Privatisation of ZESCO Limited: In search of an appropriate method

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DEDICATION

I dedicate this thesis to

God almighty

My Aunt, Brendah Malisase

My Grandmother, Rosa Musale

You have all been so supportive in my life and this wonderful academic journey

DECLARATION

I, **Royd Malisase** declare herewith that this thesis entitled: **Privatisation of ZESCO Limited: In search of an appropriate method**, has not been submitted for any degree or examination at any other university, and that the sources I have used have been fully acknowledged by complete references. This thesis is submitted as a requirement in fulfilment of the Doctor of Philosophy in Public Management and Governance at North West University, Vaal Triangle Campus, Republic of South Africa.

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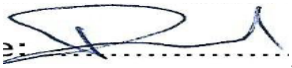
Signature of candidate:  _____

Student Number: **31375499**

Signed at Lusaka this 22nd day of October 2020

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ABSTRACT

Electricity is essential because nearly all sectors of an economy such as manufacturing, mining, construction and service provision use machinery and equipment powered by electricity. Insufficient electricity supply negatively affects countries striving to industrialise. Governments thus, endeavour to ensure that electricity utilities perform adequately. The current view is that electricity utilities perform well under private ownership and/or control. Nevertheless, there is lack of agreement on the best model for privatising electricity utilities. Therefore, the study's main objective was to develop the best model for privatising ZESCO Limited in order to improve its performance. The study relied on the Contingency Theory, which posits that the best model for privatising an enterprise is one, which takes into account a variety of internal and external environmental factors affecting its operations.

The study was a descriptive mixed methods research combining both qualitative and quantitative designs. The study employed both case study and survey strategies. The study was conducted in Lusaka District. It employed a sample size of 816 respondents consisting 16 purposively selected informants comprised of officials from ZESCO, ERB and other relevant government institutions. Simple randomly sampled respondents comprised of 500 managers/owners of businesses and 300 managers/owners of organisations that represented domestic electricity consumers. Data was collected from published literature, interview guides and questionnaires. Quantitative and qualitative data were analysed using SPSS and thematic analysis, respectively.

Findings revealed that ZESCO's performance was poor across all performance indicators. It was discovered that ZESCO's performance would improve if it were privatised. In addition, competitive concession is the best model for divesting ZESCO. ZESCO should be vertically and horizontally unbundled into separate generation, transmission and distribution units. Control of each unit should then be transferred to different firms on competitive basis. The model promoted competition while allowing the government to retake control in case of failed performance.

The study recommends improving ZDA's autonomy to enable it undertake privatisation without political interference. The study also recommends improving ERB's independence by allowing it to regulate the energy industry without political pressure. Sources of electricity should be diversified, improve incentives for rural electrification and tariffs should be cost reflective.

Keywords: Privatisation Model, Electricity Supply, Performance, ZESCO Limited, Zambia

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LIST OF ACRONYMS

AVE	Average Variance Extracted
BIS	Business Information System
BPA	Bulk Purchase Agreement
CAIDI	Customer Average Interruption Duration Index
CEC	Copperbelt Energy Corporation
CIE	Ivorian Electricity Company
CPC	Copperbelt Power Company
DRC	Democratic Republic of Congo
ENEO	Energy of Cameroon
ERB	Energy Regulation Board
FINDECO	Financial Development Corporation
GDP	Gross Domestic Product
IDC	Industrial Development Corporation
IMF	International Monetary Fund
INDECO	Zambia Industrial Development Corporation
IPP	Independent Power Producer
ITPC	Itezhi Tezhi Power Corporation Limited
KCM	Konkola Copper Mines
KPI	Key Performance Indicators
LHPC	Lunsemfwa Hydro Power Company Limited

MCL	Maamba Collieries Limited
MEBO	Management-Employee Buy-Out
MINDECO	Mining Development Corporation
MMD	Multiparty for Democracy and Development
NECL	Ndola Energy Company Limited
NHDC	National Hotels Development Corporation
NIEC	National Imports and Export Corporation
NPM	New Public Management
NWEC	Ndola Energy Company Limited
NWEC	North Western Energy Corporation Limited
NWU	North West University
OPPPI	Office for the Promotion of Private Power Investors
PACRA	Patents and Companies Registration Authority
PF	Patriotic Front
PSDMP	Power Systems Development Master Plan
REA	Rural Electrification Authority
REMP	Rural Electrification Master Plan
SAIDI	System Average Interruption Duration Index
SAPP	Southern Africa Power Pool
SEEG	Société d'Electricité et d'Eaux du Gabon
SOE	State Owned Enterprise

SONEL	Société Nationale d'Electricité
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
UNIP	United National Independence Party
ZCCM	Zambia Consolidated Copper Mines
ZCCM-IH	ZCCM Investments Holdings Plc
ZDA	Zambia Development Agency
ZEMA	Zambia Environmental Management Agency
ZIMCO	Zambia Industrial and Mining Corporation Limited
ZPA	Zambia Privatisation Agency
ZPL	Zengamina Power Limited

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1. Introduction

One strategy used by governments to promote development in their countries, to improve the living conditions of the citizens, is improving the economic contributions of enterprises (Todaro and Smith, 2015). Enterprises are important to the success of an economy as they create employment, which, in turn, enables people to earn an income necessary to meet their basic needs. Enterprises also support the production and delivery of quality and adequate goods and services (Todaro and Smith, 2015). They also help in the development of key infrastructure such as roads, schools and hospitals. Furthermore, they generate revenue for the government through the payment of taxes, royalties and other fees. Enterprises also enable access to latest technology leading to efficient production in the economy (Todaro and Smith, 2015).

However, it is crucial that these enterprises perform if they are to contribute to economic growth and development of a country. While many factors can be cited as influencing the level of performance of enterprises, ownership has garnered a lot of attention. Previously, enterprises were perceived to perform best when owned by government [see Marx [1891] (1999); Bebchuk (1999: 32); Lülfesmann (2002); Cavaliere and Scabrosetti (2008) and Carter (2013: 114)]. However, from the 1980s onwards, the dominant view was that improvement in enterprise performance is best achieved through private ownership [see Boycko, Shleifer and Vishny (1996); Estrin, Hanousek, Kocenda, and Svejnar (2009); Zahra (1996) and Abioye 2016)]. This has resulted in a number of enterprises being privatised in different countries across the globe.

Modern privatisation can be traced to Great Britain's much publicised privatisation of the steel industry in the 1950s and Socialist West Germany's in the early 1960s (Parker and Saal, 2005). However, privatisation gained global dominance as a result of Thatcherism and Reaganomics in the 1980s (Osborne, 2013). Buoyed by the dominance of capitalism, the two economic models, through the World Bank and International Monetary Fund (IMF), fostered privatisation in former socialist countries of Eastern and Central Europe, South America, Africa and Asia (Osborne, 2013). Between 1977 and 1997, about 1,850 State Owned Enterprises (SOEs) were privatised

worldwide (Munari and Sobrero, 2002). In 1988, global privatisation revenue totals were $39.0 billion, increasing to $266.4 billion in 2015 and $319.9 billion in 2016 (Megginson, 2017: 9). Thousands more unites are expected to be privatised in future (Megginson, 2017: 23).

According to Abioye (2016), African countries adopted privatisation mainly because of conditions attached to loans from the World Bank. Nigeria began privatising in 1985, followed by a host of other African countries (Abioye, 2016). As a precondition for further World Bank funding, the Zambian government began privatising SOEs in 1992. By 2010, 265 units were privatised (ZDA, 2010). The government has retained ownership of 30 key enterprises (Republic of Zambia, 2018: 9). However, most of these SOEs have continued to perform poorly leading to the conclusion that they too need to be privatised. Nevertheless, for the privatisation process to lead to successful performance, each public enterprise should be privatised using an appropriate method (model). The study is, therefore, aimed at establishing the best model for the successful privatisation of ZESCO Limited. This chapter covers the background of the study, problem statement, research questions and objectives of the study. The chapter also provides the hypotheses and central theoretical statement. Further, a brief chapter outline of the thesis is discussed in the chapter.

1.2. Background

A State Owned Enterprise (SOE) is a for profit commercial inclined legal entity that is controlled and partially or wholly owned by the government, at central/federal, state or local level (Republic of Zambia, 1996: 3, World Bank, 2000 and OECD, 2009). At independence, in 1964, Zambia only had 14 SOEs, accounting for only 14% of the economy. The rest were in the hands of foreign private companies (Fundanga and Mwaba, 1997: 5). However, it was realised that when Zambia experienced economic boom and growth between 1965 and 1968, the financial benefits and profits accrued to the foreign owned enterprises that did not reinvest into the development of the country (McGrath and Whiteside, 1989: 169). The private enterprises were concentrated in urban areas of a few provinces (Fundanga and Mwaba, 1997: 5). There was need to develop local human resources through the process of Zambianisation as most parastatals had no single Zambian occupying management position (Kaunga, 1993: 374). Foreign ownership of key enterprises restricted government's ability to direct policies aimed at developing the country.

