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Impact of higher electricity tariffs on the profitability of electricity supply and distribution companies in Namibia

By

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Declaration

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Wilhelm Shihepo April 12, 2022

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Dedication

This dissertation is dedicated to:

My late father, Petrus Hatutale Shihepo, and my late mother, Wilka Liitauleni Shali.

Their unwavering support, love and encouragement enabled me to grow as a youth and adult. As my first teachers, they developed and contributed to my early childhood learning. They provided me with positive parenting that improved and shaped my life. Moreover, they had a significant influence on my confidence as a family member.

Thank you, my parents. It has been my wish to graduate with a Master's degree and I did that in your honour, my dear, departed parents.

Abbreviations

CENORED- Central Northern Regional Electricity Distributor

ECB – Electricity Control Board

ERB – Energy Regulation Board of Zambia

ESKOM – South Africa Electricity Public Utility

EWURA – Energy and Water Utilities Regulatory Authority of Tanzania

NAMPOWER – Namibia Power Corporation (PTY) LTD

NORED – Northern Namibia's Regional Electricity Distributor

OPE – Oshakati Premier Electric

PV - Photovoltaic

SADC – Southern Africa Development Community

TOU – Time-of-use

ZESCO – Zambia Electricity Supply Corporation

ZPC – Zimbabwe Power Corporation

ABSTRACT

This paper presents the effect of increased electricity tariffs on the profitability of electricity supply and distribution companies in Namibia. The Namibian electricity tariffs regarding time-of-use, setting and pricing have been compared with others countries, regionally, continentally and internationally. The time-of-use methodology and concepts benefit the consumers in terms of low tariffs at off-peak times, and discourage high consumption at peak time. This study investigated the way in which high electricity tariffs impacted the profitability of electricity utilities in Namibia. It analysed and interpreted questionnaires administered to thirteen employees of the three electricity supply and distribution companies in Namibia. The results show that the high electricity tariffs had negative effects on the companies' profitability in the electricity supply and distribution sector in Namibia. The results, furthermore, reveal that the electricity supply and distribution companies in Namibia passed the increases on to their customers. Moreover, the study concludes that there were factors that contributed to the high electricity tariffs, such as political factors, sources of energy, the poor management of utilities and a shortage of resources. There was no relationship between the electricity tariffs and profitability and equity ratios.

Keywords:

Electricity, utilities, tariffs, profitability, supply, distribution.

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Chapter 1 : CONTEXTUALISATION OF THE RESEARCH

1.1 Introduction and background

Namibia's electricity supply dates back to 1964 when the South West Africa Water and Electricity Corporation was formed. The South West Africa Water and Electricity Corporation became Namibia Power Corporation (NAMPOWER) thirty-two years later, as a state-owned company, to generate and supply bulks of electricity. NAMPOWER generates, distributes and supplies electricity throughout Namibia. It trades power through the Southern Africa Power Pool (SAPP) (NAMPOWER, 2019). Namibia is currently unable to generate enough power for local consumption; hence, it depends on its neighboring countries for additional electricity through imports (Kalomo, 2015). During the 2018 - 2019 financial year, the country imported 37.1% of its electricity from ESKOM, 20.6% from the Southern Africa Power Pool (SAPP), 7.3 % from ZESCO and 6.3% from ZPC (NAMPOWER, 2019). NAMPOWER supplies the bulk of its electricity to regional electricity distributors, local authorities, mines, farms and others throughout Namibia.

The Electricity Control Board's annual report for 2020 indicates that Namibia imported 36% of its electricity from Eskom, 8% from IPPs and a combined 36% was imported from other regional markets, while 22% was generated by NAMPOWER (ECB, 2020a). Figure 1.1 below shows the percentages imported by NAMPOWER in the 2018 - 2019 financial year.

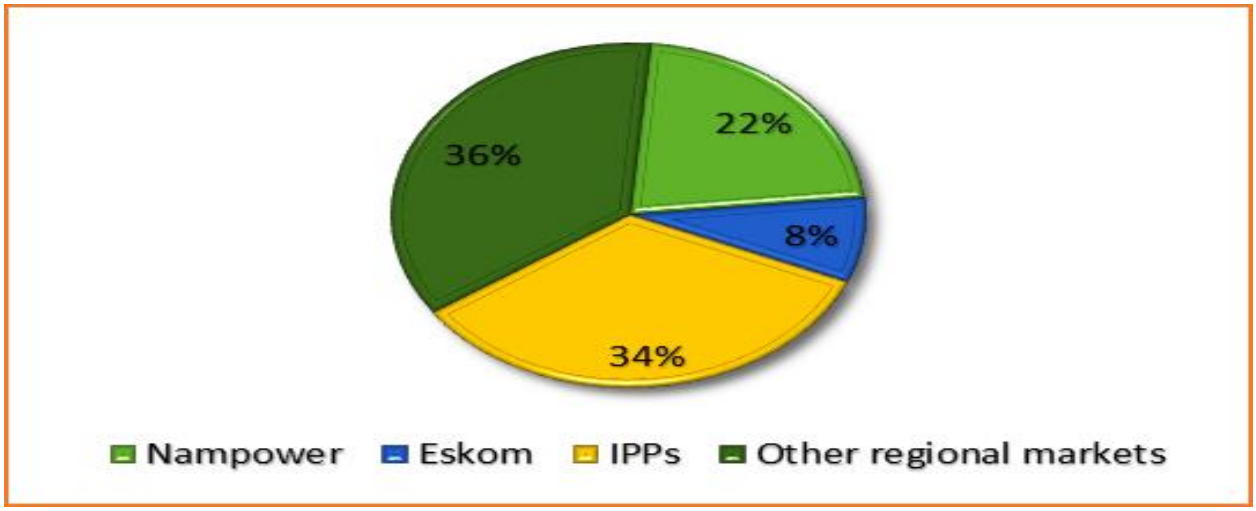


Figure 1.1: Sources of electricity in Namibia (ECB, 2020)

The electricity supply in Namibia is regulated and controlled by Electricity Control Boards, whose main objective is to approve electricity tariffs that are cost-reflective, economical, competitive and efficient (ECB, 2019b). Namibia is one of thirty-three African countries that have established electricity regulators to regulate tariffs and ensure that rules and mechanisms are in place to supervise and approve cost-reflective tariffs for industry (Associates, 2019). The electricity tariffs should reflect affordability, transparency and cost-reflectivity. Cost-reflectivity is realized when the tariffs recover all the allowed costs through generation, distribution and electricity supply. NAMPOWER, as a licensee, applies for tariff adjustments each financial year before the first of July from the Electricity Control Board of Namibia by applying the Operating and Reporting Manuals tariffs methodology. The Electricity Control Board reviews the NAMPOWER tariff application annually and grants or rejects the tariff increases. The control board also does further analysis of tariff application to ensure the justification of proposed increases. The review process considers various factors, such as the current economic status, pandemic outbreak of COVID-19 and climate change-related issues, such as drought, as well as other factors.

According to the Namibia Electricity Control Board (ECB), the electricity tariffs are cost-reflective, enabling the utilities to cover business expenses and honour financial obligations (ECB, 2019a). The supply cost is high, and most cannot afford cost-reflective tariffs (Blimpo & Cosgrove-Davies, 2019). The regulators in other countries, such as the National Energy Regulator of South Africa (NERSA) and the Uganda Electricity Authority, approve their tariffs on the same principles. They all conduct stakeholders' consultations for input before final approval decisions regarding tariffs are made.

Similarly, the Zambia energy regulator, the Energy Regulation Board of Zambia, employs the revenue requirement methodology to determine their electricity tariffs (Zambia, 2019). The Zambia electricity utility applies for tariff increases by applying the completed revenue requirement and other supporting documents. ZESCO reviews and verifies all related information before approving or rejecting the application (Zambia, 2019). EWURA of Tanzania performs both economic and technical regulations to protect the interests of stakeholders in the electricity industry, and achieve the objectives of approving cost-reflective and affordable tariffs. Besides the cost-reflective tariffs, the EWURA tariffs

regulatory process aims to promote economic efficiency and ensure electricity security (Tanzania, 2019). The Lesotho electricity and water regulator (LEWA) reviews tariff applications and other relevant information and comments, as well as inputs regarding stakeholders' increases, before final approval or disapproval (Lesotho, 2019).

Furthermore, the Eswatini Energy Regulatory Authority (ESERA) considers key objectives when approving the increment of tariffs. These are affordability, transparency, stability, nondiscriminatory measures, cost-reflectivity, shareholders and other stakeholders' expectations, low-cost implementation, efficient use and social support (Eswatini, 2019). On the other hand, the regulators' effectiveness was challenged by a weak government ministry, non-cooperation among the parties and political interference (Kelly, Geyer, & Practice, 2018). The impact of the factors behind the high electricity tariff increases on the customers' business profitability are unknown; hence, there is a need to research the effects of higher electricity tariffs on the profitablity of Namibian supply and distribution companies.

South Africa has shown that high electricity tariffs reduced production and affected the automotive industry negatively (Hoops, 2010). Additionally, it increased production costs, subsequently causing an increase in the output product and, thus, impacted economic activity negatively. Most of the profit-making companies in Namibia rely on electricity to run their operations. Besides the cost-related implications, the high electricity tariffs in developing countries are caused by various factors, such as the lack of utilizing renewable resources and investments, as well as the ageing of electricity infrastructures (Anyaka, Edokobi, & Engineering, 2014).

The study on the impact of electricity prices on various economic sectors, previous tariff determinations and utility investment noted some significant drivers of electricity pricing (Deloitte, 2012). The study identified some options to mitigate the effect of rising electricity prices, such as substituting electricity with alternative energy sources and improving energy efficiency gains and pricing power, as well as the price elasticity of demand. The question remains which options are the best and who should bear the total electricity supply cost if the preferred option remains. It can be asked whether the onus should be on the taxpayer or the electricity consumers.

Similarly, (Deloitte, 2012) indicates that rising electricity tariffs can affect business profitability directly, especially where electricity makes up a significant portion of a business's total costs. (Moseki, 2019) conducted a study in the Rustenburg municipal area to determine the impact of high electricity tariffs on the industry, and concluded that high tariffs impacted business operations negatively. However, questions regarding the need for annual electricity tariffs increases remain.

Because of the increased import tariffs, due to the current contractual obligation between NAMPOWER and its power suppliers, generation from its neighboring countries have increased by an average of 10% over the last five years (NAMPOWER, 2018). These trends may continue for an unforeseeable period, and their effect on company profitability is unknown at this stage. This area needs to be researched and revealed to all stakeholders.

Over the last ten years, the electricity tariffs in Namibia have increased significantly, as illustrated in Figure 1.2 below.

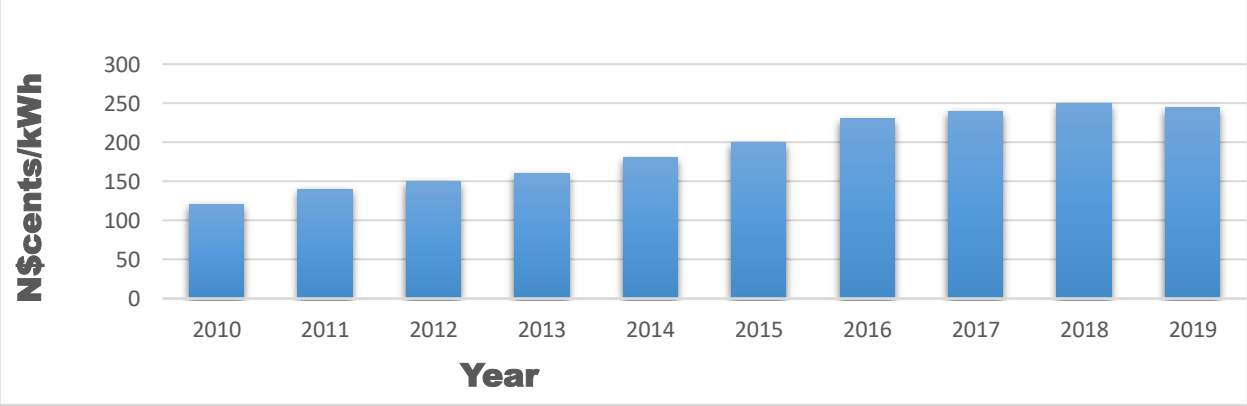


Figure 1.2 : Average NAMPOWER Tariffs increases (ECB, 2020)

NAMPOWER will continue importing electricity from outside the country due to the decline of locally generated power (Namibian, 2021). As the neighbouring countries increase their electricity tariffs, they pass these on to Namibia as a customer, which leads to increases in electricity tariffs in the country. A study conducted in Finland on load models for electricity distribution price regulation concludes that regulators need to study and understand the load models for their customers to enforce the law on tariff increases and capping (Mutanen, Lummi, & Järventausta, 2019).

1.2 Research problem

The electricity tariffs in Namibia have increased significantly over the last four years (NAMPOWER, 2018). These trends may continue for the next four years, which may harm the larger business operations. Deloitte's report on the influence of electricity tariff increases in the different sectors (Deloitte, 2012) shows that electricity tariffs have resulted in declines in the output of electricity-intensive companies. Those companies with low reliance on electricity are also affected negatively by rising electricity tariffs (Deloitte, 2012), as it leads to further slimming of their profit. Other researchers, such as (Anyaka et al., 2014), indicate that the inability to utilize natural resources in order to generate power, the lack of electrical maintenance, incompetence of executives and a shortage of inventory, as well as negligence of important corporate issues, are the main contributing factors to high electricity tariffs.

NAMPOWER provided reasons for this increase. These vary from the depreciation of the Namibia dollar against the U.S. dollar, low local generation, increases of operational expenditure and inadequate government subsidizing. NAMPOWER buys electricity from the South African Electricity Public Utility (ESKOM), Zambia Electricity Supply Corporation (ZESCO) and Zimbabwe Power Corporation (ZPC), as well as from the local Independent Power Producers (IPP) (NAMPOWER, 2019), which it, subsequently, distributes and supplies to its customers.

Additionally, the lack of reliable methods for determining the actual cost of supply and the cross-subsidies between consumer categories (Ramballee, 2010) can lead to unaffordable tariffs. In Namibia, electricity tariffs increase more than the annual inflation, and this burden is pushed to the consumer by the distributors (Andersson, 2006). The increases are not justifiable and do not make economic sense.

Accordingly, (Goliger & McMillan, 2018) advise companies to invest in their own power generation, taking advantage of available renewable energy sources of electricity, to improve the energy-related impact on their businesses. These developments can benefit the industry by reducing electricity bills when changing consumption patterns and by generating electricity. On the other hand, there is a suggested response to the influence of high electricity costs on business (Goliger & McMillan, 2018), which includes:

- Closing the whole or part of the business;
- Moving to a rural area or region with cheaper electricity;
- Investing in the consumption of electricity generation;
- Doing nothing to the high rocketing of electricity tariffs, and moving on as usual;
- Passing it on to the customers or users.

Electricity tariffs may impact a company's performance because it increases production costs and reduces profit. Companies may lose their customer base as they change their geographical area due to high electricity tariffs. They also lose revenue as a result of shutting down parts of their business operations. Additionally, they may invest in electricity generation and forfeit other essential capital projects, which may affect them in the future. Despite these negative consequences, companies, on the other hand, may not experience any impact on performance as they pass the increases on to their customers, resulting in high electricity prices. Alternatively, accepting the situation and moving on with business, despite the high electricity tariffs will hurt the electricity industry.

Despite the many attempts to address companies' concerns regarding electricity tariffs, many other concerns still remain unknown at this stage. Firstly, there is no proper documentation or evidence regarding the factors that influence Namibia's electricity tariffs (Kapika & Eberhard, 2010). Another critical issue yet to be documented is the way in which electricity tariffs have impacted firms' performance (Kapika & Eberhard, 2010). This makes the debate on the effects of electricity tariffs on companies' performance inconclusive; hence, the need for this study to determine the effect of high electricity tariffs on the operations of supply and distribution companies in Namibia.

1.3 Research aim and objectives

The main aim and objective of this research were to determine the impact of higher electricity tariffs on the profitability of electricity supply and distribution companies.

The following were the secondary objectives of the research study:

- To ascertain the perceptions of business leaders regarding the high electricity time-of-use tariffs.
- To investigate the factors that contribute to the high electricity time-of-use tariffs in Namibia.

- To examine the effect of electricity tariffs on the performance of electricity supply and distribution companies.
- To propose mitigating measures to the increases in electricity time-of-use tariffs in the future.

1.4 Key research questions of the study

The following are the research questions formulated to guide the study.

