on the receipts and cancellation of permits, when needed, cannot be done on the system.

Respondents have also indicated that while the system is bringing the improvement, it is impacted by lack of computer skills by some of the receivers of revenue.

4.5.12 Differences brought by introduction of the automation system

Respondents were asked to indicate the difference the introduction of the automated system has brought to ENP. Satisfied respondents indicated that at exit point if the permit has expired the system revealed that and the gate won't open for the client to exit. Therefore, the client would be required to go back to the pay point and pay the dues. They further indicated that the system is fast and save time; and the gate statistics of the clients who entered the park can be accurately retrieved.

The system has eliminated long queues and no complaints from customers anymore because they are even correctly charged. It has introduced an efficient way of confirming the nationality of a person at the point of entry. Scanning of the documents helps to identify quests' nationality, unlike with the manual system whereby clients would tell the staff wrong nationality for low charges. Permits are issued electronic and can be traced if lost. The system has minimised unauthorized entries to the park. Gate statistics and revenue reports can be generated by the system and be available any time.

The reports are sent to Head Quarter on time. Nationalities of the clients can be determined by scanning the documents and charge them accordingly. It can easily detect fraud and prevent over or under charges. It made it easier for them to do reconciliation on the permits issued and money collected.

The implemented system is very easy to use and no excessive delays at the entry points at the parks. This is an indication that the introduction automation of system has brought major differences in revenue collection, efficiency and effectiveness in service delivery in Etosha National Park.

4.5.13: Future improvements to be implemented with regards to automated system operations

A high number of respondents indicated that a lot should done while at piloting level. The system should keep a trial of all transactions for audit purposes. A network system should be improved and back-up power should be in place. It should allow the supervisor to have effective control over the daily transactions processed by the users. System should be built with a proper sequence of permits issued to allow reconciliation

of the daily totals and individual transactions. Provision for modifying the information in the permits should be provided.

The users indicated that the system should be programmed in such way that duplication of permit ID can be prevented. More options for tracing the clients should be integrated because currently there is only one option which is searching by vehicle registration number and if wrongly captured, one would not able to retrieve the clients' information.

Passwords should be set in a way that it cannot be visible to the next person. Users should be provided with computer literate training for effective and efficient use of the system. Routine maintenance should be done on the machines. UPS batteries with big capacity for supporting the system when the power is off. The respondents suggested that the training time for the system be increased to help them fully understand and adopt the system.

4.6 Impact and transformational change of the automated park entry and revenue collection system

Pay point personnel are no longer processing payments manually and most importantly, the lengthy process of daily cash ups and financial reconciliations are no longer done manually, as these reports are now generated by a click of a button.

Park entry permits are not issued manually anymore, but electronically. Meaning, the park visitor's identity document (ID and Passport) is scanned and the scanner transmits the information to the computer, where a park permit is generated, all electronically. The efficiency to process a permit has improved from about five minutes to one minute

depending on the number of visitors in the vehicle. Park Wardens and Accountants have no longer to spend lengthy hours in the office pairing the Park Entry Statistics with the payment, as well as visitor's info for their monthly reports, because such reports are part of the new database and can be generated by a click of a button.

The system had sealed some loopholes in terms of employees not handling money physically. The risk of miscalculations and lost documentation is greatly minimised and since all information is captured in the computerised database, the audit process is much easier, information is clear and it is easy to detect mismatches. The system is operated with specific access codes for each staff and if a mismatch is detected, the auditor can trace who the processor was. The audit has become much faster and more effective.

4.7 Challenges on automation implementation

A number of constraints were reported to be limiting and hindering the implementation automated system in Etosha National Park. The study established that the main challenges faced were interruption and inadequate knowledge in staff without computer skills or with no proper/refresher training. The most frequent reported cause for interruption was poor network connectivity and ineffective computers that either freeze or hang-up in that order. This had serious implications for their operations.

The study recognised further that the Ministry was not in a good financial status to cater for the entire project cost, hence relying to donor and sponsors. It was also noted that maintenance has been limited due to inadequate technical personnel and funds for hardware maintenance as well as consumables. However, it was noted that there are

service level agreements in place for maintenance of all core equipment. The respondents also added that the implementation was also hindered by remoteness of the area and therefore internet connectivity was a challenge.