As such, SOEs were expected to restore economic power to the government thus, enabling it to dictate the pace and direction of economic development (Kaunga, 1993: 374).

To reconfigure the economy, the Zambian Government instituted the Mulungushi Reforms in 1968 (Saasa, 1996: 5). The Matero Reforms, announced in 1969, set the stage for the nationalisation of mining companies. By 1991, Zambia had 288 SOEs (United Nations, 2011: 9) accounting for 80% share of economic activities (Madimutsa and Pretorius, 2017). To improve coordination, the majority of SOEs were supervised by the state holding company, *Zambia Industrial and Mining Corporation Limited (ZIMCO)* (Banerji, Zimmerman and Mwinga, 1996). *Zambia Industrial and Mining Corporation Limited* was further divided into *Zambia Industrial Development Corporation (INDECO)* in charge of industrial/manufacturing sector, *National Hotels Development Corporation* in charge of tourism, *Financial Development Corporation (FINDECO)* in charge of financial institutions, *Mining Development Corporation (MINDECO)* in charge of mining activities, supported by the *Consolidated Copper Mines (ZCCM)*, and *National Imports and Export Corporation (NIEC)* overseeing the trading sector (Kaunga, 1993: 372).

However, SOEs failed to perform as expected (Rakner, 2003: 79). Between 1966 and 1970, when the economy was dominated by private enterprises, Zambia's Gross Domestic Product (GDP) grew at 11.4%; the highest in history (Central Statistical Office, 1972). However, from 1975, when SOEs dominated the economy, the country's GDP growth rate regressed reaching a record as low as -8.6 by the early 1990s (Rakner, 2003: 79). Among the main reasons for this decline since establishment are that, SOEs were inefficient making them financially unviable and costing the taxpayers colossal sums in bailouts (Fundanga and Mwaba, 1997: 6). For instance, in 1988, the government spent over K3.5 billion bailing out loss making SOEs compared to just K39 million spent in 1965, when the majority of enterprises where in private hands (Fundanga and Mwaba, 1997: 6). State Owned Enterprises also lacked competitiveness as most sectors were dominated by monopolies. Additionally, the SOEs also produced inadequate and poor quality products and services (Larmer, 2010: 39). Labour utilisation in SOEs was very low as most SOEs employed surplus workers as a way of rewarding political supporters and freedom fighters (Chigunta, Chisanga and Masiye, 1998).

To address the poor performance of SOEs, since establishment, the government regularly re-organised them in one way or another. For instance, in 1970, ZIMCO was added as a second holding company to relieve pressure on INDECO (Kaunga, 1993: 379). In addition, SOEs were transferred from the Ministry of State Participation to various appropriate line ministries. In 1979, political control was diluted by de-involving cabinet ministers and instead creating an Executive Directorate to run the affairs of ZIMCO (Kaunga, 1993: 380). In late 1982, control of prices for the products and services of SOEs were removed and in 1988, SOEs were required to adopt business practices (Fundanga and Mwaba, 1997: 7). In 1990 the economy was liberalised. Furthermore, a Utilities Secretariat was established to oversee and regulate the operations of public utilities (Kaunga, 1993: 381). Despite all these reforming efforts, spanning over two decades, the performance of SOEs failed to improve (Chipwende, 2001: 35).

To overcome the performance failures of SOEs and their negative effect on development, the Zambian Government, like most developing countries, borrowed colossal sums of money from the IMF and World Bank, which it failed to pay back (Saasa, 1996: 4). The IMF and World Bank commanded the country to privatise all SOEs as one of the precondition for further funding (Fundanga and Mwaba, 1997). Proponents like the World Bank and IMF argued that privatisation would improve the performance of these enterprises [see Banerji et al., 1996); Fundanga and Mwaba (1997); Serlemitsos and Fusco (2003); Megginson (2005); Fraser and Lungu (2007); Abioye (2016) and Madimutsa (2016)].

To guide the privatisation process, the Government, in 1992, enacted Privatisation Act No. 21 under Chapter 386 of the laws of Zambia, which was amended by Act No. 13 of 1994, itself amended by Act No. 9 of 1996 (Republic of Zambia, 1996). The Act established the Zambia Privatisation Agency with a Board tasked with the responsibility of carrying out the privatisation process (Republic of Zambia, 1996: 5). By 1992, all SOEs were put up for privatisation (Saasa, 1996: 19). In 2006, the 1996 Privatisation Act was repealed and replaced with the Zambia Development Agency Act (Republic of Zambia, 2006: 38). The repeal replaced the Zambia Privatisation Agency with the Zambia Development Agency (ZDA), tasked with creating an economic environment conducive for a private sector driven economy (Republic of Zambia, 2006: 5). By 2010, a total of 265 units were privatised from working portfolio of 288 (United Nations, 2011: 9 and ZDA, 2010). Only 41 SOEs remained in 2013 (Balbuena, 2014: 47) before

reducing to 30 in 2018 (Republic of Zambia, 2018).

Zambia's first power station, a thermal plant, was built in *Livingstone* in 1906 (Kapika and Eberhard, 2013: 131). Subsequently, a number of standalone thermal plants were installed on the *Copperbelt*. Beginning in 1925, focus shifted to hydro, with the first 2 MW hydro powered plant being installed at *Mulungushi Power Station.* Two 6 MW generators were added to the station in 1927 (Kapika and Eberhard, 2013: 132). A second hydro station was installed in 1938 at a gorge below the *Victoria Falls*. A further 6 MW generator was installed at *Mulungushi* in 1941. *Lunsemfwa Power Station*, with two generators rated at 6 MW each, was commissioned in 1945 (Kapika and Eberhard, 2013: 132). In the early 1950s, interconnected grid supply was initiated through the connection of four power stations on the *Copperbelt*. In 1956, a second transmission line was laid from *Katanga* (in the then *Belgian Congo*) to *Kitwe* on the *Copperbelt*. The line enabled importation of power to meet the increased demand from the mines on the *Copperbelt*. The line (and distributing infrastructure) was operated by the *Rhodesia Congo Border Power Company*, renamed *Copperbelt Power Company* (*CPC*) in 1966 (CEC, 2019). The government of the *Federation of Rhodesia and Nyasaland* then decided to construct a dam on the *Zambezi River* at *Kariba* gorge, straddling *Northern* and *Southern Rhodesia.* The dam created a reservoir for construction of power plants. These included the 666 MW *Kariba South Bank* power station commissioned in 1962 and operated by *Central African Power Corporation* (Jarosz, 1992).

According to ECFA (2006: 4-C-1) at independence, in 1964, Zambia's electricity production and supply was dominated by three companies. These were: *Victoria Falls Electricity Board*, established in 1951, and supplied electricity to the southern parts of the country; *Central Electricity Corporation Limited*, established in 1953, and supplied electricity to *Lusaka* and surrounding areas; and *Northern Electricity Corporation Limited*, established in 1960, and supplied electricity to mining companies and consumers on the Copperbelt. However, in 1970, the three enterprises were consolidated into one; The *Zambia Electricity Supply Corporation* (ZESCO Limited), a parastatal created through the *Zambia Electricity Supply Act of 1970* (Kbaki, 2009: 7). The *Electricity Supply Act* also established ZESCO Limited as the sole supplier of electricity in Zambia. However, in 1995, the Act was repealed paving the way for the private sector to participate in the electricity industry (Republic of Zambia, 1995). In reality, ZESCO Limited retained dominance in Generation (78.7%), Transmission (91.3%) and Distribution

(99.5%) (ERB, 2020a: 2 and 9). In addition, it is the sole off-taker for all generated power as well as the sole operator of the country's transmission network (Phiri and Ziba, 2018: 17). As such, all private generators and distributors buy or sell their electricity to the firm, respectively. ZESCO Limited is, therefore, critical to Zambia's electricity needs and development at large.