1. What are the perceptions of business leaders regarding the high electricity time-of-use tariffs?
2. What are the factors that contribute to the high electricity tariffs in Namibia?
3. What is the impact of electricity tariffs on the performance of electricity supply companies in Namibia?
4. How can the country mitigate the increases in electricity time-of-use tariffs in the future?

1.5. Rationale of the study

Various important stakeholders have been affected one way or the other by the electricity tariff increases, and these stakeholders have a substantial impact on the tariffs.

1.5.1. Renewable Energy Industry Association of Namibia

The Renewable Energy Industry Association of Namibia is a membership-based organization that promotes renewable energy and energy efficiency in Namibia (REIAoN, 2019). The usage of solar and other renewable sources of energy will make Namibia's electricity affordable and enable the country to prosper due to the following:

The electricity supply will alleviate its financial plight by raising enough funds for the supply of power.

It will reduce supply losses due to the flexibility of solar, which affects the electricity tariffs.

The electricity customers will pay affordable tariffs and spend the rest of their income on other goods and services and projects, which will boost the economy.

The electricity sectors will add value to the country's economy by utilizing its available natural resources, such as water, sun, wind, bio-mass and tidal energy.

This study is essential to the Renewable Energy Industry Association. It will inform the association members and guide them on the electricity tariffs, as well as energy efficiency and effectiveness. The fiscal incentives, public financing and ownership models are the best ways to promote and encourage renewable energy as a source of electricity (LE FOL, 2012). Furthermore, (LE FOL, 2012) reveals that Namibia has the best solar in the world, and the costs of solar Photovoltaic is low.

1.5.2. United Nations Development Programme (UNDP)

The United Nations Development Programme is an international organization that supports developing and least developed countries. The United Nations Development Programme, furthermore, creates an enabling environment for solutions regarding access to low carbon energy. The programme, operational in many countries around the globe, is eradicating inequalities and assisting countries to sustain themselves in future by means of climate-resilient energy and infrastructure.

Namibia's energy efficiency is low, due to energy ineffective practices, technologies, applications and regulations, as well as benefits from renewable energy-efficient technologies (UNDP, 2010). One of the UNDP programs in Namibia is to remove barriers to usage and fund renewable energy. The main objective is to reduce financial barriers to the supply and installation of renewable energy, reduce prices and avail finance to related projects on renewable energy (UNDP, 2010).

The findings of this study are essential to the United Nations Development Programme in order to enable the organization to plan, support and build capacity in the Namibia electricity industry. This is in line with the UNDP Sustainable Development Goal Seven for Energy and Information and Communications Technologies.

1.5.3. Energy and environment partnership with Southern and Eastern Africa

The energy and environment partnership with Southern and Eastern Africa supports projects to provide sustainable energy services and reduce climate change. However, the energy and environmental partnership program, supported by eastern Africa countries, implements the delivery models (pay-as-you-go, retail, consumer financing, mini-grid and fee-for-services) that promote solar PV at affordable tariffs (Muchunku, Ulsrud, Palit, Jonker-Klunne, & environment, 2018). These partnerships score on two critical aspects,

namely electricity tariffs and clean energy sources which are environmentally friendly. This study's outcome will be of interest to the energy and environment partnership as it affects Namibia which is in the Southern Africa region.

1.5.4. Regional Electricity Distributors Supply (REDs)

The REDs are responsible for supplying and distributing electricity to consumers in their licensed area of distribution (Nghifikwa, 2019).

The regional electricity distributors are the main electricity suppliers to the larger power users, medium businesses, government ministries and domestic, conventional and prepaid customers. Any positive or negative impact due to tariff increases will attract the attention of the REDs; hence, this study is crucial to the REDs. The study will inform the REDs how tariffs impact their customers' operations and how their own activity is affected by the tariff increases. Electricity distributors in Namibia are regulated, based on their revenue requirements. The revenue requirements of the distributors are determined by the costs of the distributor and includes cost of sales, overheads, operating and maintenance costs, as well as customer service costs, return on long term assets and working capital.

1.5.5. The Regulators (Electricity Control Board of Namibia)

The ECB is the regulator of the electricity supply industry in Namibia, and is tasked with regulating and controlling the electricity supply industry. The regulator's primary responsibility is to regulate the electricity industry, as well as determine and approve electricity tariffs (ECB, 2020a). Its main objectives are to promote affordable and cost-reflective tariffs and control all stakeholders' interest in terms of price, quality and reliability, as well as viability and safety.

The study, furthermore, provides direction on the current status of the electricity tariffs in Namibia and their effect on different stakeholders.

1.5.6. Business researchers

The business researcher is defined as an organized, systematic, data-based and critical objective investigation into a specific problem; it is undertaken to find a solution to the problem (Roger Bougie, 2020). The study on the impact of the tariffs on companies' profitability will assist executives in making an informed decision based on the researcher's results. Furthermore, this study also assists the executive in solving work-related problems

as a result of high tariffs, as well as apply experience to evidence in the executives' experience and build on their existing knowledge.

1.6 Significance of the study

The conclusion, this research could assist electricity supply and distribution companies and other corporates in implementing strategic decisions that will improve day-to-day operations. This will be creating a conducive environment in the industry.

It, furthermore, encourages the setting and implementation of cost-reflective tariffs to improve the sustainability of the electricity sector. Moreover, the study promotes companies' profitability, effectiveness and efficiency, attracts investors and improves stakeholders' relationship.

1.7 Chapter summary

The first chapter gave the background and historical information regarding electricity generation, supply and distribution in Namibia. It explained the way in which tariffs are determined, approved and regulated in Namibia, regionally and internationally. It also introduced the research objectives of the study. The chapter, furthermore, outlined the contents of the subsequent chapters.

Chapter Two will define and explain the literature review by covering the main components, such as the keys concepts of electricity time-of-use tariffs, the definition of use tariffs, theoretical framework and an empirical literature review of time-of-use tariffs.

The third chapter will explain the research methodology. It also presents the research design and paradigm, population of the study, sampling of the data, data collection and procedures, data validation and reliability, ethical issues related data, data analysis and limitations of the study.

The fourth chapter will present and discuss the findings based on the methodology employed in the study. It will also show and discuss the results of additional testing, analyses and conclusions applied in the research study.

The last chapter summaries the findings and conclusions, and provides recommendations in light of the study's findings.

Chapter 2 : LITERATURE REVIEW

2. Introduction

The study explores the impact of higher electricity tariffs on electricity supply and the profitability of distribution companies in Namibia. It discusses the different views gleaned from previous studies with reference to Namibia and Africa, as well as internationally. Moreover, it helps identify the gaps in previous studies and emphasizes the need to conduct this research to fill them.

2.1 Conceptual literature review

This section covers the conceptual literature framework of electricity tariffs locally, regionally and internationally. It, furthermore, explains the electricity tariff system.

2.2 Business leaders and high electricity TOU Tariffs

2.2.1 The concept of electricity tariffs

Electricity tariffs have been defined as the amount of money that the electricity supplier charges the consumers, covering the production and supply of electricity-related costs. Electricity tariffs are influenced by a variety of factors, such as energy consumption, the power factor of the load, time load required, load type and maximum demand (Reneses, Gómez, Rivier, & Angarita, 2011). However, electricity tariffs are designed to be cost-reflective and reasonably priced for customers while, at the same time, avoiding cross-subsidies between customer categories (Reneses et al., 2011).

The tariff concept is not easily understood because non-experts apply it, although it was set by experts (Darby & Pisica, 2013). According to Darby (2013), there is a need to match the supply and demand for electricity, which could impact electricity tariffs positively. A proper and satisfactory tariff setup is essential to all electricity usage stakeholders as it promotes short- and long term use and provides guidance on demand response (Reneses, Rodriguez, & Pérez-Arriaga, 2013).

2.2.2 Electricity tariffs globally

The global average electricity tariffs in US$ per kWh show that Germany has the highest tariff rate of US$ at 0.3 per kWh, followed by Denmark and Belgium. In contrast, Russia has the lowest tariff rate of U.SD$ at 0.06 per kWh. The time-of-use tariffs show economic efficiency and cross-subsidization. Furthermore, renewable energy sources play a

significant role in tariffs, and contribute to the fairness and efficiency of electricity tariffs, as well as reflect further positive economic consequences (Ansarin, Ghiassi-Farrokhfal, Ketter, & Collins, 2020).

A tariffs reform has been developed for the generation of renewable electricity to promote the utilization of clean energy and support environmental protection initiatives (Lin & Liu, 2013). This reform promotes competition, reduces the cost of electricity generation and tariffs rates, improves the electricity sectors' efficiency and attracts new investments to the sector (Lin & Liu, 2013). According to Foster (2020), the electricity tariffs reflect the cost drivers, as small developing countries have high tariffs, while countries with adequate energy sources have low tariffs (Foster & Witte, 2020). Besides, high-income countries charge higher tariffs than their low-income counterparts.

The adequate electricity tariffs that are cost-reflective minimize social and environmental effects, negative economic impacts and government revenue generation worldwide (Huenteler, Dobozi, Balabanyan, & Banerjee, 2017). Electricity tariff charges are widespread worldwide, with many countries allowing incentives for domestic and agricultural consumers at the expense of industrial and business consumers (Foster & Witte, 2020).

In the European region, electricity prices have been reduced significantly due to various factors, such as the expansion of renewable energy, a decline in electricity consumption, low natural gas and coal prices, optimistic power plant investments and the collapse of the European emission of the trading scheme (Hirth, 2018).

2.2.3 Electricity tariffs in Africa

The tariff charges per kWh by African companies differ from one country to another due to tariff structures (Kojima & Han, 2017). Similarly, other contributing factors are tariffs below the cost recovery level, shortage of power supply, electricity delivery costs, government subsidy policies and tariff regulators (Kojima & Han, 2017).

The quality assurance framework identifies six stakeholders with significant drives and considerations in decisions related to the setting of electricity tariffs (Reber, Booth, Cutler, Li, & Salasovich, 2018). The governments, investors, customers, utilities, regulators and system developers play roles in setting electricity tariffs, and impact the tariffs determination

process. Many African governments have a national electricity forum that ensures the affordability, cost-reflectiveness and fairness of electricity tariffs (Reber et al., 2018).

Members of African countries study, compare and analyse the impact of tariffs and costs to customers, and take the necessary action to charge cost-reflective tariffs and contain costs regarding the generation of electricity (ERERA, 2019). Besides the regional electricity regulatory authority of the Economic Community of West African States (2019), significant generation resources create potential benefits for surplus and cross-border electricity trade that contribute to lower tariffs (ERERA, 2019). The average prices of retail electricity in Africa vary widely across the entire continent. Liberia has the highest price of 490 US$ per megawatt-hour and Ethiopia has the lowest of 24.4 US$ per megawatt-hour, as per the 2016 African statistics.

2.2.4 Electricity tariffs in Southern Africa

The electricity price is defined as an electricity tariff that differs from country to country and areas in the states of the SADC region (SADC, 2018). Each SADC country's tariffs are regulated and approved by that country's electricity regulator, members of the Regulators' Association of Southern Africa (RERA). Many factors in the process, such as supply, generation and distribution costs, economic factors, government subsidies, electricity infrastructure and industry regulation, are considered in the tariff approval and determination (SADC, 2018). The SADC member states adopted the principles of cost-reflective electricity tariffs, which enable utilities to raise enough capital for generation, network expansion and other related, allowed costs (SADC, 2018).

The tariffs charged by each SADC member state vary from country to country. According to the SADC report on regulatory and tariffs review, Malawi and Namibia charged the highest average tariffs of 0.13 USC/ kWh and 0.12 USC/kWh, respectively (SADC, 2020). Zambia had the lowest electricity tariffs in the region, followed by Botswana with 0.02 USC/kWh and 0.05 USC /KWh. The cost of energy per kWh is essential to companies as their viability depends on their electricity consumption patterns, which could affect operations in either a negative or positive way.

2.2.5 Electricity tariffs system in Namibia

In Namibia, TOU tariffs are available to larger power use customers. The main aim of TOU is to encourage electricity users to avoid consuming electricity during the periods when the national system is stressed due to shortages or the non-availability of power in the system.

Different customers are responding to different types of electricity tariffs, based on their electricity consumption patterns. The electricity tariffs have been divided into two aspects, namely daily and seasonal. The seasonal tariff has a high and low season with corresponding high and low tariffs respectively. The daily tariff is divided into the following categories: peak, standard and off-peak. The time different tariffs incentive allows automated or manual load adjustments, and allow electricity users to save on consumption which, in turn, benefits the electricity system (RERA, 2019).

The electricity tariffs in Namibia are regulated and approved by the Electricity Control Board of Namibia, following Section 27, Subsection (2) of the Electricity Act 4 of 2007 (ECB, 2019b). The Electricity Control Board's primary objective is to regulate the supply, generation, distribution and transmission of electricity in Namibia. The ECB ensures smooth electricity operations and protects electricity consumers as per Namibian government policy (ECB, 2019b). The regulator conducts annual electricity tariff reviews to ensure that utility charges are approved, and cost-reflective tariffs promote reliable, efficient electricity operations based on sound economic principles.

The National Electricity Tariff study conducted in Namibia on ECB revealed that the sectors faced short- and long term challenges attributed to the electricity industry (ECB, 2020a). The Electricity Control Board employed an operating and reporting manual to determine tariffs, report the licensee's financial results and provided guidelines for ring-fencing. Regulator tariff reviews were conducted following the Namibian government's existing policies, which stated that the tariffs should be cost-reflective, affordable and reflect long-run, marginal cost (ECB, 2020a).

The electricity tariff structure entails establishment categories, such as time intervals or periods subject to billing, which should comply with electricity regulations (Reneses et al., 2013).

The following are the different electricity charges in Namibia.

Services or basic charges are fixed charges for the administrative expenses and fixed network costs related to the customer category (www.cenored.com.na, 2020).

The capacity charge reflects fixed costs based on how much capacity is made available to the customer (www.cenored.com.na, 2020).

A demand charge is a partly variable charge for all fixed costs based on the size of power supply for large power users (www.cenored.com.na, 2020).

The energy charge is a variable based on actual units consumed, and it covers all the variable costs in the power supply; it sometimes covers fixed costs. Time-of-use is part of the energy charge (; www.cenored.com.na, 2020). The time-of-use tariffs charge comprises different rates for electricity at different times of the day. The time-of-use is currently applicable in the Namibian electricity industry. It is divided into two seasons, namely the high season from June to August and the low season from September to May, as well as a three-time period in a twenty-four hour cycle, reflecting peak, standard and off-peak times.

Table 2.1. The schedule of approved energy charge tariffs only for NAMPOWER for the financial year 2018 – 2019.

2018 - 2019		Higher Season	Low Season	Higher Season	Low Season
		Tariff=<33kV		Tariff>33kV	
		Tariff	Tariff	Tariff	Tariff
kWh:	Off Peak	1.0065	0.7615	0.9619	0.7278
	Standard	1.5098	1.2183	1.4430	1.1644
	Peak	2.5163	1.5229	2.4050	1.4556

Table 2.1: NAMPOWER approved tariffs 2018 – 2019

The average price per unit of electricity expressed in N$/kWh is determined by the total sales divided by the total units sold per period. The electricity tariffs currently in Namibia provide efficient price signals to consumers, with notable differences between high and low seasons and peak and off-peak periods (SADC, 2020).

2.3 Factors that contribute to the high electricity time-of-use tariffs in Namibia

2.3.1 Different methods of calculating electricity tariffs

There are different electricity tariff models, such as standard tariffs, which charge a fixed rate per kWh for consumption, as well as day and night tariffs, charges on a daytime basis, flat tariff charges for accessing electricity and prepayment tariffs where consumers pay before electricity consumption (Dibaba, 2019). The TOU pricing is another method that serves as a cost-reflective way of realizing the response to the demand for electrify employed when charging for electricity. This requires customer participants to contribute to the best pricing model (Wang & Li, 2015). The TOU tariffs charge for electricity on actual time at a different rate during a different time of the day. These times are divided into peak, standard and off-peak, due to the availability of electricity; it can be static, dynamic or a combination of static and dynamic. In Sub-Sahara Africa, electricity tariff structures vary widely, and comprise the following charges: block tariffs, specific sectors, demand charges and schedules for voltage customer tariffs (Kojima & Han, 2017).

When electricity users consume energy at different time intervals during twenty-four-hour cycles, they are charged different prices for the electricity (Alahakoon & Yu, 2015). The TOU tariffs charge at high rates when energy demand is at its highest and low when energy demand is at its lowest. This is currently applicable in the South African and Namibia electricity industry sector.