During the interview some respondents revealed that shifting from manual to automated system brought new challenges in terms of skills. It took a long time to change their mentality and adoption to modern technology. This was related to computer skills as some staff are computer illiterate.

4.8 Benefits of Automation

Automating computer operations can be surprisingly easy and can reap major benefits, given the right tools. The primary benefits of operations automation cited most often were cost reduction**,** productivity**,** reliability**,** and performance.

Below are some of the other benefits that were pointed out by the officials:

- Improve the safety and security of employees collecting fees by decreasing the amount of cash held at cash offices
- The system helped reducing paper work
- Improve visitor convenience
- Reports in the system could be accessed at any time
- Improvement in revenues
- It gives revenue managers and users a clear vision of the relevant data to bring more accuracy and consistency with rate strategies to successfully achieve revenue targets

- Manual receipting always leaves room for errors and omissions which sometimes can cause loss of cash collected or miscalculation of balances
- Time saved from long queues gives resident's time to continue with their other business engagements thereby enabling a higher economic growth

Apart from being an efficient, fast and effective collection method, the automated revenue collection system provides various other benefits and the user experiences much more efficient and secure revenue management system where more is collected and accounted for at less costs.

4.9 Discussion of findings

4.9.1 Implementation of the automated system to enhance effectiveness and efficiency

The study revealed that, that the Etosha National Park has introduced the use of a modern and computerised revenue collection system. The results from the study show that the ENP adopted the use of a computerised revenue collection system in the year 2014. The study revealed further that the need to develop and put in place an automated park fees collection system was aimed at enabling the park to fulfil its responsibility of effectively and efficiently managing the collection of park charges from the public and tourists visiting the park. Due to lack of funds, MET was assisted by MCA in finalising the development and installation of the system.

This was evidenced from 100% of the respondents who were in support of the adoption of the automated system and nobody disagreed. Additionally, the majority of the respondents agreed that introducing an automated system made their work easier. In the same regard, it was revealed that the system was introduced in order to minimise human error and improve service delivery. The findings agree with Russell (2010), who suggested that improving tax compliance needs to have long-term reform efforts, that starts with the strengthening of the organisation as well as management of the revenue agency, implementing robust collection systems notwithstanding building capacity in core tax administration functions (registration, filing and payment enforcement, debt collection, audit, taxpayer services, and processing of appeals).

Gordon (2010) argues that the technology issue for tax authorities is regarded to be different to that of their taxpayers. There indeed appears to be a general acceptance that technology is likely to play a very essential role in revenue management and as such most authorities have invested heavily in the recruitment for or developing their computer audit capabilities. Gordon (2010) further argues that information technology, which encompasses computerised systems, is likely to increase tax processes substantially, with savings in time as well as money, while at the same time affording customers a better service. On the other hand, the human element is also affected by technological changes in different ways, given that it makes jobs more important for some, while at the same time posing a threat to others. Also, the findings show that one of the reasons for not satisfying is that some users are not conversant with the system.

4.9.2 The Impact of automated systems on revenue collection

The study revealed that, the majority of the respondents agreed, that using the system reduces the application and payment process which saves on man-hours. It also reveals that, unlike the manual system, using a computerised system reduces the receipting process in the ENP. It can therefore be concluded that most respondents accepted that the introduced system in ENP was the best electronic collection system.

The findings agree with Owino (2017), who stated that the use of an electronic revenue collection system resulted in a significant improvement in the revenue collection time. Revenue mobilisation is one of the key factors for economic development of nations and links into the national agenda on social wellbeing, poverty reduction and economic development of countries and their citizens. The Ministry of Environment and Tourism is a mandatory element in attracting tourists to the country and the procedures to this mandate significantly influence the role of the tourism industry in contributing to the national economy through revenue collection from tourism activities.