Despite the critical role ZESCO Limited plays in Zambia's electricity needs and development, from its inception to the early 1990s, the company had serious operational and management challenges (Bureau of Economic and Business Affairs, 2018). This led to calls to have it privatised if it was to effectively generate, transmit and distribute electricity. In response, in 1992, all SOEs, including the then *Zambia Electricity Supply Corporation*, were put up for privatisation (Saasa, 1996: 19). However, rather than privatising it, the government decided to reform the company. Firstly, the government formulated the *National Energy Policy* in 1994. The Policy called for the company to take advantage of the country's electricity generating potential (ERB, 2015: 4). In 1994, the company formally changed its name from *Zambia Electricity Supply Corporation Limited* to ZESCO Limited (from now on referred to as ZESCO) as part of the reform process aimed at improving customer service (ZESCO Limited, 2018: 22). In 1995, the *Energy Regulation Board* (ERB) was created as an independent regulator of the energy industry (Republic of Zambia, 1995: 4). In 1996, ZESCO's management signed a Performance Contract with government in which its performance would be assessed using eight Key Performance Indicators (KPI): Metering customers; Cash management; Staff productivity; Quality of service supply, System losses; Power generation; Safety; and Customer complaints (ERB, 2017: 10). In 2003, ZESCO was corporatised and commercialised so as to allow it to operate with the characteristics of a private business (Republic of Zambia, 2016: 3). A modern Business Information System (BIS), aimed at improving the efficiency of ZESCO's internal operations and decision-making, was established and implemented in 2006(World Bank, 2006: 4). The reforms failed to improve the company's performance (Republic of Zambia, 2016: 3).

In response, the government announced its intention to privatise the company in the proposed 2017 National Budget (Mutati, 2016: 15). Resistance to ZESCO's intention from some sections of society resulted in the government scraping ZESCO's privatisation from the final budget (Nyati, 2016 and Lusaka Times, 2016). According to the Republic of Zambia (2016: 5), a 2016 Report of the Committee on Economic Affairs, Energy and Labour for the Fourth Session of the

Eleventh National Assembly found a number of reasons for the Zambian Government's reluctance to privatise ZESCO. Firstly, the government feared that private owners would implement cost reflective tariffs, which most Zambians, because of high poverty levels, would not afford. Secondly, with ZESCO having thousands of employees, it was feared that failed privatisation would result in more job losses at a time when poverty was rife. Thirdly, with energy, and electricity in particular, being important to economic growth, development and poverty reduction, there was concern that failed privatisation of ZESCO would be catastrophic. Additionally, due to their desire for profit maximisation, new private owners of ZESCO would roll back the progress made towards rural electrification (Republic of Zambia, 2016: 5).

Nevertheless, the Committee noted that if a method (model) which avoided the above mentioned pitfalls was to be found, the Zambian government could be persuaded to divest ZESCO (Republic of Zambia, 2016: 5). Therefore, the purpose of this study was to identify, through thorough research on privatisation, the best model for use in possible privatisation of ZESCO in order to improve its performance. This was done by suggesting a model guided by the contingency theory. The model was to be build based on a variety of pertinent factors.

1.3. Problem Statement

All the reforms undertaken to improve ZESCO's performance as an SOE failed (Republic of Zambia, 2016: 3). According to the latest *Energy Sector Report* from the ERB, ZESCO had not made any major investments to repair and maintain its systems for supplying power. As a result, the company's equipment had deteriorated while the system was unreliable (ERB, 2020b). ZESCO had annual transmission losses of 5% compared to 2.1% for the *Copperbelt Energy Corporation* (ERB, 2020b: 51 and 81). ZESCO was also financially indebted as a result of poor management, lack of investment and misallocation of resources. In 2016, due to poor cash management, ZESCO only scored 15% promptness in debt collection (ERB, 2017: 62). This resulted in the company being owed huge sums of money. The government owed it around US$ 42 million, a figure expected to increase in future (ERB, 2017: 62). In addition, ZESCO's tariffs were way below production and market value and the company was also overstaffed with a labour force said to be double the required number (ZESCO Limited, 2019).

Zambia has about 100 million tonnes coal deposits, 2.15 million tonnes of biomass, 3,000 hours annual sunshine, 80 hot springs and 6,000 MW hydropower reserves (Owen, 2016: 19 and Republic of Zambia, 2018: 29). However, the country only has total installed generation capacity of 2,981.31 MW, with actual available capacity of 2,730 MW (ERB, 2020a: 2). This has resulted in low electricity access rates of 33% at national level, 67% in urban areas and 4% in rural areas (Woods, Barua and Kibira, 2019: 28). Between July 2015 and 2016, Zambia experienced 8-hour daily power-cuts (Owen, 2016: 1). Zambia's electricity deficit, based only on the demands of those connected, stood at 526 MW (ERB, 2017: 2) with a 200 MW annual increase in demand without matching increase in supply (Owen, 2016: 1). As a result, in 2016, ZESCO paid a total of US$ 500 million, at $0.19/kWh, to import electricity. This electricity was then sold to local consumers at $0.05/kWh, a huge financial loss (Daily Nation, 2018). In June 2018, the Mozambican electricity supplier, *Electricidade de Moçambique*, suspended the supply of 111 MW to Zambia over a US$ 70 million debt (The Zambian Observer, 2018). Even with imported electricity, ZESCO was only able to supply manufacturing and mining companies 70% of their demand (African Development Bank, 2016: 325). In 2019, the Zambian currency, the *Kwacha*, depreciated by 24.86% against the US Dollar while inflation rose by 11.7% leading to a spike in food and fuel prices (Ng'andu, 2020: 2 and ERB, 2020b: 1). Many factors, including drought, poor government policies and electricity deficit led to the economy's poor performance. However, electricity deficit was significant as enterprises either reduced production or shut down due to inadequate power supply (Woods et al., 2019: 21).

Therefore, since past efforts to reform ZESCO have failed to improve its performance, the solution may indeed be privatisation. The rationale is that once privatised, the quality and quantity of electricity supplied by ZESCO would improve, meeting both local and international demand (Thillairajan, Mahalingam and Deep, 2013: 94). The private buyer would make investments to exploit the country's vast potential for electricity generation (Abioye, 2016: 203). The private investors will be able to diversify electricity production by investing in geothermal, biomass and solar energy sources. ZESCO would become more efficient in its operation enabling it to reduce production costs (Ogbole and Willliams, 2014: 96). Prudent management would enable the enterprise to improve financial performance leading to an uptake in profit (Naceur, Ghazouani and Orman, 2006 and Gewald and Soeters, 2010: 160). The company would improve labour productivity by reducing its bloated workforce and improving labour utilisation (Jefferys,

Pond, Kilicaslan, Tasiran, Kozek, Radzka and Hermann, 2009: 58 and Mining for Zambia, 2016). Curtailing political control would insulate the enterprise from abuse from politicians who currently use it as a cash-cow to fund political campaigns and reward supporters.

A number of early and recent researches have concluded that privatisation does succeed in improving the performance of enterprises (Ghulam, 2012: 3 and Abioye, 2016). For example, a study by Chisari, Estache and Romero (1999) found that in Argentina, privatisation led to 19.51% and 6.26% efficiency gains in electricity generation and distribution, respectively. In electricity generation and distribution, labour productivity increased by 23.1% and 17.59%, respectively. This resulted in a 9.5% reduction in electricity tariffs. Another study by Van Gyes, Vael and Vandekerckhove (2009) found that 88% of customers were satisfied with the quality of electricity following privatisation in six European countries.

Fundanga and Mwaba (1997: 12) state that soon after *Tate and Lyle* and *CDC* bought *Zambia Sugar Company*, they invested $28 million. The USADA (2007: 22) posits that *Illovo Sugar Group*, which took over ownership, made further investments. As a result, Zambia's sugar production rose from 65,000 tons in 1974 to 250,000 tons in 2006 (USADA, 2007: 2) before increasing to over 440,000 tons in 2013 (Mseteka, 2013: 7). Mseteka (2013: 7) adds that Zambia Sugar exports a third of its sugar into the regional market, another third to Europe, with the remainder sold locally. Furthermore, Zanaco, a loss making parastatal, became profitable after it was sold to Rabobank in 2007. In 2010, Zanaco recorded a profit of US$21.7 million, with US$1.5 million paid to the government as dividend (Musonda, 2011: 2). In addition, Zanaco's services vastly improved, enabling the company to compete favourably with other banks (Musonda, 2011: 2).

However, other early and recent researches have concluded that privatisation fails to improve the performance of enterprises (Ghulam, 2012: 3 and Abioye, 2016). For example, privatisation of electricity supply in Australia resulted in exorbitant prices as well as reduced reliability and investment. Increased customer dissatisfaction with service quality resulted in annual complaints rising from 500, before privatisation, to 50,000 after privatisation (Quiggin, 2014: 5). Between 1992 and 2000, almost two-thirds of the privatised companies in Zambia had a decline in turnover. As a result, 6% of companies closed within three years of privatisation (Serlemitsos and Fusco, 2003: 23).

Therefore, the reservations the Zambian Government has about privatising ZESCO (Republic of Zambia, 2016: 3) are valid. Among the numerous factors determining successful privatisation is the model guiding the process. No study could be traced on developing a model to guide ZESCO's privatisation. Therefore, necessity arose to explore the development of a model for privatising ZESCO, and possibly any other electricity company in future. This solicited a research question: *What might be the best model for privatising ZESCO Limited in order to improve its performance?* This study, thus, aims at analysing various factors that would determine the appropriate model to employ in privatising ZESCO. The study then develops a model to guide the privatisation of ZESCO.