2.3.2 Electricity sector in Southern Africa

The Southern African Development Community (SADC) is a group of sixteen countries established for integration, socio-economic, political and security cooperation, with the vision to facilitate the development of a competitive electricity market in the SADC region (SAPP, 2019). The SADC member states created the Southern Africa Power Pool to provide reliable and economical electricity to its member states (SAPP, 2019). The SADC region has vast energy sources and reserves, such as solar, hydro, wind, gas and thermal, retrievable from the different member states, although these are under-utilized (Madakufamba et al., 2017). Despite the SADC members' willingness to invest in the electricity sector to improve the region's electricity supply, members face financial challenges that require external funding (Madakufamba et al., 2017).

According to the Southern African Power Pool 2018 Annual Report, the region has a generation capacity of 67.19 Gigawatts (SAPP, 2018). Even though the SADC region has overall excess capacity, some individual members state, such Namibia, Mozambique, Zimbabwe and Eswatini, have shortfalls during the peak time demand, resulting from the importation of electricity from neighbouring countries through SAPP agreements and other mutual or commercial agreements in place (SADC, 2018). Through SAPP, the SADC member states allow members to sell and buy surplus electricity from one another to meet the demand for energy among them and avoid load shedding in the region (SADC, 2018). The region has various projects in place to improve the electricity supply. The SADC region has an interconnector that connects members to increase electricity trading among them (SADC, 2018).

The energy sector plays a significant role in improving the economic growth and development of member states (Madakufamba et al., 2017). Much of this energy comes from clean energy sources, which minimize the environment's electricity power supply (Belward et al., 2011). Renewable energy is still untapped in most SADC member states, although it could be a crucial solution to the access to electricity in the region and beyond, as well as contribute to the global fight against climate change (AREI, 2018).

The following diagram indicates the sources of electricity generated in the Southern Africa region at the end of the year 2018, indicating that coal was topping the list, followed by hydro.

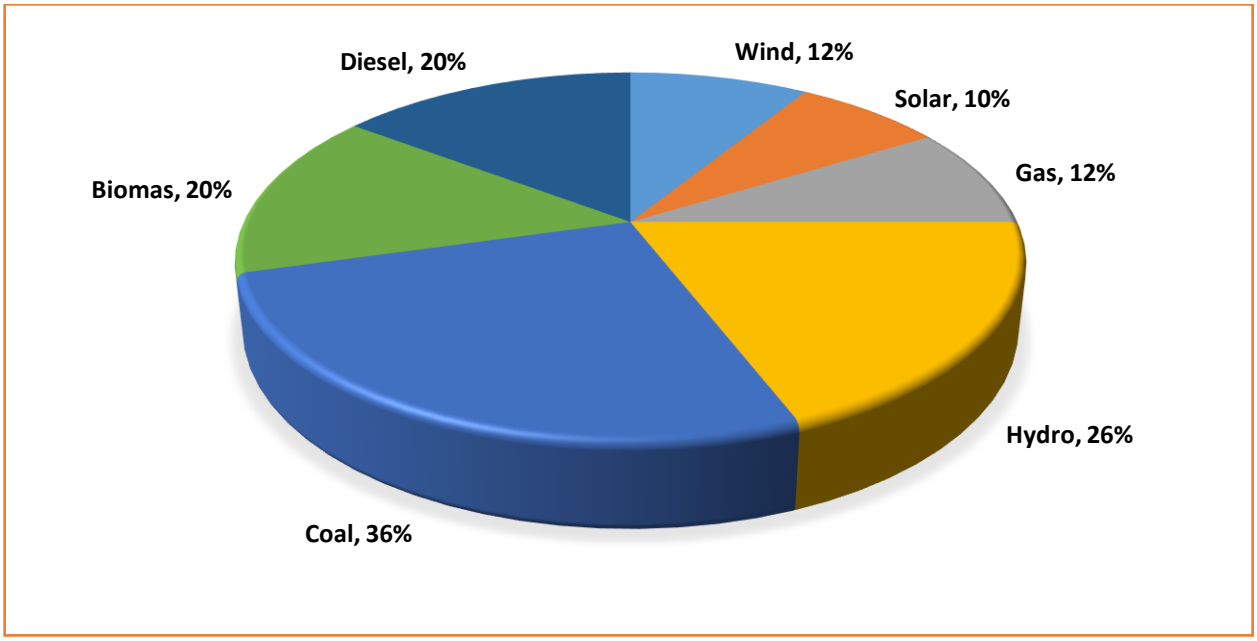


Figure 2.1: Sources of SAPP Electricity Generation Mix 2018

The Southern Africa Power Pool member states are committed to reducing the carbon footprint and fighting against climate change. As indicated in Figure 5 above, more than 50% of energy sources mix clean energy sources. The Southern Africa Power Pool members continue penetrating renewable energy sources and support the global protection of the environment.

The SADC is one of the African development community regions with low access to electricity, with some SADC member states such as Namibia, Lesotho and the Democratic Republic of Congo having below 5% access to rural electricity (Madakufamba et al., 2017). The SADC region's power sector has been developed to meet the regional power supply needs, reduce power shortages, charge cost-reflective tariffs, improve and strengthen the financial health of electricity utilities and increase power quality (Kojima & Han, 2017).

2.3.3 Namibia electricity sector

The country's electricity generation declined from 49% in the 2015 – 2016 financial year to 40% in the 2019 – 2020 financial year, while the electricity imports increased from 51% to 60% in the same period (ECB, 2020a). The Namibia electricity sector faces many challenges. This includes the lack of incentives to clean energy generation, cost decline of

renewable energy technology and digitalization. All these affected the electricity sector negatively (Von Oertzen, 2018).

The following Table 2.1 shows the energy supply composition for the financial year 2019 – 2020 which indicates that the country generated 40% and imported 60% in this period.

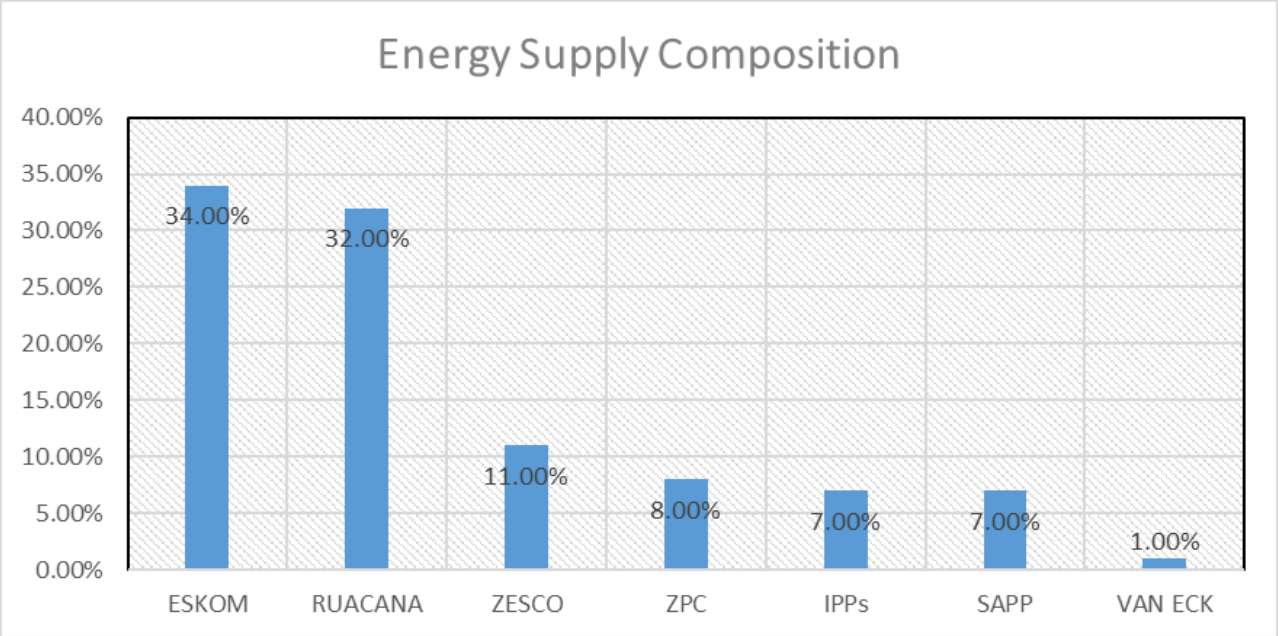


Table 2.2: Energy supply composition 2019 – 2020

The Electricity Control Board is the statutory, regulatory authority for the electricity sector, with the core responsibility of regulating the generation, transmission, distribution, supply, use, import and export of electricity in Namibia (ECB, 2020a). NAMPOWER is the only power utility in the country. It is a state-owned enterprise that generates, distributes and supplies electricity to regional electricity distributors, mines, municipalities and other outside regional electricity distribution companies and local authorities (Dall et al., 2019). The electricity generation sector has opened the door for IPP and other licensees to attract private sector investment (ECB, 2020a). Namibia employs a single-buyer, electricity market model that is a centralized supply model. A single buyer solely regulates electricity imports and exports, and more significant power users and electricity distributors procure electricity from the single buyer (ECB, 2020a).

The Namibia government reformed and restructured the Namibia Electricity Supply Industry by forming five REDS with boundaries based on network characteristics (Von Oertzen,

2019). Three of the five REDS are operational, namely the Northern Regional Electricity Distributor Company, Central Northern Regional Electricity Distributor and Erongo Regional Electricity Distributor. The Central RED and Southern RED are not yet operational. The municipalities and town councils still supply electricity in those areas (ECB, 2020a).

The Figure 2.2 below shows the restructuring of the Namibian electricity supply industry which is divided into five regional electricity distributor companies.

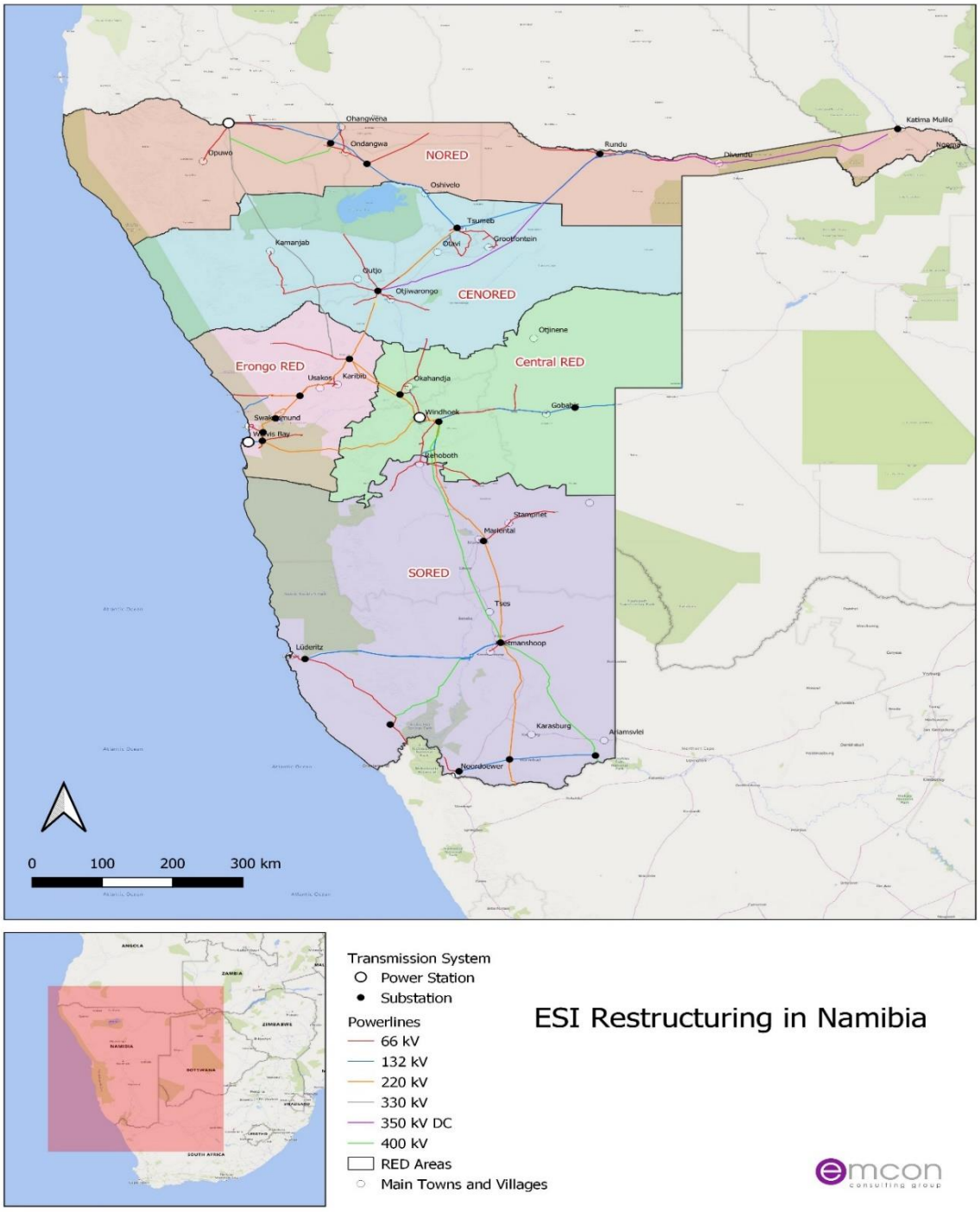


Figure 2.2: Namibia Map of five REDS borders (EMCON2019)

Figure 2.3 below shows the electricity supply industry structure of Namibia, as well as the key players.

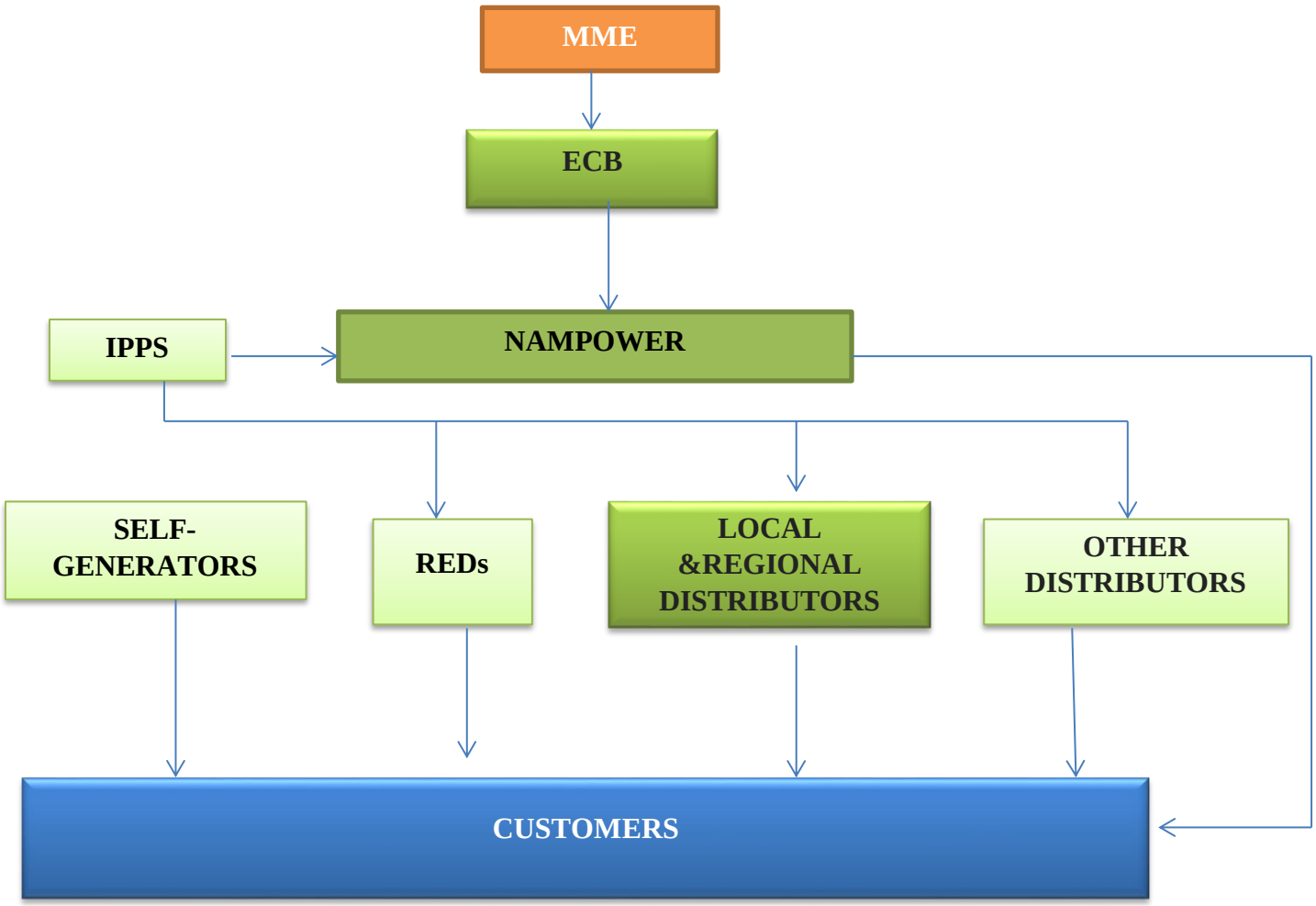


Figure 2-3:Electricity supply industry in Namibia

Namibia has the capacity to generate approximately 6300 megawatts of power, spread among the different sources of electricity. The country's generation capacity had been increased from 593.71 in 2018 to 639.32 in 2019 (NAMPOWER, 2019). Due to the energy consumption growing annually over the past five years, the country, through SAPP, imports about 60% of the electricity consumed. The key players in the electricity sector have different roles which contribute to the sector's performance. Namibia has significant unutilized sources of energy, particularly in renewables, such as wind power, solar and gas, that can address the country's power needs (SADC, 2018).