Computerised processes improve efficiency and improve revenue management. According to Sani (2009), automation systems help to improve revenue collection. This is because they are based on the electronic payment system through applications such as toll revenue collection, automatic fare collection, bus revenue system and parking system. Additionally, by automating revenue collection, service providers are in a better audit trail since all transactions captured can be detailed by time, whom and where. This prevents revenue loss through abuses as all moves are recorded electronically. Automation also provides huge transactions that need to be handled efficiently. According to him, automating revenue collection is key especially within

the revenue collection agencies, which therefore requires fast and efficient output, as there will always be a trade-off between control and operational needs.

According to the study results, the implementation of the automated revenue collection/management system resulted in improved efficiency. Since the objective of an automated revenue collection system was to enhance revenue collection, the expectation was that revenue collection would significantly increase after the implementation. However, this was not the case in all months of collection. The drop in park fees collected in some months could therefore be attributed to challenges of new system implementation, initial familiarisation issues with the staff and clients, resistance from some employees among others.

The findings revealed that the system which was used could not auto calculate the amount to be paid by the clients. Further the study revealed that manual collection receipts lead to low revenue. Nevertheless, the overall revenue management in the ENP has improved in terms of collection, effectiveness and reporting.

4.9.3 Challenges

The study established that lack of resources was a major challenge as the Ministry was not in a good financial standing to finance the entire project costs. This challenge was mitigated through use of already existing infrastructure and resources with the assistance from projects and donors.

Implementation of the integrated revenue collection system was hindered by remoteness of some areas making it hard for internet connectivity. The national server has not yet been installed due to the lack of an internet connection between the MET

Headquarters in Windhoek and the park entry and revenue collection system server at Okaukuejo. This is due to the change of internet network service providers at the Ministry Headquarter. The MET has applied for a virtual private network (VPN) internet line between Etosha and MET Headquarters to enable the transmission of data from Etosha to Windhoek. It was expected that this connection would be finalised during the first quarter of 2016. When this system entrenched, it will form a critical part of effective revenue collection for MET as well as a critical management tool for the parks and other functions within MET.

Another challenge raised by the study was staff capacity to handle the new electronic revenue collection system. It was established that the majority of the staff transitioned from the old system and therefore the adoption of new technology was a challenge. However, the study established that users were trained and equipped with user skills. A training need has been identified with respect to the park staff at the gates and pay points, as well as for supervisors, although they do not operate the system on a daily basis, for them to understand how the system works and to be able to assist one another or new staff members. This finding is in line with another one by Nzepa (2011) who identified that lack of adequate capacity to implement ICT related systems is a major challenge to their success.

Leakages that occurred because of untimely collection, corruption and under collection can be reduced by streamlining and automating the revenue collection process. With a modern system of revenue collection, government can more effectively manage existing revenue streams as well as mobilising additional revenue by increasing

collection efficiency as well as by expanding its revenue base (Fjeldstad and Heggstad, 2012).

4.10 Summary of the findings

The Ministry of Environment and Tourism initiated the implementation of the automated revenue collection system in 2010. The study examined the electronic revenue collection system to find if the system brought any difference in organisation performance. The aim of the study was to assess the effectiveness of the system and present solutions that could serve as best practice guidelines in the rolling out of the system to other regional offices within the Ministry.

Sixty seven (67) questionnaires were distributed to respondents of which all were completed and returned. The number of questionnaires returned represents 100% which is excellent to analyse the findings. Most of the respondents' years of service was between 5 to 10 years and hence were familiar with most of the operations of revenue collection and agreed with the implementation of the system.

The population interviewed shows that the new automated system was accepted by ENP officials and they recommended the system for its robustness, ease of learning, friendliness, effectiveness, ability to make work easier and facilitating an increase in revenues. Respondents commended the introduction of automation system in revenue collection and indicated that pre-automation system usage era was ill managed resulting in inefficiency and slow procedural efforts in revenue collection.

The study established that automation of the revenue collection system enhanced the efficiency of the process to a great extent. A large number of the respondents were of the view that an increase in revenue at all revenue points in the Etosha National Park was realised out of the adoption of the automated revenue collection systems.