1.4. Research Questions

The main research question of this study was:

- *What might be the best model for privatising ZESCO Limited in order to improve its performance?*

Secondary-specific research questions of this study were:

- What models were used to privatise State Owned Enterprises in Zambia?
- How do stakeholders view the current performance of ZESCO Limited?
- Will privatising ZESCO Limited improve its performance?
- Which appropriate model can be used to successfully privatise ZESCO Limited?

1.5. Objectives of the Study

The main objective of this study was:

- *To establish the best model of privatising ZESCO Limited in order to improve its performance.*

Secondary-specific objectives of this study were:

- To examine the models used to privatise State Owned Enterprises in Zambia.
- To analyse stakeholders' view of the current performance of ZESCO Limited.
- To establish whether privatising ZESCO Limited will improve its performance.
- To develop an appropriate model to be used to successfully privatise ZESCO Limited.

1.6. Hypotheses

The study employed a mixed research design. It consisted of both quantitative and qualitative approaches. The quantitative approach required development of hypotheses (Saunders, Lewis and Thornhill, 2016: 532-533). Since the study had an element of the quantitative approach, there was need to determine the relationship between independent and dependent variables. Therefore, the following were the research hypotheses:

Stakeholders' view of ZESCO Limited's current performance:

- **H_0:** Stakeholders have a neutral view of ZESCO Limited's current performance.
- **H_1:** Stakeholders have a negative view of ZESCO Limited's current performance.

Stakeholders' view of ZESCO Limited's performance once privatised:

- **H_0:** Once privatised, ZESCO Limited's performance will remain the same.
- **H_1:** Once privatised, ZESCO Limited's performance will improve.

Impact of privatisation model:

- **H_0**: The model used to privatise ZESCO Limited will have no impact on its performance.
- **H_1**: The model used to privatise ZESCO Limited will have an impact on its performance.

1.7. Aim of the Study

The study aims at developing the best model for successful privatisation of ZESCO Limited.

1.8. Scope of the Study

The study was confined to establishing the best model for privatising ZESCO in order to improve its performance. Further, the study did not compare the performance of privatised enterprises with those of SOEs. It only considered the effect of ownership and control on the performance of ZESCO. Other factors determining performance of the company were not looked at. The energy sector, electricity in particular, was chosen because it is the driving force of any economy without which modern industries and everyday life would not be possible.

1.9. Significance of the Study

This study is significant as it contributes to the understanding of Zambia's weak experience with privatisation and the limitations in existing literature to fully assist with regard to a specific way forward. Reflecting possible theoretical models and merging their strengths into one might possibly contribute in establishing the best way of privatising ZESCO in order to improve its performance. Information from this research is also informative on how stakeholders view ZESCO's performance as an SOE. Additionally, the study contributes to the understanding of the models that were used in the past to privatise SOEs. It also examines how these models impacted both the privatisation process and the performance of the enterprises once privatised. This enabled the development of an appropriate model to be used in privatising ZESCO. The development of this model would guarantee that once privatised, ZESCO's performance would improve thereby ensuring that electricity supply is accessible to all Zambians.

1.10. Limitations of the Study

The study encountered a number of limitations. A component of primary data was qualitative leading to possible problems of some data being subjective and difficult to generalise (Ilker, Sulaiman and Rukayya, 2016: 4). The study overcame these limitations through peer debriefing, triangulation, member checks, thick description and audit trials, among others. In addition, quantitative data helped minimise the weaknesses of qualitative data. The use of the case study strategy posed the risk of making generalisation of results problematic. This was overcome by employing the survey strategy's application of random sampling and use of a large sample (Creswell, 2014: 243). Being a key parastatal, ZESCO Limited is politically sensitive. This might have led to some participants having political and administrative pressure leading to biased responses. To curtail this limitation, the researcher triangulated data from different respondents and sources.

1.11. Ethical Considerations

The research was conducted in accordance with the rules of the North West University (NWU) Institutional Research Ethics Regulatory Committee. The study also followed all applicable policies, ethical principles and responsibilities of the 2016 NWU Policy and Rules for Research Ethics. Before conducting the research, authorisation letters for permission to conduct interviews

were sought from all sampled organisations. The research proposal, signed ethics statement and other relevant documents were submitted to the relevant NWU ethics committee. The proposal was then registered and cleared of the ethics by this committee.

The researcher sought written informed consent from all participants at least, a day before conducting interviews. Participants were given adequate information on the study's objectives and were permitted to ask any pertinent questions. The nature of the research was explained to the participants to enable them make informed decision about whether to participate in the study. Additionally, the participants were informed that their participation in the research was voluntary and that they had the option not to participate or withdraw from participating at any given time without offering any explanation. Confidentiality was maintained by not sharing collected data with any other party. To preserve anonymity, research participants were not asked to provide their names.

The research was conducted in a favourable environment, allowing free communication and transparency while avoiding any fears and possible risks from interaction with participants. The study was structured to have minimal risk, discomfort or inconvenience. Integrity in data collection, analysis and presentation was guaranteed by safeguarding honesty, accountability, professional courtesy and fairness. All study data was encrypted in digital form and stored on a cloud platform, Dropbox. The platform was protected and only accessible, with a secure login account and password, by the researcher and supervisor. The data sets will be protected for a period of 5 years as stipulated by the University regulations.

1.12. Chapter Breakdown

The study comprises the following chapters:

Chapter One: Introduction and Background to the Study. The chapter focuses on the background, problem statement, research questions, research objectives, hypothesis, theory, significance, scope, limitations, ethical considerations and chapter breakdown.

Chapter Two: Literature Review on Privatisation. The chapter focuses on developing a theoretical framework on privatisation. The chapter then reviews empirical literature on the performance of privatised electricity firms, both in and outside Africa.

Chapter Three: Models Used to Privatise SOEs in Zambia. The chapter focuses on examining the models that were used to privatise SOEs in Zambia. It also examines the strengths and weaknesses of each model. The chapter further examines how each model impacted the post-privatisation performances of enterprises. This was done based on literature review.

Chapter Four: Overview of the Electricity Industry in Zambia. The chapter provides an overview of the electricity industry in Zambia. The chapter achieves this by looking at historical development, policies, market structure, demand, investment and diversification in the electricity sector.

Chapter Five: Research Design and Methodology. The chapter establishes the research design, research strategy, sources of data, sample size and sampling methods, methods of data collection, validity and reliability and methods of analysing data.

Chapter Six: Stakeholders' View of the Current Performance of ZESCO Limited. The chapter focuses on analysing the views of stakeholders on the current performance of ZESCO. Specifically, performance is determined by looking at the current quality, quantity, financial performance, productivity and competitiveness of electricity supply by ZESCO. This was based on literature review and research findings.

Chapter Seven: Privatisation of ZESCO Limited and Performance. The chapter focuses on establishing whether privatising ZESCO will improve its performance. Specifically, performance was determined by assessing quality, quantity, financial performance, productivity and competitiveness of electricity supply once ZESCO is privatised. This was done based on literature review and research findings.

Chapter Eight: Appropriate Model for Privatising ZESCO Limited. The chapter focuses on developing an appropriate model for privatising ZESCO. The model was developed, among others, by building on the strengths of previous model(s) while overcoming their weaknesses. This was done based on literature review and research findings.

Chapter Nine: Conclusions and Policy Recommendations. The chapter focuses on making a summary of the study findings, conclusions derived from the findings and policy recommendations from the study. The chapter also identifies areas of possible future research.

1.13. Chapter Summary

This chapter presented the introduction and background of the study. It also illustrated the problem statement, research questions and study objectives. The chapter also highlighted the hypotheses, significance, scope, limitations and ethical considerations of the study. The chapter then outlined the study's chapter breakdown. The next chapter focuses on the theoretical framework and literature review on privatisation.

CHAPTER TWO

THEORETICAL FRAMEWORK AND LITERATURE REVIEW ON PRIVATISATION

2.1. Introduction

The previous chapter was the presentation of the introduction and background to the study. This chapter focuses on the theoretical framework and literature review on privatisation. Countries all over the world have altered their approach to public administration in line with shifts in Western paradigms. In the 1960s, newly independent countries inherited, from their colonial masters, the Weberian model of bureaucracy in administering public services (Pollitt, Van Thiel and Homburg, 2007: 1). With its emphasis on rules and regulations, hierarchy of authority, written documents, specialisation and devotion to duty, Weber was confident that bureaucracy was *"capable of attaining the highest degree of efficiency in administering large scale organisations"* (Weber, 1978: 223). In 1980, buoyed by the confidence in bureaucracy, Zambia's public sector accounted for 80% of the economy compared to 20% at independence, in 1964 (Kalinda and Floro, 1992; Fundanga and Mwaba, 1997: 5). However, by the mid-1980s, bureaucracy faced criticisms of rigidity and unresponsiveness in the delivery of public services (Christensen and Lægreid, 2007). The public sector took on too many responsibilities thus, becoming too large, highly centralised and too slow to respond to changes in the environment.