2.4 The impact of electricity tariffs on the performance of electricity supply and distribution companies in Namibia

2.4.1. Measurement of firms' performance

Financial performance is defined as how well a company utilizes its assets to generate revenue in order to maximise its profit and shareholders when conducting business (Naz, Ijaz, Naqvi, & Education, 2016). The aim of financial performance is to provide information to the users (management, lenders, potential and existing investors, as well as other stakeholders) to make informed decisions. Wilks (2003) defines financial performance as the ability and capability of a company to utilize its available resources effectively and efficiently in order to achieve its objectives, while considering its relevance to its users (Peterson, Gijsbers, & Wilks, 2003). Colase (2009) considers profitability, growth, efficiency, productivity, competitiveness and return of investment as the full definition of financial performance. Bartoli and Blatix (2015) define financial performance as the achievement of evaluation, piloting, efficiency, effectiveness and quality of conducting business.

Due to changes in the business environment, more complexity and uncertainty surround company performance and performance measurements (Taouab & Issor, 2019). According to (Atkinson, Waterhouse, & Wells, 1997), the performance measurement systems of companies must provide the following: 1. Assisting the company to assess its potential by receiving supplier and employee contributions. 2. Assisting the company in assessing and monitoring its strategic planning and whether its stakeholders support the company in achieving its objectives. 3. Assisting the company in building and implementing internal and external processes that contribute to its strategic objectives.

A company's financial performance and position reports are some of its performance measurement indicators. There are various methods of measuring the financial performance of a company, such as the DuPont analysis, balanced scorecard, performance pyramid and Malcolm Baldrige model, as well as the performance prism.

2.4.2. DuPont analysis

The DuPont system analysis is employed to measure a company's finances in detail by indicating the net profit margin, return of assets, return on equity and tax burden (Doorasamy & innovations, 2016). This method provides relevant information regarding the

different factors that cause the positive and negative performance of a company. It utilizes historical data from previous financial performance and positions to advise and reflect on current performance and predict the company's future outlook.

2.4.3. The balanced scorecard

The balanced scorecard is a management system that maps the company's strategic objectives into performance under four perspectives. These are financial, customer, internal and innovation, as well as learning perspectives.

The balanced scorecard allows the company's executives to look into the four, main and essential perspectives, and link them to the company's strategies. The balanced scorecard manages both financial assets and non-financial assets, and links them to the company's overall strategies (Frigo, 2012).

2.4.4. The performance pyramid

The performance pyramid originated from the idea of a company that operates at different levels. Each level has a different concern which should, nevertheless, be regarded in achieving company objectives. This concept holds that company strategies are linked to day-to-day operations.

The performance pyramid is a conceptual framework for identifying interventions for performance improvement (Wedman, 2009). The utilization of the pyramid starts from assessment and performance situations; it then moves to planning and implementation, performance improvement and the summative stage (Wedman, 2009).

2.4.5. Malcolm Baldrige model

The Malcolm Baldrige model is a non-prescriptive framework that empowers a company to reach its goals, improve its results and become competitive. It incorporates the company's management and leadership to enable the executives to manage the company as a whole entity. It looks into the company's performance, and improves business areas, such as its financials, customer satisfaction, market performance, operational performance, governance, human resources and supplier and partner performance.

The Malcolm Baldrige model is controlled and weighted into seven categories, namely leadership, strategies planning, customer focus, workforce focus, operations focus and measurement analysis, as well as the knowledge of management results.

2.4.6. The performance prism

A performance prism is an approach to performance management that aims to meet all company stakeholders' needs and requirements effectively. The performance prism is a second-generation, measurement framework, which is designed to assist the selection of performance measurement, which is vital to picking suitable measures (Neely, Adams, & Crowe, 2001). It takes stakeholders' requirements, instead of company strategy, as a starting point for developing performance measures. The performance prism consists of five main, interrelated measurement facets (Neely et al., 2001).

- Stakeholders' satisfaction reflects the way in which the satisfaction and needs of a company's stakeholders will be addressed and achieved.
- Strategies comprise different strategies a company can apply in order to achieve its aims and objectives.
- Process relates to the different types of processes a company will adopt and follow to achieve its strategies.
- Capabilities examine a company's capacity and capability to do the process.
- Stakeholder's contribution addresses the ways in which a company's stakeholders contribute to the process in order to achieve its strategies.

The performance prism method evaluates and analyzes the stakeholders satisfaction and contribution regarding the company's performance (Severgnini, Galdaméz, & Moraes, 2018).The stakeholders are affected by the high electricity tariffs in different ways. The understanding of stakeholders' importance and expectations are playing major roles in the company's performance (Severgnini et al., 2018).The performance prism considers the financial and non-financial perspectives, as well as the relationship between them (Frederico & Cavenaghi, 2009).

The electricity tariffs in Namibia is regulated by the Electricity Control Boards of Namibia (ECB, 2019b). Many factors are considered in the process of regulating the tariffs. These make all the five performance methods above suitable and relevant to this study's objective,

because they constitute different performance testing. Cost-reflective tariffs will close the gaps of negative impact on companies' performance. The high electricity tariffs will affect the cost of sales and profitability; therefore, cost-reflective tariffs will solve this effect on a company's performance.

2.5 Measures to mitigate the increases in electricity TOU tariffs in future

2.5.1 Challenges to setting realistic electricity tariffs

Anderson (2006) identified the lack of a proper regulatory system to control electricity tariffs as one of the challenges facing the setting of realistic tariffs (Andersson, 2006). Setting realistic electricity tariffs faces many challenges; there should be a balance between affordable tariffs and adequate return on investments (Kojima & Han, 2017).

Globally, electricity tariffs are cross-subsidized. For example, the electricity consumer category charges below the economic cost of providing electricity, while other categories pay the tariffs above the cost price. This creates a problem for the sector and undermines the promotion of reform in the electricity market (Li et al., 2020). The cross-subsidies of tariffs arise as the tariff rate does not reflect the actual power generation or supply cost. There are four tariff cross-subsidies, namely between different consumers, different voltage grids, users of different loads and consumption in different areas. The tariff cross-subsidies are advantageous to some consumers who pay low tariffs, while affecting others who have to pay high electricity tariffs, negatively (Li et al., 2020).

The measures of full cost recovery and financial sustainability influence the setting and structure of tariffs significantly. This leads to cross-subsidies and tariff structures (Kojima, Bacon, & Trimble, 2014). Developing countries with high- and middle income consumers can afford the cost-reflective tariffs; however, in Sub-Sahara Africa, the level of affordability is low; hence, consumers cannot afford the cost-reflective tariffs even though these are relatively low (Kojima et al., 2014).

The pattern of electricity consumption by different consumer categories poses challenges to regulators and utilities when setting affordable and cost-reflective electricity tariffs (SARDC, 2010). The setting of cost-reflective tariffs that value the chain from generation, transmission, distribution and supply is another challenge to electricity regulators (SARDC, 2010).

2.5.2 Political interference in the determination of electricity tariffs

Political interference in the electricity supply and distribution companies' management affairs creates considerable problems in the sector, resulting in negligence, inadequate funding of electricity projects, weak governance and inefficiency (Ahmed & Research, 2011). A government's direct involvement and control of electricity tariffs create problems in most African countries (SARDC, 2010). In the Southern Africa Development Community, the Ministers' Council approves the migration of electricity tariffs to cost-reflectivity; this initiative was considered as political interference in the determination (Sikwanda & BOARD, 2016). In Namibia, the cabinet passed a resolution in 2009 that the power utility should reach cost-reflective tariffs; this may compromise the regulator's work and cause a clash between parties.

Most electricity utilities have internally created strategies to counter the challenges resulting from political intervention in the determination of electricity tariffs (Chatterjee, 2018). The following are some of the internal strategies implemented to minimize government interference in the determination of electricity tariffs across Africa: 1. Drawing up independent regulations for electricity tariffs by taking all stakeholders concerned into account. 2. Improving the quality of electricity service. 3. Promoting and implementing good corporate governance. 4. Privatizing the electricity supply industry, as well as encouraging and promoting private investment. 5. Improving operational accountability. 6. Considering the efficiency of customer interfaces and implementing tariff reforms.

2.6 Theoretical literature review

This section presents a general understanding of theories regarding the impact of tariffs on companies' profitability and the comprehension of research results.

2.6.1 Stakeholders' theory

The stakeholders' theory regards a company as part and parcel of society and its environment. Stakeholders, such as shareholders, investors, employees, communities and the government, are parties involved in, or affected by, the organisation (Ackermann & Eden, 2011). In addition, (Ackermann & Eden, 2011) argue that paying attention to the management of stakeholders will have a positive effect on the achievement of the company's strategic goals.

A company's operation and stakeholder's activities are affecting each other in either a positive or negative way. The stakeholders' theory states that a company with good corporate governance can meet all stakeholders' expectations (Gelmini, Bavagnoli, Comoli, & Riva, 2015). The company executives must strike a balance in meeting stakeholder's expectations without compromising the strategic goal of the company when dealing with electricity tariffs. Boente (2019) identified the relation network among the stakeholders as variables that contributed to the efficiency of the distribution and supply of the electricity companies (Boente & Lustosa, 2019). The stakeholders' theory aims to improve and address the relationship between the company and its stakeholders.

A study by (Khatala, 2019) explored and described stakeholder's perceptions of engagements with the regulators (LEWA) during the tariff review process (Khatala, 2019). The stakeholder's theory relates to this study as tariff reviews play a significant role in the outcome of the final tariffs, impacting the profitability of companies. Khatala (2019) concluded that the communication between the LEWA and stakeholders was inadequate and not embraced by some stakeholders (Khatala, 2019).

As the Namibia electricity regulator, the Electricity Control Board, assesses the impact of electricity tariffs on businesses, other users and the economy in general (ECB, 2020a). The Electricity Control Board, furthermore, consults and considers stakeholders' expectations during the tariff review assessment and the final stage of tariff approval. Hence, the stakeholder's theory plays a significant role in the determination of tariffs (ECB, 2020a).

A study by(Kyari, Lawal, & Policy, 2021) investigated stakeholders' perception of the sustainability and pricing methodology of companies regarding electricity efficiency in Nigeria. The study employed a five-point Likert questionnaire and analyzed data by utilizing both regression and descriptive analysis. (Kyari et al., 2021) concluded that the Nigeria electricity tariff pricing model was sustainable, and it enabled the electricity supplier to be sustainable as well and expand its investment. The study, furthermore, concluded that there was a need for adequate and proper awareness and education regarding the methodology employed in pricing electricity in order for users to understand it. The study found that there were not sufficient policies that addressed electricity tariffs, and that created misunderstanding and mistrust among the electricity players.

2.6.2 Agency theory

The agency theory admits the problem between shareholders and executives, and attempts to mitigate it, together with its associate costs (Shapiro, 2005). Furthermore, (Shapiro, 2005) advocates that a balance should be struck between stakeholders and shareholders. Shareholders should appoint non-executive directors to run the company on their behalf, as per its strategical directions.

The problems between shareholders and executives result from withholding crucial information from shareholders by the executives, and this causes decisions to be taken by shareholders with limited information (Mutunga & Owino, 2017). Besides, due to the nature of their duties, executives can be risk-takers who do not favour shareholders as they may incur a loss due to such decisions (Mutunga & Owino, 2017).

One of the objectives of this study was to investigate the impact of electricity tariffs on companies' performance. The executives could aim to increase the tariffs with a significant margin to achieve high revenue and maximize profit, directly opposite to customers' expectations of lower tariffs. However, the customers may react negatively to high tariffs and reduce their buying power, which will affect the company revenue. Due to these possible problems between the executive and shareholders, it requires proper handling and consideration. The executives set tariffs as part of corporate governance, which separates the duties of executives and shareholders (Panda & Leepsa, 2017). Panda and Leepsa (2017) concluded that the mechanism of shareholder structure and corporate governance could minimize agency cost. The current study looked at the impact of specific factors on companies' financial performance in the electricity sector (Mafumbate, Ndlovu, Mafuka, Gavhure, & Studies, 2017).

(Mafumbate et al., 2017) concluded that specific factors, such as capital structure, size and sales, had significant effects on financial performance. Financial performance is measured by profitability, coming from positive sales which link to consumption and tariff charges.

Shareholders' expectation of sound returns will be affected, resulting in problems between executives and shareholders; the agency theory is concerned with ways to solve the problems between them.

2.6.3 Legitimacy theory

The legitimacy theory is a generalized assumption that a company's actions need to be desirable, proper or appropriate in some socially-constituted system of norms, values, beliefs and definitions (Zyznarska-Dworczak, 2018). The legitimacy theory emphasizes that the company should maintain its social contract promises which comprise its operational benefit with the community (Deegan Craig, 2019).

According to (Deegan Craig, 2019), there are implications for a company for non-compliance with a social contract. The legitimacy theory looks at closing the gap created by the company and society due to the way that a company acts and society's beliefs regarding the way in which the company should act (Deegan Craig, 2019). Society expects only a slight, or even zero, electricity tariff increase annually, while the company is doing the opposite; therefore, their legitimacy is under threat.

The legitimacy theory is a mechanism that supports organizations in developing and implementing their social and environmental disclosures to fulfil their social contract with society (Burlea & Popa, 2013). The company should disclose all electricity tariffs and other related information regarding operations, supply, distribution and generation that impact society, as well as the economy and environment.

2.6.4 The shareholders' theory

The primary purpose of business is to maximize the company profit and pay a good dividend or increase its wealth. The shareholders' theory posits that the corporate company's only duty is to maximize the profit accruing to shareholders. The application of the shareholders' theory can cause a financial crisis for the company and have social implications for non-shareholders who may affect the company's strategy negatively (Tse, 2011).

One of this study's objectives was to investigate factors contributing to high electricity time-of-use tariffs. The company executives may increase tariffs to maximize the sales and contain some expenses to increase profit. The company's performance and strategic fulfilment depend on the success of its executives in adapting to operational and environmental factors (Mutunga & Owino, 2017). A study by (Mutunga & Owino, 2017) investigated the impact of the Brazilian government, which played a dual role as both regulatory and shareholder, on the electricity sector (Loch, Marcon, da Silva, & Xavier,

2018). It analyzed and studied legislation that affected the electricity sector in Brazil from 2010 to 2015.(Loch et al., 2018) concluded that the electricity industry's financial performance was affected negatively by a government that played two roles. They, furthermore, argued that conflicts could arise between majority and minority shareholders due to one party's interest in the two differing roles of being both regulator and owner. Tariffs adjustments and implementation should consider the shareholders, as well as all other company stakeholders, their satisfaction improved the company's performance (Severgnini et al., 2018).

2.7 Empirical literature review

This section presents the empirical framework for the four secondary objectives of the research study.

2.7.1 Business leaders and high electricity TOU tariffs

The Namibian Members of Parliament were accused the NAMPOWER of increasing electricity tariffs at consumers' expense while making a considerable profit (Namibian, 2005). The Electricity Control Board rejected the NAMPOWER application for tariff increases for the 2020 – 2021 financial year. The ECB indicated that the economy was struggling. They blamed weather behavior, the impact of the COVID-19 pandemic, foreign exchange fluctuations and other external factors as the main reasons for the increase in the decline. However, the regulator indicated that tariffs were expected to increase in line with inflation to accommodate new generation projects (ECB, 2020b).