According to the results, there has been some improvement in revenue management in terms of effectiveness and efficiency; and reporting has improved in terms of appropriateness, time and accuracy. The study revealed that there is less close supervision of revenue collectors by the supervisors due to the automation. This means that there is no challenge in accountability of the revenue which has been collected and the study revealed that there are no leakages within the automated revenue collection system.

From the responses, it is evident that the implementation was not a smooth ride and faced a number of challenges. The initial challenge being financial requirements to set up a sound infrastructure to manage effectively the flow of data from all points to a centralised location. Challenges that were identified to influence implementation of integrated revenue collection systems included resources, staff capacity and remoteness among others.

The study established that the Ministry was not in a good financial standing to finance the entire project costs. This challenge was lessened through the use of already existing infrastructure and resources with assistance from projects. Another challenge to implementation of the automated revenue collection system was remoteness of area, making it hard for internet connectivity.

Further, the study identified that the staff lacked the adequate capacity to handle the new revenue collection system. However, this challenge could be corrected through training. It is obvious that new ways of doing things, such as change in technology, needs new strategies for dealing with them. It is important therefore to provide on the job training to revenue collectors in order to update their knowledge on effective modern ways of collecting revenue. The strong capacity building amongst staff should be enhanced to eradicate the problem of limited capacity.

The findings from the study imply that there is efficiency in service delivery in ENP in respect of revenue collection as evidenced by the respondents who agreed to the statement that there is improvement in revenue collection with the implementation of the automated system. The study recognised that the system was developed in such a way that it can be further developed into a full system that can be used by all revenue collection offices in all parks and other offices where permits are issued and revenue is collected.

Data analysis obtained from the research indicated that most of the automation system objectives have been realized. The research findings showed that computerised revenue collection system used in ENP is effective; however there is a need for improvement in revenue collection system so that ENP can meet all the targeted objectives.

4.11 Chapter Summary

This chapter dealt with the presentation and analysis of the research findings. In this chapter the researcher provided the findings with respect to the information given out by the respondents on the effectiveness of revenue collection system in ENP. It is clear

with the findings that moving from manual revenue collection to the automated system has brought about a reduction of corruption and fraud in revenue collection; and efficiency has been enhanced.

The study identified that, to collect revenue using an automated collection system was more effective than the manual system. It closed the loopholes of diverting funds collected into the collectors' own pockets. The findings show that most of the respondents applaud the introduced system and preferred collecting revenue using the electronic system. Although this system has its drawbacks, its benefits outweigh the drawbacks; it therefore needs to be improved for better results in the future.

CHAPTER 5

5. CONCLUSIONS AND RECOMMEDATIONS

5.1 Introduction

This chapter presents the conclusions and recommendations from the findings. The chapter starts with the conclusion section followed by summarising the findings and thereafter the chapter included the recommendations. Conclusions and recommendations were made from the analysis and data collected. The responses were based on the objectives of the study, which the researcher pursued to determine the effectiveness of an automated revenue collection system in the Etosha National Park and the challenges faced during the implementation of the system.

5.2 Conclusions

The findings show that the automated system is effective and efficient and has improved revenue collection to a great extent. It is expected that the system will be very effective when fully deployed as it will reduce cash lockup associated with the paper system and the trend towards control of revenue shows significant improvements. The efficiency of the system was in that initial costs are high but when fully implemented it would be very efficient as revenue collection would be improved. In general, findings show that the system is efficient and more preferable than other traditional systems used before.

It was established that before the introduction of automated systems of revenue collection, the Ministry used a manual system of collection by using manual receipts

and manual recording. With this system problems such as fraud, underpayment and other revenue leakages were noticed. Leakages that occurred because of theft, fraud and under-collection were reduced with the streamlining and automation of the revenue collection process. The study observed that with a modern system of revenue collection, the national government could more effectively manage existing revenue streams as well as mobilising additional revenue by increasing collection efficiency as well as by expanding its revenue base.

The study concluded that the Ministry of Environment and Tourism has introduced an effective automated revenue collection system in Etosha National Park. The study further concluded that the majority of the respondents' years of service was between five to 10 years and hence were familiar with most of the operations at the revenue offices in the ENP and the different kinds of revenue collected. The whole population interviewed expressed that the new automated system was accepted by the officials. The system was also commended by some of the clients who interacted with the researcher.