Critics called for de-bureaucratisation through New Public Management (NPM) reforms. New Public Management reforms were an outgrowth of neo-liberalism, which called for a market driven economy, free from the weakness of government regulation. The NPM, consequently, advocated decreasing government size, decentralisation, effectiveness and efficiency through the policy of privatisation (Fatemi and Behmanesh, 2012). Nevertheless, Abioye (2016: 36) argues that privatisation cannot improve public service delivery without *"a radical approach to address the current situation, including an adoption of economic models for political and administrative motives".*

This chapter is structured into eight sections. Section one is the introduction. Section two is the theoretical framework on privatisation. Section three defines the concept of privatisation. Section four provides a rationale for privatisation by assessing its likely effect on performance indicators.

Section five, six and seven assesses the performance of privatised electricity supply firms in Zambia, Africa and outside Africa, respectively. Section eight is a summary.

2.2. Privatisation: Theoretical Framework

According to Grant and Osanloo (2014: 12), developing the correct theoretical framework *"is one of the most important aspects in the research process"*. National Academy of Sciences (2008: 11) defines a theory as *'a comprehensive explanation of some aspect of nature that is supported by a vast body of evidence'.* Saunders et al., (2016: 48) add that a theory is a set of interrelated concepts, assumptions or propositions, or accepted facts that attempt to explain how variables in events or situations relate. This entails that theories are analytical tools that guide researchers in understanding, explaining and predicting phenomena. Researchers are able to provide support or contradiction to an established theory by gathering empirical evidence about phenomena that have not yet been observed (Saunders et al., 2016: 48). A framework is simply a basic structure containing a set of interrelated rules, ideas, or beliefs that is used to plan how to deal with a problem or undertake an action (McLntosh, 2013 and Abend, 2008: 180)

Therefore, a theoretical framework is the structure that holds or supports a theory of a research study (Abend, 2008: 180 and Swanson, 2013). Through the theoretical framework, the theory that explains the existence of the research problem under study as well as how its variables interrelate, is introduced and described (Abend, 2008: 180 and Swanson, 2013). It is the structure that holds the rationale for the study, the problem statement, the purpose, the significance, and the research questions. It also anchors the literature review as well as the methods and analysis. By acting as a blueprint, a sound theoretical framework clarifies the structure and vision of the study (Grant and Osanloo, 2014: 12-13) and confines the researcher to scholarly and academic literature (Imenda, 2014). The researcher should endeavour to unearth research findings that either corroborate, improve or reject the existing theory that was employed (Adom, Hussein and Agyem, 2018: 439). Therefore, in order to establish the best model for the successful privatisation of ZESCO, the study was guided by three theories. These are the Agency Theory, the Theory of Cyclical Change and the Contingency Theory.

2.2.1. Agency Theory

The Agency Theory was developed by Jensen and Meckling (1976). The Theory is concerned

with understanding the relationships between agents (managers) and principals (owners/shareholders or the government) (Jensen and Meckling, 1976: 308). Milgrom and Roberts (1992: 181) see the principle-agent relationship as situations in which the agent acts on behalf of the principal and is supposed to advance the best interests of the principal rather than their own. Milgrom and Roberts (1992: 181) further assert that *"senior executives of corporations are charged with advancing the interests of the stockholders, who are the owners of the corporation,"* making the executives *"agents of the stockholders"* In this relationship, owners earn profits from the firm while managers earn a wage. Managers, therefore, make decisions that ensure the success of the firm in order to keep earning a wage. This enables owners to have control over managers.

However, Jensen and Meckling (1976: 368) also identified problems to the principle-agent relationship. That is, without control, managers may seek to maximise their own self-interests. Therefore, there is need for an effective control mechanism to prevent the agent from acting in his or her own interest at the expense of the principle. Private owners are able to provide this control as a result of their high need to see the firm perform better due to their interest on return on investment. Governments, on the other hand, do not see firm's profitability as a priority (Boycko et al.,1996: 317). Estrin et al., (2009: 7) add that monitoring of managers by the state is weak thus, enabling SOE managers to gain discretion and follow their own objectives. Therefore, the agency theory advocates for private ownership if firms are to perform better.

On the other hand, Cavaliere and Scabrosetti (2008: 706) saw no definitive conclusion regarding the relation between privatisation and efficiency. To them, SOEs are better because the government acts as a better principle since it is ultimately responsible to the citizens. Also, private owners may over extract the firm's resources, compromising future performance (Bebchuk, 1999: 9). Examples show managers being pushed to illegal activities such as price and market share controls. According to Boycko et al., (1996: 318), in private enterprises where there are too many owners or shareholders, such as a Public Limited Company, there are possibilities of a free rider problem. This is because the return on investment for each owner is too low thus, not providing enough incentive to monitor the behaviours of managers. Lülfesmann (2002: 6) notes the frequency of government bailouts as examples of private owners failing to control managers leading to inefficient private firms. Nevertheless, Sappington and Stiglitz (1987: 576)

argue that the solution does not lie in running SOEs. Instead, the government can supplement weaknesses of pure private ownership through the use of politically independent regulatory agencies.

2.2.2. Theory of Cyclical Change

Sociologists contend that the one constant about society is that it continuously changes. Proponents of the Theory of Cyclical Change argue that this change is cyclical rather than linear. According to Carlson (1978: 28), the theory of cyclical change assumes that *"a certain course of events will be endlessly repeated, exactly or approximately"*. In addition, Sorokin (1947: 676) contends that the history of the world and mankind *"is an endless recurrence of either identical or essentially similar cycles".* This implies that certain states of society, such as type of ownership and control of enterprises, constantly change and repeat themselves overtime.

When applied to politics and the economy, the Theory of Cyclical Change traces its origin to Arthur Schlesinger's 1939 essay, *Tides of National Politics.* According to Schlesinger (1949), the political setup of any country is endlessly repeated in two cycles, liberalism (dominated by private interests) and conservatism (dominated by public interests). The cycles are determined by the mood of the general population. The political phases have an effect on a country's economic setup. As the political system moves between the liberal and conservative phases, and back, repeatedly, there is a corresponding adjustment in the country's economic setup (Schlesinger, 1986). Poor performance in the economy or part of the economy, under a particular phase, results in a shift in public mood. The political leadership responds by changing the dominant economic set up (Bresser-Pereira, 1993). There are two main phases in the economic cycle. One phase is dominated by public interest resulting in the majority, if not all, enterprises being SOEs. The second phase is dominated by private interest, resulting in the majority, if not all, enterprises being privately owned and controlled (Bresser-Pereira, 1993).

Due to changes in the mood of Zambians with regard to economic performance, the country's political setup has gone through three major cycles since gaining independence: liberalism - 1964 to 1972, conservatism - 1972 to 1991 and back to liberalism-1991 to date (Bertelsmann Stiftung, 2018: 5-6). The political cycles resulted in corresponding cyclical changes in enterprise ownership: private ownership - 1964 to 1968 (McGrath and Whiteside, 1989), public ownership

- 1969 to 1994 (Fundanga and Mwaba, 1997) and back to private ownership - 1994 onwards (Madimutsa and Pretorius, 2017). Between 1951 and 1970, electricity in Zambia was supplied by private enterprises (ECFA, 2006: 4-C-1) before being dominated by ZESCO from 1970 onwards (ERB, 2017). Therefore, in line with the Theory of Cyclical Change, since ZESCO Limited has performed poorly as an SOE (Owen, 2016:1; ERB, 2017: 2, 62-63; Chimbaka, 2016: 3; Daily Nation, 2018 and The Zambian Observer, 2018), the solution should be to change from public to private ownership and/or control.

2.2.3. Contingency Theory

The Contingency Theory guided the study's determination of the best model to apply in the privatisation of ZESCO. Estrin and Pelletier (2018) offers examples of various countries utilising diverse models of privatisation with varying degrees of success and failure. This gives impetus to contingency theorists' argument that there is no best model of privatising an SOE (Abioye, 2016:40). Rather, the best model is dependent (contingent) on the internal and external environments surrounding an SOE and the country at large. Carter (2013: 111) notes that for privatisation to succeed, the model used should consider a *"country's internal and external environmental conditions".* The internal factors include among others, the organisation structure, culture, social norms, values, beliefs, resources, size of the SOE, strategic importance of the SOE to the economy, the main objective behind the privatisation and the political leadership. External factors include global competitions and geo-political coalitions (Carter, 2013).