Hoops (2010) investigated perspectives regarding the ways in which high electricity tariffs impacted the manufacturing costs of executives in the automotive industry (Hoops, 2010). The study employed questionnaires to obtain responses from automotive executives, administer through email. Hoops (2010) advocated that the industry needed to minimize the impact of increased tariffs by reducing energy consumption, passing the high electricity prices to customers, cutting other expenses and finding alternative electricity sources of supply. The business community is less likely to question increases in the costs of electricity utilities beyond the control of utilities caused by factors that reduce the demand for commercial load. Examples of these factors are the COVID-19 pandemic and the effect of the drought on a market that depends on hydropower as a source of power generation (Kojima et al., 2014).

There is evidence that the business leaders may absorb the high electricity tariffs by adopting different measures. Despite the electricity tariffs being regulated in Namibia, the price has been increasing significantly due to economic and environmental factors. The key question remains to what extent the high electricity tariffs impact the supply and distribution companies; therefore, underscoring this research study.

2.7.2 Factors that contribute to high electricity time-of-use tariffs

A study on electricity theft and comparative analysis revealed that electricity theft was the main factor that contributed to increases in electricity prices (Smith, 2004). Electricity theft leads to revenue loss and reduction of profitability. Smith (2004) identified four methods of electricity theft, namely fraud, stolen electricity, billing irregularities and unpaid bills. The analysis found that electricity theft had the potential to lead to an increase in electricity tariffs as a result of the counter-response of revenue decline (Smith, 2004).

A study conducted by (De Lange, 2010) determined the impact of electricity price increases in South Africa. The study focused on larger customers from Eskom and the impact of increased electricity prices on their electricity demand by employing a historical data analysis. The study found that the Eskom Mega Flex TOU tariff in 2002 increased peak season tariffs by 40%, and indicated that electricity demand was inelastic over a short period and elastic over a more extended period. It, furthermore, found that electricity prices drove behavior related to electricity consumption; thus, economic factors also drove the commodity of electricity prices.

The main objective of a study conducted in Nigeria by (Anyaka et al., 2014) was to determine the extent to which high electricity tariffs affected consumers in developing countries. The study investigated the situation in Nigeria from power generation to distribution chain supply, including tariff pricing. It looked at regional and international tariff comparisons to determine whether Nigerian tariffs were high or low when compared to others. The main factors that caused high electricity tariffs in some developing countries, resulting in a negative impact on consumers (Anyaka et al., 2014), were found to be a lack of utilization of naturally available resources, such as sun, gas, hydro and other clean and renewable energy sources, low maintenance of the existing electricity infrastructure, a shortage of an electricity inventory for network maintenance purposes, corruption and rotten

corporate governance, as well as a lack of political will and low electricity prices for potential investors.

The study on the Southern Africa migration of electricity tariffs to cost reflectivity in the SADC countries (Sikwanda & BOARD, 2016) revealed that only Tanzania and Namibia migrated their electricity tariffs to cost reflectivity.

The study by (Sikwanda & BOARD, 2016) analyzed the tariffs of nine selected SADC countries, namely Angola, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. The study concluded that the impact of non-cost-reflective tariffs was demonstrated by a shortage of power, the poor state of electricity infrastructure, higher system losses and failure to attract investment.

The study investigated the electricity price development in the electricity market in the European Union member states (Pezzutto, Grilli, Zambotti, & Dunjic, 2018). The study interrogated two main aspects: 1. a self-developed form of Porter's five forces analysis to determine the characteristics of modest electricity price increases; 2. a self-developed form of a multiple criteria, decision analysis. Both analyses applied forecasting electricity price trends, while analyzing sentiments and expectations. They, furthermore, tested the knowledge of electricity experts by assessing the factors that influenced the electricity tariffs market. A survey was conducted by interviewing the European Union member states (Pezzutto et al., 2018). The study concluded that the complexity of electricity regulatory and generation oversupply were the main drivers of price increases in European Union member states (Pezzutto et al., 2018).

An investigation was conducted on the impact of wind and solar power on wholesale electricity prices in Australia over eight years (2010 – 2018) (Csereklyei, Qu, & Ancev, 2019). It employed high frequency and day-to-day data sets from the Australia National Electricity Market (Csereklyei et al., 2019). The paper concluded that both wind and solar electricity generation reduced electricity prices (Csereklyei et al., 2019). Due to their lower percentage on the electricity mix, their impact was lower; however, Australia's electricity prices had increased significantly as it was driven by the high price of gas, comprising the highest percentages in the generation of the electricity mixture. The study listed

manufacturing industries' energy prices and financial performance on the Pakistan Stock Exchange for ten years from 2007 to 2016 (Rasheed & Research, 2019).

The regression analysis method was employed to establish the financial indicators of 67 companies sampled (Rasheed & Research, 2019). The study concluded that energy prices harmed some manufacturing industries, such as sugar and cement. The study, furthermore, found that some sectors, such as textiles, pharmaceuticals and automobiles, were not affected by increases in energy prices (Rasheed & Research, 2019).

The study investigated the way in which COVID-19 affected the power sector's operation in terms of technical, socio-economic and pricing of electricity tariffs in the Indian power sector (Elavarasan et al., 2020). The study found that most of the businesses, especially the non-essential sectors, had reduced their electricity load significantly due to the lockdown resulting from the COVID-19 outbreak. The study concluded that the COVID-19 pandemic had affected many sectors, including the electricity sector, due to the lockdown that led to the decline in businesses' demand for electricity (Elavarasan et al., 2020). Additionally, the sustainability of the utilities in India had been affected negatively, and future electricity tariffs would have to be imposed to recover the losses due to the devastation caused by the COVID-19 pandemic. The study by (Kirli, Parzen, & Kiprakis, 2021) investigated the impact of COVID-19 on energy demand and pricing in Great Britain by analyzing different quantitative markets, and comparing data from before and after the lockdown in Great Britain. They concluded that the COVID-19 pandemic had reduced electricity consumption and disrupted the balance between electricity supply and demand; this affected the electricity tariffs. The study concluded that the electricity price had decreased significantly due to a decline in the electricity wholesale market price. On the contrary, some notable events increased electricity prices per MWh more than in the month preceding the lockdown.

It is important to address these factors that contribute to high electricity tariffs; however, these research studies were not conducted in the Namibian context. It is, thus, necessary to conduct research on the factors that contribute to high electricity tariffs in Namibia.

2.7.3 Impact of electricity tariffs on the performance of supply and distribution companies in Namibia

(Anyaka et al., 2014) found that higher electricity tariffs contributed to the following factors which had adverse effects on the performance of companies. The agricultural activity and its supply chain had been reduced and that led to a shortage of food production; consequently, performance was affected negatively due to the loss incurred.

A study by (Montmasson-Clair & Ryan, 2014) investigated the influence of electricity pricing on the South Africa mining value chain and considered possible shifts to greener energy. The study conducted interviews with electricity representatives and analyzed financial performance and financial position reports. The study concluded that electricity increases had varying effects on the different companies in the mining sector in the electricity-intensive category. They, furthermore, found that some companies could pass the high tariffs on to their customers, while others absorbed the impact of increased electricity prices. The increase in electricity prices, thus, had negative consequences for a company's competitiveness (Montmasson-Clair & Ryan, 2014). The study examined the relationship between production, electricity tariffs and electricity consumption by assessing regulation in Namibia's electricity supply industry (Kapika & Eberhard, 2010). The price was moving towards cost-reflectivity.

The study by (Arlet, 2017) reviewed and tested the relationship between power outages, electricity tariffs and firm performance in Kuala Lumpur. The paper employed data for both power outages and electricity tariffs of 190 economies with the primary objective to measure the relationship between electricity characteristics, conducting business and firms' performance. It investigated the way in which power outages and electricity tariffs related to a firm's behaviour and, lastly, tested the way in which power interruption and electricity tariffs were associated with the firm's performance. The regression analysis demonstrated that power outages and electricity tariffs related negatively to the firms' performance. The high tariffs reduced companies' productivity, due to the methods to contain electricity expenses. The power outage reduced production also because of wastage of time and breakdowns of machinery caused by constant power failures. In addition, the high electricity tariffs reduced revenue and profitability as more expenses were paid on electricity bills.

However, the power outages and electricity tariffs were not associated with each other, and varied from economic sectors.

A survey by (Deloitte, 2012) investigated the influence of electricity price increases on employment, output and profitability. The study surveyed 31 of Eskom's critical industrial customers and targeted customers from three categories, namely the closed related, related energy and intensive industries, by administering questionnaires before price increases (Deloitte, 2012). The survey concluded that relative electricity-intensive mining and manufacturing sectors suffered from declines in output and employment due to increased electricity prices. On the other hand, there were significant decreases in employment and output in gold and platinum mining. Simultaneously, there was a negligible effect on employment and output in the coal mining and food and beverage sectors. However, electricity price increases caused a relatively significant decrease in output and employment in some service sectors, while it was severe in the transport and communication sectors. Some sectors' profit was affected negatively by the rise in electricity prices; some were less affected while others showed the greatest vulnerability to increasing electricity prices (Deloitte, 2012).

A study by (Abeberese & Statistics, 2017) focused on India's electricity and firm performance, and provided evidence on the way in which electricity prices affected India's productivity growth and firms' performance. The study employed panel data of manufacturing firms to study the influence of electricity costs on firms' decisions. Besides, the study's purpose was to examine firms' responses to electricity costs in India. The results showed that high electricity prices reduced electricity consumption and led to firms shifting their production processes to reduce electricity consumption. The higher electricity prices harmed the firms' output and reduced growth. Additionally, the study found that the increase in electricity prices caused a decline in firms' output, labor production and machine intensity. These impacts on individual firms could decrease a country's economic growth and specific industries.

The study by (Goliger & McMillan, 2018) studied the effect of increases electricity tariffs on companies in South Africa, and investigated the likely result of rising electricity costs on 21 larger companies by utilizing financial information and tariff increase scenarios. They, furthermore, employed different variables, such as profit ratios, revenue growth and

increases in costs and expenses. The study concluded that rising electricity tariffs led firms to reduce costs, implement efficiency measures, invest in other sectors, close some segments and move operations to neighbouring countries (Goliger & McMillan, 2018).

The study by (Olaoye, Talabi, & Accounting, 2018) investigated the influence of electricity tariffs and the generation of own power supply on Nigeria's business performance. The study employed questionnaire data from business, retail, manufacturing and servicing companies. These were investigated by means of the ordinary, least square, estimation model. The study found that high electricity tariffs and self-generated electricity costs harmed companies' performance. It, furthermore, showed that there was a significant difference between electricity tariffs and own generated electricity in the companies.

A study on the negative influence of the electricity tariffs on micro-enterprises in the Rustenburg area, South Africa, employed a descriptive survey research to collect and analyze data (Moseki, 2019). It concluded that high electricity tariffs harmed business performance. The study, furthermore, indicated that increased tariffs forced some businesses to close down, and some investors withdrew their investments. Besides that, some businesses could not survive without passing the increments on to their customers.

The study by (Neves, Henriques, & Vilas, 2019) assessed the financial performance of electricity companies in Portugal for five years from 2010 to 2014. The study employed data from regulated companies, and analyzed their profitability and efficiency. The information data of 213 companies were tested and analyzed by means of the estimation method. It concluded that the efficient electricity sector companies in Portugal were profitable and reported positive cash flow results.

The study by (Inglesi-Lotz, Ajmi, & Research, 2021) investigated the way in which electricity tariffs affected foreign, direct investment in South Africa by employing the auto-regressive, distributed, lag, co-integration approach from 1085 to 2018.The study concluded that the electricity tariffs had negative impacts on inward, foreign-direct investment. On the contrary, the electricity supply contributed positively to foreign-direct investment.

As the Namibia electricity regulator, the Electricity Control Board assesses the ways in which the electricity tariffs affect business, other users and the economy in general (ECB, 2020a). The Electricity Control Board, furthermore, consults and considers stakeholders'

expectations in the tariff review process and final stage of tariff approvals; hence, the stakeholder's theory plays a significant role in the determination of tariffs (ECB, 2020a).

A study by (Kyari et al., 2021) investigated the stakeholder's perception of the sustainability and pricing methodology in companies regarding electricity efficiency in Nigeria. The study employed a five-point Likert questionnaire and analyzed data by means of both regression and descriptive analyses. The study concluded that the Nigeria electricity tariff pricing model was sustainable, and that it enabled the electricity supplier to be sustainable and expand its investment (Kyari et al., 2021). The study, furthermore, concluded that there was a need for adequate and proper awareness and education regarding the methodology of electricity pricing to enable users to understand the system. Another conclusion concerned policy reform in Nigeria as the study found that there were not sufficient and adequate policies that addressed the electricity tariffs, and that created misunderstanding and mistrust among the electricity players.

It appears that not many studies were conducted regarding the ways in which electricity tariffs impacted the supply and distribution companies in Namibia. Studies on the impact that electricity tariffs had on companies' performance had been conducted in Africa and internationally; however, only a few studies investigated supply and distribution.

2.7.4 Measures that can mitigate increases in electricity time-of-use tariffs

Smith (2004) identified factors, such as tamper-proof meters, regular inspection and monitoring of the metering system, as well as the segregation of duties within the power system, that could minimize tariff increases. Additionally, eliminating or minimizing electricity theft has a strong potential to contain affordable and cost-reflective electricity tariffs. Furthermore, electricity tariffs could be reduced by a low level of corruption, effective accountability, good corporate governance practice, political stability and high government effectiveness (Smith, 2004)

Deloitte South Africa's study on the economic impact of the electricity price increase on various sectors in South Africa (Deloitte, 2012) provided some, possibly mitigating factors regarding adverse effects on profitability. This study suggested that mitigation depended on each organisation's capability and ability to pass on the cost, electricity efficiency gains and substitute electricity from cheaper energy sources. Ryan (2014) explored the mitigation

strategies that reduced electricity price increases in platinum companies in South Africa, and identified three mitigating factors, namely energy management, technology innovation and energy efficiency.

Doe and Emmanuel (2014) analyzed the impact of electricity fluctuations in power availability being planned and unplanned as a result of power failures, shutdowns, outages and load shedding on the profitability and competitiveness of the SME in Ghana's Accra District. The study sampled 70 SMEs in the area and employed a cross-sectional survey with mixed research approaches to electricity business operations (Doe & Emmanuel, 2014). They concluded that power change led to the non-availability of electricity, enabling the high technological, dependable companies to produce low quality and inadequate products, resulting in poor sales and low profitability. They, furthermore, argued that SMEs required reliable supply and affordable electricity tariffs to enable them to contribute to the growth and development of the economy.

A study by (Wang & Li, 2015) investigated different industrial scenarios to predict cost savings on electricity for industrial customers that utilize the TOU tariff rate in U.S.A. utilities. The survey targeted about 43 TOU industrial customers who were making use of utilities in the United States of America. Wang and Li (2015) concluded that cost-saving varied from company to company depending on the way in which the company utilized electricity, as well as the way in which they applied their switching strategies. Furthermore, the study showed that the production schedule style played a significant role. Companies could shift their primary production schedule from peak to an off-peak period and save more on electricity tariffs because of low tariffs applicable at off-peak periods. However, the companies that utilized electricity for an entire 24-hour production cycle did not necessarily benefit from off-peak, low tariffs rates as they were exposed to high peak tariffs.

The study assessed the impact of high electricity time-of-use tariffs on business in Hong Kong, China. According to (Dong, Ng, Cheng, & management, 2017) one of the measures exposed by the study were shifting consumption from a peak to non-peak period to save electricity, an idea supported by the study in China. Although in an Africa context this is disputable as suggested by (Essa, 2010).