The study concluded that the implementation of the automated revenue collection system in the ENP, has led to enhanced revenue collection. Following the study findings, the study concluded that the MET with the assistance of the projects, a computerised revenue collection and management system has been implemented successfully, in order to improve collection and management of revenue. Although, revenue collection dropped in some months of implementation, the drop was attributable to implementation challenges of resource availability (financial, ICT resources and human resources) as well as resistance to change during the transition

period. The study established that the ENP has the potential to collect more revenue if it fully utilises the computerised systems in place. It was concluded that there has been improvement in revenue management as reporting had improved in terms of timeliness and accuracy.

Comparing to the manual system, it was determined that the electronic system is good and convenient by far. It reduced the queues, workload and cumbersome application and payment processes of the permits. The electronic system also reduced corruption loopholes. The study indicated that revenue collection was affected upwards and the ENP staff are comfortable using electronic processes than the manual one. Respondents stated that the system had sealed some loopholes in terms of park employees not handling money physically. Also, the study concluded that indeed the electronic system has helped in efficient time utilisation.

The study further revealed that the revenue collection performance in ENP improved considerably after the introduction of the new system of revenue collection. The adoption of this system has improved revenue management in the ENP compared to the manual system. The study concluded that adopting the automated system, has positively influenced the revenue collection performance at the four gates in the Etosha National Park. It was established that the period after adoption the non-manual system affected the revenue collection performance in the ENP in a positive way. The study concluded that the period before adopting automated revenue collection system, influenced the revenue collection performance in the ENP negatively, decreasing the revenue collection performance either by defrauding or undercharging the clients which in return affected the revenue of the whole government.

It is concluded that the benefits gained from a computerised revenue administrative system is that it yields benefits of efficiency and transparency over the paper-based systems. The system should not merely be designed to limit corruption, even though a carefully designed intervention will have the benefit of constraining corruption, it has improved efficiency and increased revenue. Additionally, the improvements in technology will enhance revenue management in future. This research demonstrated the clear fiscal benefits from the introduction of the automated revenue system within the Ministry of Environment and Tourism, in the ENP.

5.3 Recommendations

There is a growing need to have a system rolled out to all parks and other offices that are issuing permits and collecting revenue in the Ministry. To that effect the system can be strengthened further through the following interventions:

The study strongly recommends the rolling out of the automated system and its adoption at all revenue offices in the Ministry of Environment and Tourism. The Ministry of Environment and Tourism should ensure that there are necessary resources and infrastructure before the rolling out of an automation system. It should develop a program for the systematic roll-out of a computerised system to all national parks that are collecting entrance fees. Funding will have to be sourced to roll out the system to all the parks and offices where permits are issued and where revenue is collected for such permits. Manual collection receipts should be discouraged. Supervision by revenue collectors should be done on a daily basis to ensure that the revenue collected on that day is submitted and banked and spot checks should be increased.

The study established that computer skills influence performance in the revenue offices. As a result, this study recommends that the Ministry should invest heavily in information technology for the staff to be well equipped with computer skills. This would help in attaining maximum possible benefits of the electronic revenue collection process. Training for the officials should be conducted before the roll out of the system. Training should be provided to build awareness of benefits and employee confidence in using new systems. The Ministry should employ competent staff in some of the key revenue offices such as Okaukuejo and Namutoni. The Ministry should also ensure that all employees who will be working with the system are technological understanding and have computer skills. This will reduce training time, and further reduce support costs. Training for park officials should be conducted before the roll out of such system.

The study further recommends that budgetary provision should be made for necessary resources for supporting and maintaining the systems i.e. equip gate staff with computer skills, adequate staffing, information technology (IT) infrastructure and modern telecommunication infrastructure for transmitting data between servers and entrance gates; and readily accessible IT expertise to guarantee minimum downtime. There should be back-up power at all gates and pay points to ensure the sustainable success of the system. Internet connectivity should also be ensured for smooth flow of work all time.