Todaro and Smith (2015) contend that the internal environment of every country is unique due to the unique nature of forces existing within it. According to Smircich and Stunnart (1985) cited in Carter (2013: 112) the country has to adapt to, co-align with, and if possible, control these forces. The internal environment in turn determines how a country responds to the external environment. Carter (2013: 112) thus maintains that those in charge of privatising an enterprise *"must take full considerations economically, politically, and socially, and adopt experimentations contingent upon the environment".* Guided by the contingency theory, the study will analyse the strengths and weaknesses of the previous models used to privatise Zambian SOEs in the past. The study will then analyse the internal and external environment affecting ZESCO Limited. The study will then develop a model to guide the privatisation of ZESCO Limited. The model will build on the

strengths of previous privatisation model(s) while overcoming their weaknesses. At the same time, the model will take into account other factors that may affect which model the state may be more willing to accept in privatising ZESCO.

2.3. Definitions of Privatisation

The term privatisation has, and will continue to have a myriad of definitions. Shirley (1992) defines privatisation as *"the transfer of ownership and control of assets to the private sector".* However, Shirley (1992) does not clarify which assets should be transferred. By law, state assets such as ministries, departments and agencies are not transferable. Fundanga and Mwaba (1997) sees privatisation as activities aimed at expanding the private sector and incorporation, into state institutions, of organisational and management techniques behind the success of private sector institutions. However, this definition confuses privatisation with commercialisation.

To overcome this, Agba, Agba, Ushie and Festus (2010: 95) see privatisation as involving *"the transfer of government owned shares in designated SOEs to private shareholders"*. Abioye (2016: 38) improves on this by defining privatisation as *"the transfer of ownership of SOE to private ownership for the primary purpose of an efficient and effective operation leading to better productivity and profitability of the state owned enterprises".* Nevertheless, both Agba et al., (2010) and Abioye (2016) fail to mention that transfer of ownership has to be accompanied with corresponding transfer of control of the enterprise.

The Zambia Privatisation Act defines privatisation as *"the transferring to the private sector of part or the whole of the equity or other interest held by the government, directly or indirectly, in a state owned enterprise wholly or partly owned by the government"* (Republic of Zambia, 1996: 2). However, the definition is flawed because partial sale in which control is retained by the state means that the enterprise remains an SOE. As such, privatisation is best defined in a way that reflects the objectives sought from adopting the strategy. To this effect, the study defined the term privatisation as referring to *situations in which the transfer of ownership of an enterprise to the private sector, full or partial, leads to control being handed over to the private owners*. It is expected that this will lead to improvement in an enterprise's performance when its activities are measured against predetermined performance indicators.

2.4. Rationale for Privatisation: Effect on Performance Indicators

Proponents assert that privatisation improves the performance of SOEs. They contend that compared to SOEs, privately owned and controlled enterprises have superior performance as they are effectively and efficiently run. The paper will, therefore, identify the key performance indicators that help to determine the effectiveness and efficiency of an enterprise's performance. To begin with, effectiveness refers to the extent to which an enterprise achieves the objectives it was set up to achieve (Dunn, 2008: 222). For instance, an effective electricity supply company is one that ensures supply of electricity for all or the majority of its intended customers. A major weakness of effectiveness is that it ignores the costs associated with achieving the set targets.

Efficiency helps to plug the gaps left by effectiveness. Simply put, efficiency refers to *"a given relationship between the quantity of output(s) and the quantity of inputs"* (Bosch and Vergés, 2009: 2). In other words, it refers to the amount of effort (costs) required to produce a given level of effectiveness (Dunn, 2008: 222). To be efficient, an enterprise should achieve its objectives while reducing associated costs by eliminating *"redundancies and factors which do not add value to the process"* (Abioye, 2016: 46). Chisari et al., (1999) argues that improvement in efficiency, after privatisation, are the reductions in the quantity of inputs used by the privatised enterprise to obtain one unit of output. Therefore, for privatisation to improve performance, a privatised enterprise should show improvement in the indicators below.

2.4.1. Quality

Quality is determined by the characteristic of the product or service, which makes it better to use. In many cases, focus is put on showing improvements in quality through speeding up processes, using new technology, product or service variety, performance and production type or enhancing responsiveness in customer care and safety (Hermann and Flecker, 2009: 34). For instance, the drying time could be considered a measure of the quality of cement (Banerji et al., 1996). In hospitals, quality can mean improvement in equipment and the time doctors and nurses spend with patients. For transport, quality can be marked by improvement in comfort and reduction in travel time (Hermann and Flecker, 2009).

The quality of electricity supplied is assessed by looking at reliability and customer service. Reliability is determined by the frequency and duration of electricity interruptions. Quality of

customer service is assessed through number of operating hours of ZESCO call and traditional walk-in centres; how convenient it is for customers to call or talk to agents face-to-face regarding inquiries, complaints or reporting electric faults; and the time it takes to repair major breakdowns in electricity infrastructures (Hermann and Flecker, 2009: 34).

2.4.2. Quantity

Quantity is measured by the amount of output or supply of a product or service regardless of the associated costs. In simple terms, when a certain product or service is readily available on the market, and is easily accessed by those who want to buy it, then the quantity is said to be high (Estrin and Pelletier, 2018: 90). Ideally, all individuals or groups who demand for the product or service should have access to it. In addition, when the prices of products and services reduce, it is taken as an indication of increase in quantity (Thillairajan et al., 2013). This is important because when a product or service is inadequately supplied; demand is not met, leading to increase in prices. Therefore, if the product or service is sold at a price affordable for most or all potential customers, then one can conclude that the quantity supplied is outstripping demand.

For instance, if the cement produced in a given period of time is able to meet the demand from the construction industry, the quantity is considered to be adequate and vice versa (Banerji et al., 1996). Quality in hospitals is determined by assessing the number of nurses, doctors and support staff and the availability of medicine and hospital beds. For transport, new vehicles, flexibility in operating time and routes serviced are all marks of quantity (Hermann and Flecker, 2009: 34). In assessing the quantity of electricity, emphasis is placed on; the amount of electricity produced compared to actual demand; the proportion of the population connected to electricity supply; and the variation in the amount of electricity produced over a stated period of time.

2.4.3. Financial Performance

A number of studies such as Megginson, Nash and van Randenborgh (1994) and Ghulam (2012) have employed financial ratios to assess the impact of privatisation on the performance of firms. Analysing financial performance is popular as it is simple to understand, intuitive and easy to implement (Ghulam, 2012: 89). The study measured financial performance using levels of investment in infrastructure and profitability.

(a) Investment in Infrastructure

This study took investment to mean the allocation of various resources, especially finances, into increasing and/or improving infrastructure to enable a privatised enterprise deliver services (Ouda, Al-Waked and Alshehri, 2014). For ZESCO, emphasis was placed on the levels of investment in electricity supply infrastructures such as generation plants, transmission lines and distribution infrastructure. Ghulam (2012: 117) notes that governments, especially in developing countries, have many pressing demands for their inadequate financial resources. As a result, most financial recapitalisations in SOEs only cover the costs of maintaining dilapidated infrastructure.

Proponents of privatisation rationalise that private investors, unlike the government, have more financial muscle (Kirby, 2013). This is because private investors can source for funds from equity market and private finances (Agba, 2010: 99). As such, immediately after privatisation the firms become profitable. This provides them an opportunity to reinvest the profits as well as to tap into internal and capital market by floating new shares (Amakom, 2003: 2). This is especially true for firms sold to established people with the expertise to exploit the rising demand by borrowing in financial markets (Ghulam, 2012: 117). The study assessed the proportion of investment in generation, transmission and distribution of infrastructure.

(b) Profitability

Profit refers to the financial gain from business activities once all associated costs are deducted from the revenue gained (Abioye, 2016). A company can realise a profit without necessarily being profitable. Usually, an entity is considered profitable if its profits on an investment, based on resources invested, are better than on an alternative investment. When profit is generated, wealth is created which, in turn, increases the firm's value. Profit is maximised as a result of the firm's ability to reduce costs by identifying and eliminating areas of waste and duplication. The profits lead to infrastructural investments, improvement in quality, quantity and productivity in part because the firm is financially viable (Hermann and Flecker, 2009).

Most SOEs are established to aid economic development objectives as opposed to profitability. States, therefore, can, run intentionally or otherwise, loss-making enterprises as long as they contribute to the country's development agenda (Boycko et al., 1996). This is to ensure loses are offset by increasing public taxes, which are then used to fund the losses. This creates a vicious

cycle in that by financing loss-making SOEs, the government is unable to provide essential services to the public. By removing non-economic objectives, privatised enterprises increase financial efficiency and maintain enough liquidity to meet financial charges (Muogbo, 2013: 81). Improved financial performance enables the privatised enterprises to be profitable. As argued by the Agency Theory, managers of privatised enterprises are typically concerned with maximising profit to increase the dividend pay-outs to the shareholders (Milgrom and Roberts, 1992: 181). Muogbo (2013: 81) adds that unlike SOEs, the financial statements of privatised corporations are, by law, subjected to a thorough annual audit. This helps to improve the accountability, transparency and integrity.