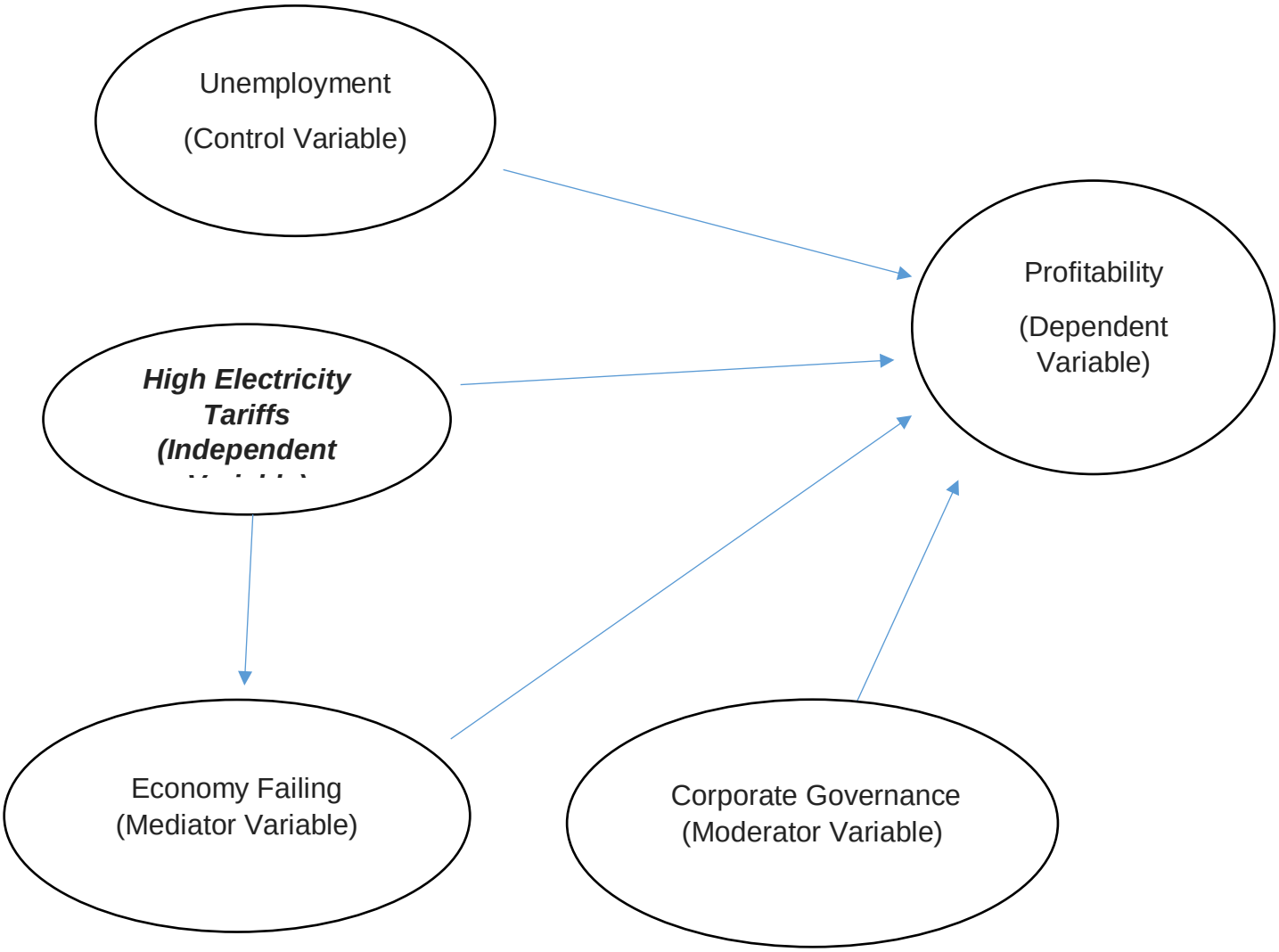
(Jishkariani, 2019) studied tariff setting methods alongside their increases, and investigated the way in which electricity tariffs met supply and consumer needs while encouraging investments in electricity and ensuring the reliability and efficiency of electricity supply in Georgia. The article identified the rate of return, electricity regulation, price-cap regulation, return on assets and cost-plus as the main factors that pushed the increases of electricity tariffs. The study concluded that meeting the investors and consumers' needs was a meaningful, health-factor relationship in the electricity industry, and it had either negative or positive effects on the tariffs. It, furthermore, discouraged monopolized electricity supply in order to avoid tariff increases without justification or cost reflectivity. Moreover, it encouraged electricity trading in an open market by means of the supply and demand method to encourage competition in the sector.

Only a few studies had been conducted on ways in which the higher electricity tariffs affected companies' profitability in Namibia; studies were recently conducted in Namibia by (Dibaba, 2019),(Kalomo, 2015), (Kapika & Eberhard, 2010), (LE FOL, 2012), (Nghifikwa, 2019), (Von Oertzen, 2018) 2019). They focused on micro-grids, consumption patterns, regulator performance, renewable energy, revenue collection, electricity storage and the state of electrcity in Namibia respectively; therefore, the current research was conducted to fill the gaps and to determine the ways in which high electrcity tariffs affected the supply and distribution companies' profitability in Namibia.

Furthermore, the study investigated factors contributing to high electricity tariffs and ways to mitigate increases in the future. Companies' profitability in relation to high electricity tariffs was also assessed. It is very important to address the ways in which high electrcity tariffs affected companies' profitability in Namibia in order to enable different stakeholders to make informed decisions and find suitable remedies.

2.8 Conceptual framework

Figure 2.4 presents the conceptual framework and causal relationships between the variables. The independent variable, dependent variable and other variables (mediator, moderator and control variable) are indicated in the diagram.



Figur 2-4: Conceptual Framework

The conceptual framework defines one or more formal theories, as well as other concepts and empirical findings from the literature. It shows the relationship between variables and the way in which they relate to the research study.

High electricity tariffs was the independent variable, while profitability the dependent variable. According to (Bell, 2011) a variable is defined as an attribute in terms of which cases vary. As the independent variable, the high electricity tariffs have causally influenced profitability, the dependent variable. An independent variable constitutes the variables that impact dependent variables (Bell, 2011), and is not affected by any other variable. Both moderator and mediator variables affect profitability (dependent variable); in this case, both corporate governance and economic fail impacted companies' profitability. However, corporate governance, as a moderator, was not affected by the high electricity tariffs, as the independent variable. The lack of corporate governance caused financial crises and companies collapsed (Dzingai & Fakoya, 2017). It, furthermore, revealed that there was a relationship between good corporate governance and companies' performance (Dzingai & Fakoya, 2017). In Namibia this was supported by (Masunda, 2013) who concluded that there was a good relationship between good corporate governance and a company's financial performance. The high electricity tariffs will cause the economy's failure, which leads to profit reduction or losses. On the contrary, it influenced the relationship between high electricity tariffs and profitability. It can alter the effect that an independent variable has on the dependent variable.

The mediator variable accounts for the relationship between the independent and dependent variables as it links the two variables. (Kambwale, Chisoro, Karodia, & Review, 2015) revealed that a lack of training and financial support was one of the factors causing Namibian companies to fail. This idea was supported by (Amwele, 2013) who concluded that relevant registration and a lack of financing were factors that affected the performance of companies in Namibia.

The control variable is causing poverty which leads to low electricity consumption, crime and reduced buying power; these affect companies' profitability negatively. The study by (Santarelli, Carree, & Verheul, 2009) explored the relationship between unemployment and companies' entry and exit in Italy. It is supported by (Pakarinen, 2012), namely that Namibia had a high unemployment rate that affected the economy negatively. In addition (Sunde &

Akanbi, 2016) concluded that the high unemployment in Namibia was caused by various factors and that it impacted companies' profitability. On the contrary, the control variable, not related to high electricity tariffs, impacts companies' profitability. However, it may interfere with the outcome of the results.

2.9 Chapter summary

The review in this chapter compiled evidence on various factors that relate and influence electricity tariffs and companies' profitability in Namibia, Africa and internationally. There is sufficient evidence in this chapter that shows the relationship between electricity tariffs and companies' profitability.

However, there is limited literature on the impact of electricity tariffs on companies' profitability in Namibia. Due to a lack of these studies, this study investigated the impact of electricity tariffs on firms' profitability in Namibia. The findings of this study will contribute to the existing literature on the importance of electricity tariffs for companies' profitability in Africa, particularly in Namibia, and contribute to filling the knowledge gap.

Chapter 3 : DESIGN AND METHODOLOGY

3.1 Introduction

A research design is a blueprint or plan for collecting, measuring and analyzing data created to answer empirical research questions (Sekaran, 2016). The research methodology explains the way in which a research problem is solved in a systematic way (Kothari, 2004). The different research steps, as well as the logic behind them, are explained.

The study's primary objectives were to analyze the ways in which electricity tariffs influenced the profitability of electricity and distribution companies by utilizing data from participants' questionnaire responses and financial performance, as well as the financial positions of participants' companies over the past four years. It, furthermore, tested and analyzed the approved tariffs downloaded from the Electricity Control Board's website.

Chapter Three presents the research methodology that was employed in this research.The data collection instrument will be discussed in detail. The method of sampling and the population are also presented. Furthermore, the method of data analysis utilized, as well as the validity and reliability of the data, are explained.

3.2 Scope of the study

The study has been necessitated by the current, annual increases of electricity tariffs in Namibia. Furthermore, there had been much publicity, without evidence or substance, in the local newspapers in Namibia regarding the increase of already high electricity tariffs.

Therefore, the main aim of the study was to determine the influence of high electricity tariffs on supply and distribution companies' profitability in Namibia.

3.3 The research methodology

Research methodology is defined as a blueprint for the collection, measurement and data analysis created to answer the research questions (Sekaran, 2016). Research methods employed are strategies utilized to implement the research design.

A questionnaire as research instrument was important for this study because of its quantitative approach; furthermore, the questionnaire is a valuable instrument in a survey. In addition, this method assisted the researcher during the COVID-19 pandemic that made some other research methods unusable. A quantitative approach to the study was taken as

it met the main, key characteristics of the data gathered; measurable variables comprise numbers to assess the details, change aims to objectives and employ statistical analysis to evaluate the findings. They, furthermore, utilize measuring devices and research instruments (Goertzen, 2017). According to (Sidel, Bleibaum, & Tao, 2018), the quantitative methods is cost-effective and provides scientific methods with quantifiable outcomes. In this quantitative study, data were collected by employing questionnaires and tariffs, as well as financial performance and position. Stakeholders' theories specify the relationship between various stakeholders (Ackermann & Eden, 2011).

3.4 Research design

A research design provides a framework for the collection and analysis of data (Bell, 2011). The research design will address the following: population and sample, data collection methods, research instruments utilized, and the ways in which data were analyzed.

The collection research design were use for this study because of the followings:

1. It is a fast way to get the results needed and not face to face contact with paticipants which make appropriate during the COVID – 19 pandemic.

2. It is inexpensive method of conducting a research.

3.4.1 Population and sample

A research population is the entire group of events, things or people of interest that a researcher wishes to investigate and draw conclusions based on the evidence (Sekaran, 2016). The population of this study involved the emplyees of the Regional Electricity Distributors Companies (NORED, CENORE and OPE). According to (Sekaran, 2016), a sample is defined as a subset of the population of interest from which a researcher can draw conclusions that generalize to the population of interest.

The research population was selected by means of simple random sampling from the thirty emplyees of the three electricity supply and distribution companies (NORED, CENORED AND OPE).This method was chosen due to the high generalizability of its findings.Twenty employees were selected to form a research sample. Fifteen designed questionnaire were prepared and administered.

3.4.2 Research instruments

The instruments (Likert scale) were developed to assess the different variables in the research. A five-point Likert scale, which provided a reasonable array of opinions that contained understanding and knowledge of the object evaluated, was employed. The scale, furthermore, provided response categories for respondents to rate their answers to questions, making responding easy and simple to answer. Furthermore, a five point Likert scale ensured that respondents did not lose interest, and it was easy for them to interpret different answer choices.

The research instruments were designed to measure the following:

- Perceptions of business leaders regarding the high electricity time-of-use tariffs were covered in Questions One to Five.
- Factors contributing to the high electricity time-of-use tariffs questions were covered in Questions Six to Ten.
- Measures that could mitigate the increases in electricity time-of-use tariffs were covered in Questions Eleven to Fifteen.

3.4.3 Data collection approaches and methods

Questionnaires were employed as a data collection instrument and were sent to participants via email. Sekaran (2016) notes that electronic questionnaires are generally easy to administer, have fast delivery and are inexpensive (Bougie, 2020). Moreover, this instrument allows participants to respond at their convenience within a deadline period (Bougie, 2020).

Furthermore, this method was the best and most convenient way of researching in the COVID-19 pandemic era because there was no face-to-face contact with the participants. Administering a questionnaire was important for this study because of its quantitative approach. In addition, this method assisted the researcher during the COVID-19 pandemic that made some other research methods unusable.

Some people consider the invitation via email rude and offensive and emails can also be deleted (Bougie, 2020). This method, however, was preferred and employed in this research study because of the convenience of email correspondence.

The administration of the questionnaires was undertaken during this stage. The fifteen self-designed questionnaires were distributed through e-mail and covered the key research questions of the study.

The data collected involved financial performance and position reports for four financial years, namely 2016 – 2017, 2017 – 2018, 2018 – 2019 and 2019 – 2020. The tariffs for four years were downloaded from the Electricity Control Board of Namibia for CENORED, NORED and OPE.

Thirteen questionnaires were completed, and one set of financial reports was received and analyzed. The electricity tariffs for all participating companies (NORED, CENORED and OPE) were analyzed. The response rate was 65% for the questionnaires and 33% for the financial performance and financial position reports, as well as 100% for the electricity tariffs. The data utilized in this research were relevant to the current study because they were effective, trusted, reviewed, accessible and comprehensible.

3.5 Data analysis

The data were collected and analyzed to answer all the research questions. The data were processed into an informative format to ensure that they were accurate, complete and suitable for relevant and reliable analysis (Bhattacherjee, 2012). The data preparation process involved data extracted from questionnaires, financial performance and position reports and approved electricity tariff schedules for four years. The Statistical Package for the Social Sciences was employed to analyse the data. The questionnaires were scaled in groups as per research objectives; they were then analysed and interpreted. The SPSS was preferred because of its comprehensiveness, as well as making the interpretation of results easy.

The data analysis for this study employed descriptive and inferential statistics, utilizing the Statistical Package for the Social Sciences, which describes the data and strength of the relationship between the variables respectively. The use of the Statistical Package for Social Sciences enabled the researcher to analyse the sample and have confidence regarding the research results.

3.6 Reliability and validity

Major criteria for evaluating measurement tools are validity and reliability. These tools provide credibility to the research survey results credible, as well as make them reasonable (Sekaran, 2016). Reliability is defined as a test of how consistently a measuring instrument measures the concept under scrutiny (Sekaran, 2016). The reliability measures test the consistency and stability of the data tested.

According to Sekaran (2016), validity is a test of how well a developed instrument measures the particular concept it is intended to measure. It can be divided into three parts, namely group content, criterion-related and construct validity. Further definition of validity is the extent to which differences in observed scores reflect the actual difference between objects being measured instead of a systematic survey (Bhattacherjee, 2012).

The reliability and validity of the data were tested by utilizing the Statistical Package for Social Sciences. The relationship and consistency of the group of questionnaires as per secondary research objectives was measured by employing the SPSS - Cronbach's Alpha Reliability.

3.7 Chapter summary

Chapter Three summarized the research scope and methodology, with regards to data collection, design and analyses that were applied during the study. The reliability and validity in data collection were also tested and validated.

The following chapter introduces and explains the collected data that were analyzed. The analysis was conducted by employing the Statically Package for the Social Science.

Chapter 4 : DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter contains the report of the study's findings. The statistical data were measured for reliability and consistency by means of Cronbach's Alpha as per the Statically Package for Social Sciences (SPSS). Both descriptive statistics and inferential statistics, including the mean, standard deviation, graphs and charts, are presented at the beginning of this chapter. The financial statements were utilized to calculate the ratios, cost of electricity changes, revenue and profit for four years.

The preference for description statistics was motivated by the fact that it enabled the researcher to analyze the data through organizing, simplify and summarizing the data set. It, furthermore, allowed the researcher to describe and quantify the data. Similarly, the inferential statistics assisted in explaining the phenomenon, and allowed conclusions to be drawn, with the assumption that the existing trends would continue.

In this section, descriptive statistics were employed to analyse the research objectives. Objectives One, Two and Four were investigated by means of questionnaires, and the third objective considered the tariffs and financial statements to ascertain the perceptions of business leaders regarding the high electricity time-of-use tariffs. The objectives were:

- To ascertain the perceptions of business leaders regarding the high electricity TOU tariffs.
- To investigate the factors that contributed to the high electricity time-of-use tariffs in Namibia.
- To examine the impact of electricity tariffs on the performance of companies.
- To propose mitigating measures to the increases in electricity time-of-use tariffs in the future.

The frequency Table score for business leaders' perceptions regarding high electricity time-of-use tariffs is presented graphically in the Table below. The responses regarding the perception of business leaders to high electricity time-of-use tariffs, effects on total expenses, tension among electricity industry players, minimal yearly tariff increases, historical pricing and poor quality of power of supply were analyzed and interpreted.