Government employees have been rotating within ministries through promotion and transfers. Therefore, the study recommend that the system should be introduced in all

ministries for all employees to be equipped and be able to adapt quickly when transferred to other ministries. This will reduce the time and money spent in training the rotated staff about the system. Therefore, further study should be conducted in order to identify specific needs for each ministry. A similar study should be done on other ministries since their operations may be different from that of the Ministry of Environment and Tourism based on their geographical positioning.

The study recommends that the Ministry should be more committed to the implementation to ensure adequate resource allocation. It also recommends that the Ministry should ensure that it builds on its staff capacity through establishment of ICT professional curriculum.

The researcher recommended that it is high time for the Ministry to put lots of effort in the adoption of an automated revenue collection system as the findings show it has improved efficiency and increased revenue. Full deployment of the system to all parks and revenue collection points in the Ministry at large will enhance the organisation to reap the fruit of this technology.

5.4 Areas for Further Study

During the study it was very difficult to obtain some study data due to reluctance of some respondents, who felt that they were busy on duty and were not able to explain some technical terms in details. The study also faced the challenge of limited time for data collection and other processes. The study therefore recommends that another

study should be conducted on the same variables by an authorised researcher within the Ministry with the staff assigned to assist in collecting data and analysis. This will help to avoid the limitations of inaccurate and incorrect information. The study was further constrained by limited financial means. To overcome this, the study recommends that the study to be undertaken should be fully sponsored to avoid limitation of financial resources.

Following this study, another study should be done to investigate the factors influencing the automation of other activities that form part of the large responsibility of parks within the Ministry. A similar study should also be done on other ministries since their operations may be different from that of Ministry of Environment and Tourism based on their geographical positioning. The study recommends further that in depth study should be conducted to establish the influence on implementation of automated revenue collection system on various revenue streams in other ministries to benchmark and to check whether the results can be replicated.

5.5 Summary of the Study

The purpose of study was to analyse the effectiveness of the automated revenue collection system in the Ministry of Environment and Tourism conducted in ENP. The study findings established that there was an increase in the revenue collected after the automation to the ENP revenue system. In view of revenue collected, the high revenue was collected in the period after the automation to revenue system. This indicated that, due to revenue systems automation service delivery has improved.

The results suggested that the relationship between automation and effectiveness of revenue collection system was positive, implying that with automation of revenue collection, the effectiveness of its collection increased.

Finally, a large number of the respondents were of the view that ENP has improved revenue collection for MET. In general, findings show that the system is efficient and more preferable than other traditional systems used before

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APPENDIX 1

RESEARCH QUESTIONNAIRE

A. Demographic Information

1. Gender: Male ( ) Female ( )

2. How long have you been working with revenue collection?

_____

B. Automation System Introduction

1. Do you agree with the introduction of Automation System?

Yes	
No	

2. Do you expect significant improvement with the automation system in the future?

Yes	
No	

3. Do you believe that the introduction of automated system has improved revenue collection?

Yes	
No	

4. Are you satisfied with performance of the automated system in revenue collection?

Yes	
No	

Elaborate

_____

_____

_____

_____

5. Which gain is the Ministry likely to benefit from automated revenue system?

Increase revenue	
Increasing collection efficiency	
Efficient Time Utilization	
Accurate and timely reporting	

6. Which of the following do you think are the key objectives of automation system which have been realized?

Objectives of Automation System	**Frequency**
Improved revenue collection processes	
Improved revenue receipts for government	
The process of revenue collection is tightly controlled to avoid fraud, evasion and under-collection	

7. In your own opinion, to what extent automated system influences revenue collection in the Ministry?

Very great extent

Great extent

Moderate extent

Little extent

8. What challenges have you experienced with the automated revenue system?

_____

_____

_____

_____

9. What differences has the introduction of the automation system brought?

_____

_____

_____

_____

10. Which area do you anticipate future improvements to be implemented with regards to the automated system operations?

_____

_____

_____

_____

APPENDIX 2

MET Permission to conduct academic research in ENP

AIS NRM + DSS

RECEIVED 08 MAR 2017

P. O Box 4699
Windhoek
Namibia
28 February 2017

Permanent Secretary
Ministry of Environment of Tourism
Private Bag 13306
Windhoek
Namibia

Dear Dr. Lindeque

Permission to Conduct Academic Research in Etosha National Park

I am Inamuvulwa Tukaleni Emvula, a Master in Business Administration - Finance student at the University of Namibia through Namibia Business School (NBS). The research I wish to conduct for my study involves "An Analysis of the Effectiveness of the Automated Revenue System in Etosha National Park". This project will be conducted under the supervision of Dr. Eric Makura of Women's University in Africa, Zimbabwe.