The profitability of ZESCO Limited was measured using matrices such as Net Profit Margin (NPM), Return on Capital Employed (ROCE), Return on Equity (ROE) and Current Ratio. Net Profit Margin is net income divided by total net sales. It reflects management's ability to generate enough resources to recover all of the firm's costs, while also ensuring shareholders' reasonable rate of return on their investment (Ghulam, 2012: 96). Return on Capital Employed is a ratio that measures how well a company is generating profit from its capital. Return on Equity refers to net income divided by total net equity expenses and measures management's performance (Ghulam, 2012: 100). Current Ratio measures whether a firm has enough resources to meet its short-term financial obligations and gives an indication of a firm's liquidity (Ghulam, 2012: 101).

2.4.4. Productivity

Productivity simply means efficiency in production as discerned by dividing the outputs by the inputs (Hermann and Flecker (2009:58). Chisari et al., (1999) takes productivity as reductions in the quantity of inputs used by the enterprise to obtain one unit of output. According to Chen, Igami, Sawada and Xiao (2018), productivity is high when an enterprise produces a lot of outputs from a small amount of inputs and vice versa. In the case of ZESCO, productivity referred to the level of reduction in the inputs required to produce a Kilowatt of electricity. This was examined by looking at three aspects; reduction in cost of operation (production), increase in utilisation of labour and increase in utilisation of infrastructure.

(a) Cost of Operation

Costs of operating a business are expenses on resources needed just to maintain an enterprise's existence (Abioye, 2016). The total operating cost for an enterprise is made up of the cost of goods sold, operating expenses, and where applicable, overhead. An enterprise's cost of operation is calculated by adding cost of goods sold and operating expenses (Hermann and Flecker, 2009). In addition to increasing revenue, management always looks for ways to minimise operational costs. At the very least, an enterprise's revenue must meet operational costs if it is to survive. However, a business should ensure that trimming operational costs do not affect its other productivity aspects (Ghulam, 2012).

Owing to their profit motive and efficiency, private enterprises are seen to be better at reducing operational costs thus, increasing operational productivity. Managements of SOEs are not pressured to cut costs on the assumption that the government will either bail them out or 'fix' the prices of their products and/or services (Milgrom and Roberts, 1992). Increase or decrease in operational costs, taking into account inflation, for a specific period of time was evaluated to determine ZESCO's operational productivity.

(b) Utilisation of Labour

Utilisation of labour can best be determined through labour productivity which analyses changes in output as a result of labour inputs (Chisari et al., 1999). Labour productivity is defined as "*the level of gross value added divided by the number of hours worked"* (Hermann and Flecker, 2009:58). Hermann and Flecker (2009:58) add that increased labour productivity can be the result of "*higher outputs from the same number of workers working the same number of hours, or of the same level of outputs being generated by workers working lesser number of hours".* Improvement in utilisation of labour is determined by a variety of factors. They include effective management, motivation, quality of personnel, technology, and innovations and creativity.

Most countries, especially developing ones, are faced with low levels of employment. Consequently, SOEs become conduit for accelerating employment resulting in overstaffing. It is not uncommon for SOEs to have two or more employees occupying the same position. Most of these employees tend to be overpaid and unqualified as they are appointed on either patronage or political ground (Abioye, 2016). The net result is that productivity in SOEs is poor. Through

privatisation, the new owners are able to shed off the excess labour force, employ qualified personnel and clean the payroll. Once enterprises become productive and profitable, investments are made to expand them (Ghulam, 2012). With these expansions, more labour is employed while maximising its utilisation. Agba (2010: 99) states that for every 10% increase in capital investment, labour demand (new jobs) would increase by 1.97%. ZESCO's labour utilisation was determined by analysing the increase in the number of customers per employee.

(c) Utilisation of Infrastructure

Infrastructure refers to physical and organisational structures and facilities needed to operate an enterprise (Torrisi, 2009: 104). Enterprises need properly functioning infrastructure (Wong and Almeida, 2014). In most cases, existing infrastructure suffer from overload because demand has risen beyond the forecasted level (Wong and Almeida, 2014). It is, therefore, essential for management to make the most of their installed infrastructure capacity while reducing the necessity to build more. This can be achieved, for instance, by ensuring that no power generating stations lie idle or operate below maximum capacity (Wong and Almeida, 2014: 20). For electricity supply enterprises, infrastructure is composed of generation, transmission and distribution equipment (Varley, 2009). Since private firms are efficient, privatisation would lead to improved incentive for infrastructure utilisation. ZESCO's utilisation of infrastructure will be assessed by determining levels of system loses and comparing actual electricity generated with installed capacity.

2.4.5. Competitiveness

Competition is rivalry among sellers, in the same industry, in the quest for increased sales, profit and share of the market (Konings, Van Cayseele and Warzynski, 2005). One positive aspect of competition is that in attempting to gain an advantage, enterprises become competitive. Competitiveness refers to the ability of a business to seize and expand market share by creating better value to customers compared to competitors (Ketels, 2016: 7). Privatisation is usually accompanied by liberalisation, which is the opening up an industry to more enterprises (Bullock, 2005). It is, therefore, assumed that entry of more enterprises motivates privatised enterprises to make advancements so as to be competitive. As a policy, privatisation is designed to improve the performance of public sector enterprises through increased exposure to competitive market

forces (Ghulam, 2012: 81).

However, Carter (2013) cautions that privatisation should not merely convert a public monopoly into a private monopoly. This is because the enterprise will not be compelled by competitive pressures. In addition, although privatisation and liberalisation may initially make enterprises competitive, they may eventually fail to compete against larger foreign-owned competitors (Hermann and Flecker, 2009: 7). Ketels (2016: 13) notes that enterprises attempt to be competitive through constant innovation in the Ps of marketing which are product, place, promotion and price. For instance, an enterprise can reduce the price of its offering or increase its market share. As such, competitiveness of ZESCO will be determined by assessing its tariffs and market share in generation, transmission and distribution.

2.5. Effect of Electricity Privatisation on the Performance of Zambian Firms

Only two electricity companies were privatised in Zambia. These are ZCCM's *Lunsemfwa and Mulungushi* power stations and ZCCM's *Power Division*. *Lunsemfwa and Mulungushi* power stations were sold to *Lunsemfwa Hydro Power Company Limited* (*LHPC*) in 2001 (ZDA, 2010). In 1997, 80% shares in *ZCCM's Power Division* were sold to the *Copperbelt Energy Corporation* (*CEC*), with *ZCCM-IH* retaining 20% (ZDA, 2010). At the time of divesture, *LHPC* only generated power while *CEC* was licensed to purchase bulk electricity from ZESCO and transport it across its transmission and distribution network for sale to mining customers on the *Copperbelt* and the *Democratic Republic of Congo-DRC* (CEC, 2019: 10 and Phiri and Ziba, 2018).

2.5.1. Quality and Experience of Zambian Firms

Lunsemfwa and Mulungushi power stations improved quality. For instance, *LHPC* upgraded and rehabilitated its power plants, installing new machines with modern control and protection equipment (ERB, 2020b). The transmission lines from *Mulungushi* to the national grid had protection upgrades from analogue to digital electronic. This improved response and efficiency in handling system disturbances. Apart from a few system disturbances on the interconnected grid, *LHPC*'s power supply network had satisfactory performance (Phiri and Ziba, 2018). *Copperbelt Energy Corporation*'s system was able to distribute all the electricity transmitted by

ZESCO. Incidences of power blackouts were mainly caused by faults external to the network (CEC, 2019: 40). To offset unreliability from ZESCO's supply, the company installed six diesel powered standby generators with the capacity to supply 80 MW (ERB, 2020b: 51). In addition, *CEC* had not experienced any fatalities in ten years (CEC, 2019: 34). The improvement in quality of electricity provided by *LHPC* and *CEC* is testament to the superiority of private rather than public management.

2.5.2. Quantity and Experience of Zambian Firms

The two companies improved the quantity of electricity supplied. At the time of acquisition, *Lunsemfwa Power Station*'s installed capacity was only 18 MW, with the last generator added in 1961(Lunsemfwa Hydro Power Company, 2010). *Mulungushi Power Station* had installed capacity of 20 MW, with the last generator added in 1941 (Lunsemfwa Hydro Power Company, 2010). In 2012, *LHPC* increased *Lunsemfwa* and *Mulungushi*'s capacity to 24 MW and 32 MW, respectively. This raised the capacity of the two stations by nearly 50%, from 38 MW to 56 MW (Phiri and Ziba, 2018). *Copperbelt Energy Corporation* installed 80 MW worth of standby thermal diesel generation (ERB, 2020b: 51). In 2018, it commissioned a 1 MW solar PV plant, Zambia's first ever grid scale solar plant (CEC, 2019: 10). The company was also in the process of developing a 40 MW hydropower plant. It also increased its distribution capacity from 520 MW in 2014 to over 1,000 MW in 2018 (CEC, 2019). This was made possible by increasing transmission lines, substations and control centres and installing optic fibre on power lines (CEC, 2019: 10).