4 .2 Business leaders' perceptions of TOU tariffs

4.2.1 Effects of electricity tariffs

The Tables below, (4.2.1 – 4.2.5) show the ways in which business leaders perceived the electricity tariffs (TOU) and their effect on their business operations as per Question One to Question Five in Appendix A.

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	7	53.8	53.8	53.8
	Agree	3	23.1	23.1	76.9
	Neutral	3	23.1	23.1	100.0
	Total	13	100.0	100.0	

Table 4.1: Effects of electricity tariffs

The results in Table 4.1 above indicate that 70% of respondents agreed that the high electricity tariffs had a negative impact on all of the company's expenses and the organization as a whole as far as operation was concerned.

4.2.2. Tensions among stakeholders

As indicated in Appendix B, the results show that high electricity tariffs created tension among stakeholders in the electricity industry, with a mean of 2.38 that represents about 60% of the questionnaire responses. A cynical majority of the respondents believed that the high electricity tariffs would disturb the relationship of the electricity industry stakeholders.

4.2.3. Minimal tariffs increases

Table 4.2 below shows the benefits of adjusting the tariffs annually with a conservative and minimum percentage.

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	2	15.4	15.4	15.4

	Agree	9	69.2	69.2	84.6
	Neutral	1	7.7	7.7	92.3
	Disagree	1	7.7	7.7	100.0
	Total	13	100.0	100.0	

Table 4.2: Minimal tariff increases

Of the respondents, 69.2% agreed with a minimum increase of tariffs on an annual basis to avoid significant or shocking increases at a certain point of time that might disturb and affect customers negatively. The annual, minimum increase had an advantage to customers in the long run, and it assisted customers in mitigating the pressure of increases in electricity tariffs. Customers would absorb the increases annually and would not suffer economic consequences.

4.2.4. Pricing and planning

The following Table shows the results of the Namibian Power Corporation as the main factor that contributed to high electricity tariffs.

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	1	7.7	7.7	7.7
	Agree	6	46.2	46.2	53.8
	Neutral	3	23.1	23.1	76.9
	Disagree	3	23.1	23.1	100.0
	Total	13	100.0	100.0	

Table 4.3: Pricing and planning

More than 50% of the respondents believed that the planning and pricing of electricity were the main contributors to the high electricity tariffs in Namibia. Applying and utilizing historical and planning information without considering the current and future trends would disadvantage the consumers.

4.2.5. Quality of power supply

Table 4.4 shows whether the power supply quality would contribute to high electricity tariffs.

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	1	7.7	7.7	7.7
	Agree	5	38.5	38.5	46.2
	Neutral	3	23.1	23.1	69.2
	Disagree	4	30.8	30.8	100.0
	Total	13	100.0	100.0	

Table 4.4: Quality of power supply

The results presented in Table 4.4 above indicate that the poor quality of power supply had only a slight effect on electricity tariffs.

4.3 Factors contributing to the high electricity time-of-use tariffs in Namibia

The factors contributing to high electricity in Namibia were tested under Question Six to Ten (see Appendix A).

4.3.1 Government interventions

Currently, the Namibian government has a budget deficit of about 5%. The question remains whether the government could borrow more to finance electricity generation by means of green projects and incur borrowing costs to improve in the future.

The following Table shows whether government intervention through borrowing more funds to finance electricity generation projects would have effects on the high electricity tariffs in future.

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	4	30.8	30.8	30.8
	Agree	4	30.8	30.8	61.5

	Neutral	3	23.1	23.1	84.6
	Disagree	2	15.4	15.4	100.0
	Total	13	100.0	100.0	

Table 4.5: Government interventions

Table 4.5 above indicates that 61 % of the respondents agreed that the government should be involved in electricity generation by ways of funding and promoting green projects. The government should also utilize its resources and borrow to finance electricity generation through green projects. Government involvement in clean energy projects through financing and promotion would increase the supply and reduce electricity tariffs in the long run.

4.3.2 Strategical planning and implementation

As indicated in Appendix C, the strategic implementation of key decisions will be a contributing factor to high electricity time-of-use tariffs. The results show a mean of 2.15 which represents 54% of the questionnaire responses.

This implies that poor planning, implementation and inadequate resources were contributing factors to the skyrocketing electricity tariffs in the country.

4.3.3 Leadership and accountability

In the long run, corruption, mismanagement and a lack of leadership and accountability at the electricity utilities will contribute to high electricity tariffs.

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	3	23.1	23.1	23.1
	Agree	8	61.5	61.5	84.6
	Neutral	1	7.7	7.7	92.3
	Strongly Disagree	1	7.7	7.7	100.0
	Total	13	100.0	100.0	

Table 4.6: Leadership and accountability

More than 80% of the respondents agreed that the behavior and conduct of management at electricity utilities could be contributing to high electricity tariffs.

4.3.4 Investment in green energy

The investment in green energy, as indicated in the Table below, shows whether government's lack of funding or investing in green energy generation could contribute significantly to high electricity tariffs.

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	5	38.5	38.5	38.5
	Agree	5	38.5	38.5	76.9
	Neutral	2	15.4	15.4	92.3
	Disagree	1	7.7	7.7	100.0
	Total	13	100.0	100.0	

Table 4.7: Investing in green energy

The lack of government funding and investing in green, generation-related, electricity projects contributed to the increase of electricity tariffs in the country.

4.3.5. Economic growth and political stability

The results (see Appendix C) regarding the political stability and economic growth in Namibia had effects on the electricity tariffs to the rate of 60 %. This means that political stability and economic growth could improve the generation and supply of electricity in the country which, in the end, would contribute to affordable and low electricity tariffs.

4.4 Impact of high electricity tariffs on the companies' day-to-day operations

This section of the study employed the financial performance and position reports, as well as approved electricity tariffs, from Oshakati Premier Electric as one of the three companies researched, due to the availability of these reports.

Different assumptions, such as financial ratios, changes over the years, revenue changes over the years and the cost of electricity, were made. The following ratios below were

chosen and calculated as per accounting methods. Financial ratios play an important role in the evaluation of companies' performance (Chen & Shimerda, 1981). Additionally (Barnes, 1987) indicated that the financial ratios were employed for many purposes, including the companies' performance; hence, the utilization of these ratios to determine the impact of tariffs on companies' performance. The high electricity tariffs caused decline in revenue and loss in the distribution companies in Ukraine (Honcharuk, Goncharuk, Horobets, Yatsyshyn, & Lahutina, 2020), and this could be the same scenario in Namibia, therefore, the need for this research.

Table 4.8. Indicates the two main key profitability ratios

	OPE
Net Profit Margin	
2017	6.3%
2018	5.3%
2019	6.7%
2020	5.7%
Gross Profit Margin	
2017	36%
2018	36%
2019	37%
2020	38%

Table 4.8: Profit margin

The two are the main common profitability ratios that determine a company's ability to generate profit against revenue, cost of sales and assets. As indicated in Table 4.8 above, the ratios show that the company utilized its assets to generate profit or tighten its expense control, leading to profitability.

Despite the average of a 10% increase, as stated in Chapter One, the OPE provided services at higher tariffs than its cost. Possible factors include past increases forwarded to customers, control expenses and robust tariff adjustment strategies, as well as effective and efficient management.

Gross profit can be defined as the metric analysis employed to assess the financial health of a company. A company's gross profit margin between 36% and 38% for four years indicates profitability despite high electricity tariffs as cost of sales over the same period. The company's revenue performance, based on the efficiency of its operations, was excellent, and it managed investors' wealth well by the sale of products. The company retained between N$0.36 and N$ 0.38 for each dollar generated to cover expenses.

Table 4.9 below shows the returns on capital employed, assets and equity

Return on capital employed	OPE
2017	10.5%
2018	8.5%
2019	11.1%
2020	7.8%
Return on asset	OPE
2017	6.0%
2018	5.2%
2019	6.3%
2020	4.8%
Return on equity	OPE
2017	9.3%
2018	7.8%

2019	10.0%
2020	7.5%

Table 4.9: Returns

The return on capital employed indicates that the OPE was doing well in generating between 8% and 11% profit from its available capital, thus creating wealth and growing the business.

Table 4.9 above, furthermore, shows that the company had been attracting a profit range of 4% to 6% for four years by utilizing both current and long-term assets. On the other hand, the company generated 10% and less over four years, indicating a good return on equity. The good return on equity was a relief to investors since investments were generating money.

The Table 4.10 below shows the behavior of cost of sales from year to year.

COST OF ELECTRICITY	OPE
2017	11.4%
2018	9.0%
2019	7.5%
2020	-5.7%

Table 4.10: OPE cost of sales

The cost of electricity, in this case, represents the cost of sales of the company, which is related to goods or services that it sells to its customers. The tariff charges and electricity consumption drive the cost of sales. There was a positive correlation between the cost of sales as shown in Table 4.10 and NAMPOWER tariff increases, as shown in Figure 1.2, Chapter One. The Oshakati Premier Electric (OPE) and other distributors bought electricity for reselling from NAMPOWER; hence, there were effects on their cost of sales by NAMPOWER tariffs.

Table 4.11 below indicates the way in which OPE profit changed over the four year period as a result of changes in electricity tariffs.

PROFIT CHANGES OVER THE YEARS	OPE
2017	12.5%
2018	8.6%
2019	10.5%
2020	-3.9%

Table 4.11: OPE Profit changes over years

There was a negative correlation between the profit and tariff charges (cost of sales) due to control over expenditure, consumption behavior, loss of supply and overall business management.

4.5 Inferential analysis

This section analyse the relationship between electricity tariffs and net profit margin, gross profit margin, return on equity and return on assets for both high and low season periods as from the 2017 to 2020 financial years. Pearson correlation methods was used and the result .The Oshakati Premier Electric audited financial statement was used to compute and interpretation of the ratios, as it was only financial provided out of three companies researched.

The relationship between electricity tariffs and net profit margin, gross profit margin, return on equity and return on assets was observed as indicate in Appendix E. The results show the P- value < 0.05 and negative r =correlation coefficient, which implies that there is insignificance between the variables.

4.6 The measures to mitigate the increases of electricity time-of-use tariffs

The following are measures (4.15 -4.18) that mitigate the increases electricity in Namibia tested under question eleven to question fifteen under appendix A.

4.15: Mitigate of high time-of-use tariffs

The following Table shows the mitigating factor or measures in place to minimize the increase in time-of-use tariffs.

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Agree	8	61.5	61.5	61.5
	Neutral	2	15.4	15.4	76.9
	Disagree	3	23.1	23.1	100.0
	Total	13	100.0	100.0	

Table 4.12: Mitigating factors

Of the respondents, 61.5 % agreed that, if the electricity tariffs were manipulated, they would increase electricity prices significantly.

4.16. Time- of use tariffs

Table 4.13 below indicates the way in which the time-of-use of tariffs contributed and improved economic competitiveness, social upliftment and investment growth in Namibia.

		Frequency	Per cent	Valid percent	Cumulative percent
Valid	Agree	6	46.2	46.2	46.2
	Neutral	3	23.1	23.1	69.2
	Disagree	4	30.8	30.8	100.0
	Total	13	100.0	100.0	

Table 4.13: Time of use Tariffs

The time-of-use electricity methods cannot neither improve the economy, contribute to the upliftment of the people nor improve the investment growth in the country.

4.17. Electricity consumption pattern

Table 4.14 indicates whether the organization save on electricity bills by studying and changing the electricity consumption pattern (consuming more units during off-peak instead of peak tariffs), considering the cost implication of shifting.

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	3	23.1	23.1	23.1
	Agree	9	69.2	69.2	92.3
	Neutral	1	7.7	7.7	100.0
	Total	13	100.0	100.0	

Table 4.14: Electricity consumption pattern

The understanding and study of electricity consumption will enable users to plan and implement measures to minimize high electricity bills, and this could lead to saving on electricity expenses.

4.18: Cost-reflective tariffs

Table 4.15 below indicates whether the tariffs component covered what customers paid for the services they used.

		Frequency	Per cent	Valid Percent	Cumulative Percent
Valid	Agree	5	38.5	38.5	38.5
	Neutral	6	46.2	46.2	84.6
	Disagree	2	15.4	15.4	100.0
	Total	13	100.0	100.0	

Table 4.15: Cost-reflective tariffs

As per the responses above, the cost-reflective tariffs were not necessarily affordable, reasonable or cost-reflective; most respondents neither agreed nor disagreed.

4.7 Summary

The study looked into the ways in which high electricity tariffs impacted the profitability of supply and distribution companies in Namibia. Both descriptive analysis, employing Cronbach's alpha Statically Package for the Social Science, and inferential analysis were utilized during testing and analysis. Profitabilty and owner ratios were also computed and interpreted. An anaysis of the above shows that high electrcity tariffs had a negative effect on electricty distribution and supply companies in Namibia.

Based on the findings presented in Chapter Four, conclusions will be discussed in Chapter Five.

Chapter 5 : FINDINGS AND CONCLUSIONS

5.1. Introduction

As explained in Chapter One, the objective of this study was to determine the impact of higher electricity tariffs on the profitability of electricity supply and distribution companies in Namibia. This chapter dwells on the analysis, findings and discussion of the data collected regarding the impact of electricity tariffs on companies' profitability in Namibia. The data were collected from three companies (NORED, CENORED and OPE) and thirty employees by means of emails, as well as information downloaded from the electricity control board's website.

This chapter, furthermore, provides conclusions based on the research findings from the data collected by means of questionnaires, financial statements and electricity tariffs. It concludes with a discussion of recommendations for future research.

Both primary and secondary data were collected from employees by means of structured questionnaires and emails. The data were analyzed and interpreted through descriptive statistics, such as means, frequencies, standard deviations and percentiles. The data were analyzed by employing inferential statistics.

The following research questions were presented and tested:

1. What are the perceptions of business leaders regarding the high electricity time-of-use tariffs?

2. What are the factors that contribute to the high electricity tariffs in Namibia?

3. What is the influence of electricity tariffs on the performance of companies?

4. How can the country mitigate the increases in electricity time-of-use tariffs in the future?

5.2 Summary of findings

- **The perceptions of business leaders on the high electricity TOU tariffs**

Business leaders felt strongly that the high electricity tariffs had negative effects on their company's day-to-day operations. The high electricity tariffs created pressure among business leaders, and it required proper pricing planning.

- **Factors that contributed to the high electricity time-of-use tariffs in Namibia**.

The lack of government investment in the electricity sector, including investing in green energy, contributed to high electricity tariffs.

A lack of planning, inadequate resources, mismanagement of resources, lack of accountability and corruption were also factors that contributed to high electricity tariffs.

Political instability and economic stagnation had negative effects on electricity tariffs.

- **The influence of electricity tariffs on the performance of electricity supply and distribution companies**

The electricity supply companies in Namibia were making a profit because they passed the increase of tariffs on to their customers due to the regulated tariffs. The electricity tariffs in Namibia were too high, not affordable and did not contribute to social upliftment and investment growth. There was no relationship between the electricity tariffs and different profitability and ownership ratios.

The empirical findings of this study are consistent with those in the study of Moseki (2019), which show that tariff increases had negative impacts on companies' performance (Moseki, 2019).

- **Mitigating measures for increases in electricity time-of-use tariffs in the future**

The poor control of the tariff application and approval process can lead to high electricity tariffs. The time-of-use tariffs will not necessarily reduce the effect of high electricity tariffs on companies in Namibia.

Studying and understanding electricity consumption can reduce the companies' electricity bills; however, it will not necessarily reduce the electricity tariffs.

The results indicated that cost-reflective tariffs may not necessarily mitigate the increases of the electricity tariffs. Additionally, there are challenges in reforming the electricity tariffs; this leads to responders doubting the cost-reflective tariff method.

5.3 Limitations of the research study

This study focused only on the ways in which high electricity tariffs impacted electricity supply and distribution companies in Namibia. Consequently, the analysis did not cover other companies in different sectors.

Furthermore, the study was limited to companies in those industries covering the northern and central northern parts of Namibia.

5.4 Practical implications of the study

High electricity tariffs will discourage business leaders to run their businesses, which will affect the economy of the country; subsequently, this could lead to high unemployment, poverty and a lack of resources in the government coffer. The supply and distribution companies' performance and their contribution to the country's economy will be minimal as they may run at a loss or at low profit.

In the context of determining and regulating the electricity tariffs in Namibia, the following were the main audience: the Namibia government, ECB, Distributors and Supply electricity companies and academics as they comprised the targeted audience when it came to this study. In the light of this, the following strategies could assist the entire electricity industry to facilitate, control and regulate electricity tariffs:

1. Promote enough funding for research on electricity tariffs projects.
2. Select an electricity expert committee that will be able to advise all the stakeholders.
3. Encourage the political will to enable politicians to take part in electricity tariff related activities.