I am hereby seeking your consent to conduct a research in Etosha National Park by viewing the revenue system and interview ministerial staff in Etosha National Park as well as other parks and other offices in the Ministry. This request is purely for academic purposes and please be assured that the information collected will be dealt with the utmost confidentiality.

Attached, please find the copy of the approval letter which I received from NBS, University of Namibia.

Thank you for your favourable consideration.

Yours sincerely,

.....
Tukaleni Emvula
NBS Student (201211276)

Approved / ~~Not Approved~~

PP .....
Dr. Malan Lindeque
Permanent Secretary
Ministry of Environment and Tourism

Ministry of Environment & Tourism
03- 2017
Office of the Executive Director
REPUBLIC OF NAMIBIA

APPENDIX 3

NBS Permission to carry out research

NAMIBIA BUSINESS SCHOOL
UNIVERSITY OF NAMIBIA

26 October 2016

TO WHOM IT MAY CONCERN

Ms Inamuvulwa T Emvula of Student Number: 201211276 is registered for a Master in Business Administration – Finance at the University of Namibia through the Namibia Business School.

This letter serves to inform you that her research proposal was reviewed and successfully met the University of Namibia requirements.

The student has been granted permission to carry out postgraduate studies research. The University of Namibia has approved the research to be carried out by the student for purposes of fulfilling the requirements of the degree being pursued.

If you have any queries please do not hesitate to contact the Business School at the University of Namibia.

Thank you so much in advance and many regards.

Yours sincerely

NAMIBIA BUSINESS SCHOOL NBS 26 -10- 2016 UNIVERSITY OF NAMIBIA Inspiring Minds & Shaping the Future

Albert Isaacs, PhD
Associate Dean
Namibia Business School
University of Namibia
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Email: albert.isaacs@nbs.edu.na

APPENDIX 4

Language & Copy-editing Certificate

The Rev. Dr. Greenfield Mwakipesile
mwakipg@outlook.com

CONTACT

PO Box 40529,
Ausspannplatz,
Windhoek,
Namibia

LANGUAGE & COPY-EDITING CERTIFICATE

2nd June 2018

RE: LANGUAGE, COPYEDITING AND PROOFREADING OF INAMUVULWA TUKALENI EMVULA's THESIS FOR THE MASTER OF BUSINESS ADMINISTRATION DEGREE OF THE NAMIBIA BUSINESS SCHOOL OF THE UNIVERSITY OF NAMIBIA

This certificate serves to confirm that I copyedited and proofread **INAMUVULWA TUKALENI EMVULA's** Thesis for the **MASTER OF BUSINESS ADMINISTRATION DEGREE** entitled: **AN ANALYSIS OF THE EFFECTIVENESS OF THE AUTOMATED REVENUE SYSTEM IN ETOSHA NATIONAL PARK NAMIBIA**

I declare that I professionally copyedited and proofread the thesis and removed mistakes and errors in spelling, grammar, and punctuation. In some cases, I improved sentence construction without changing the content provided by the student. I also removed some typographical errors from the thesis and formatted the thesis so that it complies with the University of Namibia's guidelines.

I am a trained language and copy editor and have edited many Postgraduate Diploma, Masters' Thesis, Dissertations and Doctoral Dissertations for students studying with universities in Namibia, Zimbabwe, Swaziland, South Africa and abroad. I have also copy-edited company documents for companies in the region and abroad.

Please feel free to contact me should the need arise.

Yours Sincerely,

The Rev. Dr. Greenfield Mwakipesile