5.5 Recommendations

The study recommends that the government of Namibia, in conjunction with the Electricity Control Board of Namibia, implement clear programs and policies on green renewables and bring in the private sector by promoting competitive and cost-reflective tariffs in the electricity industry.

Additionally, the electricity sectors should promote the use of different sources of electricity, such as solar, wind and hydrogen, which would help to minimize high electricity tariffs in the country.

The government of Namibia should invest more in generation, supply and distribution of electricity in order to reduce electricity importation, consequently, reducing electricity prices in future.

5.6 Future research

Overall, the influence of high electricity tariffs on the profitability of supply and distribution companies in Namibia has not been sufficient to substantiate the changes in the operations of these entities; hence, there is a need for future research to investigate the effects of high electricity tariffs on the electricity end-users and various other business sectors.

5.7 Electricity supply stakeholders

The players involved in the supply and distribution of electricity should consider different sources of electricity supply, especially renewable energy sources, to support the supply and demand initiative. The supply and demand may increase the players in the electricity industry which may lead to a reduction in electricity tariffs from year to year.

5.8 Summary

From the results of this study, the followings conclusions were drawn:

High electricity tariffs have negative effects on companies' operations, which puts pressure on the business community. There are factors that contribute to the high electricity tariffs in Namibia, such as a lack of government investment in the sector, non-adherence to corporate governance, inadequate resources, political instability and slow economic growth. The companies' performance will be affected negatively by the high electricity tariffs, resulting in a decline of their revenue and profit.

There are some interventions to mitigate the increase of electricity tariffs in Namibia, such as the proper tariffs set up process and control, an electricity consumption pattern study and understanding.

The distribution and supply of electricity are important pillars of the Namibian economy in terms of supporting production and services. Additionally, the annual electricity tariffs adjustment in Namibia hampers economic growth and has a negative impact on the electricity utilized by companies.

Although the study was limited to three electricity distribution and supply companies in Namibia, it can serve as a model for wider testing in the country and on a continental level. The research can establish the relationship between electricity tariffs and performance in other companies in Namibia, as well as in the African continent. Moreover, it enables the electricity regulator to design clear and relevant policies regarding electricity tariffs that control the industry. In addition, the regulator will be able to approve cost-reflective tariffs that would ensure efficiency and affordable electricity tariffs in Namibia.

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APPENDIX A
Section A: Demographic Information

1. What is the name of the company represent?

……

2. Where the company is located (the fourteen regions)?

….....

3. What is the participant's gender?"

Male

Female

4. What is the level of education that participant has completed?"

High School

Trade Certificate

Bachelor’s Degree

Master’s Degree

Ph. Degree

5. In which categories company fall?

Mining

REDS

Others

Section B: The perceptions of business leaders on the high electricity time of use tariffs

1. The increases in electricity tariffs have adverse effects on the total costexpenses and the entire operations of the company.

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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2. The high tariff rate creates tensions among the electricity industrystakeholders.

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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3. There are advantages of increasing tariffs with minimal percentages yearly.

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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4. Historical of both pricing and planning of Namibian Power Corporation are the contributions of the main factors of the high time of use of electricity tariffs in Namibia?

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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5. The poor quality of power supply can contribute to the high electricity tariffs.

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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Section C: The factors that contribute to the high electricity time of use tariffs

6. Currently, the Namibia government has a budget deficit of about 5%. Can the government borrow more to finance the electricity generation green projects and incurborrowing costs to improve the future?

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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7. The lack of strategical planning, implementation, and availability of resourcesare the contributors' factors to the high electricity time of use tariffs.

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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8. Corruption, mismanagement, and lack of leadership and accountability at theelectricity utilities will contribute to high electricity tariffs in the long run.

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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9. The government's lack of funding or investing in the green energy generation inthe country could have a significant contribution to the high electricity.

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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10. Economic growth and political stability can lead to economic growth, includingelectricity generations and supply.

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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Section D: Measures that can mitigate the increases in electricity time of use tariffs

11. The manipulated the electricity tariff formula for the advantages of generationcompany leads to high tariff pricing.

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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12. The government's lack of funding or investing in the green energy generationin the country could have a significant contribution to the high electricity tariffs.

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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13. Time of use of electricity tariffs can improve economic competitiveness, socialupliftment, and investment growth in Namibia?

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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14. Can the organization save on electricity bills by studying and changing the electricity consumption pattern (consuming more units on off-peak instead of peak tariffs), considering the cost implication of shifting?

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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15. Time of use tariffs are reasonable, affordable, and cost-reflective (customerspay the full cost of goods that they consume).

1. Strong agreed	2. Agreed	3. Neutral	4.Disagreed	5. Strong Disagreed

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APPENDIX B

Descriptive statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
The increases in electricity tariffs have adverse effects on the total cost expenses and the entire operations of the company	13	1	3	1.69	.855
The high tariff rate creates tension among the electricity industry stakeholders.	13	1	4	2.38	.870
There are advantages in increasing tariffs with minimal percentages annually.	13	1	4	2.08	.760
Historically, both pricing and planning of Namibian Power Corporation are the main factors of the high time-of-use electricity tariffs in Namibia.	13	1	4	2.62	.961
The poor quality of power supply can contribute to high electricity tariffs.	13	1	4	2.77	1.013
Valid N (listwise)	13				

APPENDIX C

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Currently, the Namibia government has a budget deficit of about 5%. Can the government borrow more to finance electricity generation through green projects and incur borrowing costs to improve the future?	13	1	4	2.23	1.092
The lack of strategical planning, implementation and availability of resources are contributing factors to high electricity time-of-use tariffs.	13	1	4	2.15	.801
In the long run, corruption, mismanagement and a lack of leadership and accountability at the electricity utilities will contribute to high electricity tariffs.	13	1	5	2.08	1.038
The government's lack of funding or investing in green energy generation in the country could contribute significantly to high electricity tariffs.	13	1	4	1.92	.954

Economic growth and political stability can lead to economic growth, including electricity generation and supply.	13	1	4	2.15	.801
Valid N (listwise)	13				

APPENDIX D

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
The manipulated electricity tariff formula for the advantages of the generation company leads to high tariff pricing.	13	2	4	2.62	.870
The government's lack of funding or investing in green energy generation in the country could contribute significantly to the high electricity tariffs.	13	1	4	2.31	.751
Time-of-use of electricity tariffs can improve economic competitiveness, social upliftment and investment growth in Namibia.	13	2	4	2.85	.899
Can the organization save on electricity bills by studying and changing the electricity consumption pattern (consuming more units on off-peak instead of peak tariffs), considering the cost implication of shifting?	13	1	3	1.85	.555
Time-of-use tariffs are reasonable, affordable and cost-reflective (customers pay the total cost of goods that they consume).	13	2	4	2.77	.725

Valid N (listwise)	13				

APPENDIX E

OSHAKATI PREMIER ELECTRIC (OPE) PEARSON CORRELATION BETWEEN TARIFFS AND PROFITABILITY RATIOS

High Season					Low Season				
	Net Profit Margin	Tariffs				Net Profit Margin	Tariffs		
		Peak	Standard	Off-Peak			Peak	Standard	Off-Peak
2017	0.063	1.87000	1.59000	1.17000	2017	0.063	2.77000	1.85000	1.40000
2018	0.053	2.89000	1.93000	1.45000	2018	0.053	1.94000	1.65000	1.94000
2019	0.067	3.06000	2.05000	1.55000	2019	0.067	2.06000	1.75000	2.06000
2020	0.057	3.00000	2.04000	1.56000	2020	0.057	2.05000	1.75000	2.05000
Coefficient, (r) :		- 0.21018	-0.126975	- 0.13850	Coefficient, (r) :		0.42257	0.65653	- 0.19005
N:		4	4	4	N:		4	4	4
T statistic:		-0.304032	-0.181034	-0.197774	T statistic:		0.6593645	1.2309149	-0.273759
DF:		2	2	2	DF:		2	2	2
P value(α):		0.7898194	0.8730255	0.8615003	P value(α):		0.5774313	0.3434678	0.8099513

High Season				
	Gross Profit Margin	Tariffs		
		Peak	Standard	Off-Peak
2017	0.359	1.87000	1.59000	1.17000
2018	0.356	2.89000	1.93000	1.45000
2019	0.373	3.06000	2.05000	1.55000
2020	0.385	3.00000	2.04000	1.56000
Coefficient, (r) :		0.53574	0.6420388	0.67104
N:		4	4	4
T statistic:		0.8972774	1.1843133	1.279957
DF:		2	2	2
P value(α):		0.4642625	0.3579612	0.3289626

Low Season				
	Gross Profit Margin	Tariffs		
		Peak	Standard	Off-Peak
2017	0.359	2.77000	1.85000	1.40000
2018	0.356	1.94000	1.65000	1.94000
2019	0.373	2.06000	1.75000	2.06000
2020	0.385	2.05000	1.75000	2.05000
Coefficient, (r) :		-0.34412	0.09139	0.58850
N:		4	4	4
T statistic:		-0.518315	0.1297923	1.0294061
DF:		2	2	2
P value(α):		0.6558801	0.9086071	0.4114966

High Season				
	Return on equity	Tariffs		
		Peak	Standard	Off-Peak
2017	0.093	1.87000	1.59000	1.17000
2018	0.078	2.89000	1.93000	1.45000
2019	0.1	3.06000	2.05000	1.55000
2020	0.075	3.00000	2.04000	1.56000
Coefficient, (r) :		-0.27820	-0.240155	-0.26586
N:		4	4	4
T statistic:		-0.409605	-0.349869	-0.390017
DF:		2	2	2
P value(α):		0.721799	0.759845	0.734141

Low Season				
	Return on equity	Tariffs		
		Peak	Standard	Off-Peak
2017	0.093	2.77000	1.85000	1.40000
2018	0.078	1.94000	1.65000	1.94000
2019	0.1	2.06000	1.75000	2.06000
2020	0.075	2.05000	1.75000	2.05000
Coefficient, (r) :		0.42116	0.512092	-0.28089
N:		4	4	4
T statistic:		0.656686	0.843149	-0.413908
DF:		2	2	2
P value(α):		0.578843	0.487908	0.719107

High Season				
	Return on Asset	Tariffs		
		Peak	Standard	Off-Peak
2017	0.06	1.87000	1.59000	1.17000
2018	0.052	2.89000	1.93000	1.45000
2019	0.063	3.06000	2.05000	1.55000
2020	0.048	3.00000	2.04000	1.56000
Coefficient, (r) :		-0.33825	-0.318158	-0.34755
N:		4	4	4
T statistic:		-0.508318	-0.474604	-0.524193
DF:		2	2	2
P value(α):		0.6617512	0.6818424	0.6524467

Low Season				
	Return on Asset	Tariffs		
		Peak	Standard	Off-Peak
2017	0.06	2.77000	1.85000	1.40000
2018	0.052	1.94000	1.65000	1.94000
2019	0.063	2.06000	1.75000	2.06000
2020	0.048	2.05000	1.75000	2.05000
Coefficient, (r) :		0.44700	0.4701817	-0.34908
N:		4	4	4
T statistic:		0.7066939	0.7534106	-0.526807
DF:		2	2	2
P value(α):		0.5529953	0.5298183	0.650924

High Season				
	Return on Capital Employed	Tariffs		
		Peak	Standard	Off-Peak
2017	0.105	1.87000	1.59000	1.17000
2018	0.085	2.89000	1.93000	1.45000
2019	0.111	3.06000	2.05000	1.55000
2020	0.078	3.00000	2.04000	1.56000
Coefficient, (r) :		- 0.35951	-0.331868	- 0.35907
N:		4	4	4
T statistic:		-0.544857	-0.49753	-0.54409
DF:		2	2	2
P value(α):		0.6404871	0.6681319	0.6409278

Low Season				
	Return on Capital Employed	Tariffs		
		Peak	Standard	Off-Peak
2017	0.105	2.77000	1.85000	1.40000
2018	0.085	1.94000	1.65000	1.94000
2019	0.111	2.06000	1.75000	2.06000
2020	0.078	2.05000	1.75000	2.05000
Coefficient, (r) :		0.47891	0.5182147	- 0.36675
N:		4	4	4
T statistic:		0.771513	0.8569024	-0.557504
DF:		2	2	2
P value(α):		0.5210886	0.4817853	0.6332539

APPENDIX F

Ethical and Company approvals

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

21 February 2021

Mnr Wilhelm Shihepo (220082184)
School Of Acc Economics & Fin
Westville Campus

Dear Mnr Shihepo,

Protocol reference number: HSSREC/00002442/2021
Project title: The impact of higher electricity tariffs on companies' profitability in Namibia
Degree: Masters

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 09 December 2020 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 21 February 2022.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,

[redacted]

Professor Dipane Hlalele (Chair)

/dd

Oshakati Premier Electric
Erf 3175 Oshakati East, Box 1594, Oshakati, Namibia, Tel +264-65-220 229, Fax +264-65-222 688, Website: www.ope.com.na

Your Ref: Oshakati Premier Electric (Pty) Ltd *Enquiries: B Sheehama*

Our Ref: Mr W. Shihepo *Date: 27 January 2021*

Mr Wilhelm Shihepo
UNIVERSITY OF KWAZULU NATAL
E-mail: 220082184@stu.ukzn.ac.za
C: 0811484378

Dear Mr W Shihepo

PERMISSION FOR CONDUCTING RESEARCH AT OSHAKATI PREMIER ELECTRIC

Your letter dated 18 November 2020, refers

We are pleased to inform you that Oshakati Premier Electric hereby grant you permission in respect of your research information towards your Master of Accountancy at the University of Kwazulu Natal.

Your research title "***The impact of higher electricity tariffs on companies' profitability in Namibia***" is very important to OPE and the Industry. We are thus looking forward to the findings.

For further information please do not hesitate to contact Mr. Bennodictus Sheehama at 0812800016 or e-mail at bsheehama@ope.com.na

We wish you all the best in your project.

Yours Sincerely

[redacted]

CHIEF EXECUTIVE OFFICER

P. O. Box 560,
Otjiwarongo,
Namibia.

Tel: 067 314 100
Fax: 067 304 701
E-mail: Info@cenored.com.na

3 March 2021

Wilhelm Shihepo
University of Kwazulu Natal
220082184

Dear Mr. Shihepo

Re: Permission to do research at CENORED (PTY) Ltd.

This serves as acknowledgement of your letter date 18 November 2020, requesting permission to use CENORED's tariff information as a case study for your Master of Accountancy.

Permission is hereby granted in line with your request and we look forward to assisting you in whatever manner possible in your quest to complete your studies. In return, you must grant CENORED access to your report when it is finalised so that we can study your recommendations and build on to better improve our processes.

I trust that you will find this in order

[redacted]

CENOR... LTD
Human Reso... ...rtment
2021 -03- 04
P.O. BOX 580
OTJIWARONGO

Ekonia Mudjanima
EXECUTIVE MANAGER: CORPORATE SERVICES

NORED ELECTRICITY (PTY) LTD | P.O. BOX 639 | ONDANGWA | NAMIBIA | TEL: +264 83 282 2100 | FAX: +264 83 282 901
24 HOURS CUSTOMER REPORTING CENTRE TEL: +264 83 282 2123 | TOLL FREE: 08000 00100 | www.nored.com.na

23 March 2021

Enq: Mr C. Aimwata
Tel: 083-2822107

Mr. Wilhelm Shihepo
E-mail: 220082184@stu.ukzn.ac.za

Dear Mr. Shihepo,

RESEARCH ACCESS PERMISSION LETTER

Reference is your e-mail on the above subject.

NORED Electricity (Pty) Ltd, hereby grants you a permission to research with regards to high electricity tariffs on companies' profitability in Namibia.

As one of the electricity distributors in Namibia, NORED Electricity was the first Regional Electricity Distributor in Southern Africa. In this regard, we have assigned Mr. Christoph Aimwata, NORED's Executive Manager: Business Strategy, to be your contact person for that exercise.

Kindly contact him at the above contact number, to set up meetings and all that you may require during your journey.

We wish you the best in all your future endeavours.

[redacted]
FILLEMON NAKASHOLE
CHIEF EXECUTIVE OFFICER

NORED ELECTRICITY (PTY) LTD
OFFICE OF THE
CHIEF EXECUTIVE OFFICER
2021 -03- 23
P.O. Box 639, Ondangwa
Tel: 083 282 2101
Fax: 083 282 2901