2.5.3. Financial Performance and Experience of Zambian Firms

The two companies progressed financially. Lunsemfwa Hydro Power Company invested in major upgrades and rehabilitation of machines at both power plants. The company also invested $6.84 million in constructing a 72 km transmission line linking the plants to the national grid (Phiri and Ziba, 2018). It also raised $700 million for the anticipated construction of a 300 MW power station in *Muchinga* (Phiri and Ziba, 2018). In addition, despite selling its generated power to ZESCO at a low price, *LHPC* remained profitable (Owen, 2016). *Copperbelt Energy Corporation* inherited an enterprise worth $50 million, with debt of $134 million (ZDA, 2010:

34). Through investment and prudent management, *CEC* grew its power infrastructure assets to $442m (CEC, 2019: 10). Between 2013 and 2018, *CEC* invested $126m in equipment, network upgrade, expansion and maintenance. The company consistently improved annual profits, paying dividend of $26m in 2018 compared to $21m in 2017 (CEC, 2019: 15). Its revenue rose from $292m in 2014 to $421m in 2018 (CEC, 2019: 15). Improved financial performance of *LHPC* and *CEC* tallies with the argument that private owners are better able to improve investments and maximise revenue. Through privatisation, the two companies transformed a dire financial outlook into admirable financial performance.

2.5.4. Productivity and Experience of Zambian Firms

Both companies improved productivity. Under state control, *Lunsemfwa* and *Mulungushi* operated below installed capacity. For instance, under *LHPC*, the two plants operated at over 90% capacity whenever water was available (LHPC, 2010 and Phiri and Ziba, 2018). Owing to upgrading and rehabilitation, both plants had low generation losses (ERB, 2020b). In addition, by digitising operations, 58 workers were able to run both plants (LHPC, 2010 and Phiri and Ziba, 2018). Similarly, skills development and modernisation of machinery enabled *CEC* to reduce the number of employees from 767 in 1997 to only 390 in 2018 (CEC, 2019: 15). The company also improved infrastructure utilisation, with transmission losses of only 2.1% (ERB, 2020b: 51).

2.5.5. Competitiveness and Experience of Zambian Firms

Both companies showed remarkable improvement in competitiveness. Once the *Muchinga Power Plant* becomes operational, *LHPC*'s share of generation and transmission is expected to significantly increase (Owen, 2016: 9; and Phiri and Ziba, 2018: 6). *Copperbelt Energy Corporation* increased its customer base by adding more mines to its system, transmitting and distributing 50% of Zambia's generated power, up from 29% in 2014 (CEC, 2019: 10 and Owen, 2016: 9). It also increased its share of generation to 3% (Owen, 2016: 9). The company also expanded to supplying mines in *Katanga Province* of the *DRC* through its ownership of the Zambia–DRC interconnector line. *Copperbelt Energy Corporation* is also a member of the *Southern African Power Pool* (*SAPP*) and trades and wheels power within the pool (ERB, 2020).

In Nigeria, it owns 45% of the *Abuja Electricity Distribution Company* and 20% stake in *North South Power Limited* (CEC, 2019). However, both *LHPC* and *CEC* found tariffs set by ERB to be too low. One assumes that given a chance, both companies would have set higher tariffs (CEC, 2019 and Phiri and Ziba, 2018). Table 2.1 below shows the post-privatisation performance of *LHPC* and *CEC*.

Table 2.1: Performance of LHPC and CEC after Privatisation

Performance Indicators		**Firms**	
		LHPC	**CEC**
Quality	**Reliability of supply**	Improved	Improved
	Customer service	Improved	Improved
Quantity	**Installed generation capacity**	Improved	Improved
	Number of connections	N/A	Improved
	Network length	Improved	Improved
Financial Performance	**Investment in Infrastructure**	Improved	Improved
	Profitability	Improved	Improved
Productivity	**Cost of Operation**	Improved	Improved
	Utilisation of labour	Improved	Improved
	Utilisation of infrastructure	Improved	Improved
Competitiveness	**Tariff**	N/A	N/A
	Market share	Improved	Improved

Source: CEC (2019); Owen (2016); Phiri and Ziba (2018) and ERB (2020b)

2.6. Privatisation of Electricity Supply and Firm Performance: Empirical Experience from African Countries

This section establishes findings from leading empirical literature on the models used to privatise and restructure the electricity industry in African countries. It then assesses the effects the models and restructuring had on firm performance.

2.6.1. Privatisation Models and Restructuring of the Electricity Industry in Africa

African power utilities were cash strapped and had allowed their infrastructure to fall into disrepair. Power shortages were widespread with only a third having access to electricity (Kojima and Trimble, 2016: 1). Despite this grim scenario, most African countries maintained

single vertically integrated state owned and controlled electricity utilities (Pudney, 2018). Others preferred unbundling state utilities and complementing them with IPPs rather than outright privatisation (Kojima and Trimble, 2016: 42 and Pudney, 2018). The study will be limited to Nigeria, Uganda, Ivory Coast, Cameroon and Gabon, the only African countries to privatise their power utilities. Nigeria and Uganda unbundled and privatised the generation and distribution arms of their utilities with transmission remaining state monopolies (Kojima and Trimble, 2016: 42). Ivory Coast, Cameroon and Gabon sold their utilities unbundled. As a result, private buyers retained monopoly in transmission and distribution. Kojima and Trimble (2016: 42) state that in all five countries, generation was opened up to Independent Power Producers (IPPs). There was no competitive retailing as only one distributor served customers in each geographical area. Sector regulators faced significant interference from government officials.

Uganda commenced liberalisation of the power sector by enacting the Electricity Act in 1999. The Act established the *Electricity Regulatory Authority (ERA)* charged with licensing power utilities, regulating the sector and determining retail tariffs (Wesonga, 2018). In 2001, the state utility, *Ugandan Electricity Company (UEC),* was unbundled into three companies, *Uganda Electricity Generation Company Ltd* (*UEGCL*), *Uganda Electricity Transmission Company Ltd (UETCL)* and *Uganda Electricity Distribution Company Ltd (UEDCL)* (Mawejje, Munyambonera and Bategeka, 2013: 127 and Wesonga, 2018). In 2003, *UEGCL* awarded a 20-year concession of its two-hydropower plants, *Nalubaale* and *Kiira,* to *Eskom Uganda Limited,* a subsidiary of *Eskom South Africa*. *Uganda Electricity Transmission Company Ltd,* the sole transmitter, remained an SOE (Wesonga, 2018). In 2005, *UEDCL* awarded *Umeme Ltd,* owned by *Eskom* and the United Kingdom based *Actis,* a 20-year concession to distribute power throughout the country (Mawejje, Munyambonera and Bategeka, 2012: 4). In 2006, *Actis* took full ownership and control of *Umeme* before selling its shares to the public in 2016 (Mawejje, et al., 2013: 128 and Wesonga, 2018). *Eskom* sells generated electricity to *UETCL*, which resells it to *Umeme*, which, in turn, sells it to consumers.

The 2001 National Electric Power Policy and the 2005 Electric Power Sector Reform Act preceded Nigeria's reforms (World Bank, 2017b: 4). According to Adedeji (2017: 194), through these instruments, the state monopoly, *National Electric Power Authority (NEPA),* was unbundled it into six generation companies (GenCos), one transmission company (TransCo) and

eleven distribution companies (DisCos). Each geographical area was served by only one distributor. In 2013, GenCos and DisCos were sold through sale of assets (competitive bidding) while the *Transmission Company of Nigeria (TransCo)* remained state-owned (Adedeji, 2017: 195). The sector was regulated by the *Nigeria Electricity Regulatory Commission (NERC).*

Cameroon's SOE *Société Nationale d'Electricité (SONEL)* failed to adequately generate, transmit and distribute power (IFC, 2012: 2). With rising household and industrial demand, blackouts and blowouts were a common feature. In response, the government created the *Electricity Sector Regulatory Agency (ARSEL)* and instituted privatisation of *SONEL*. In 2001, the American company, *AES Corporation,* acquired a 56% controlling stake in *SONEL*, renamed it *AES-SONEL* and was granted a 20-year concession (IFC, 2012: 2). The concession gave *AES-SONEL* a monopoly over transmission and distribution and the right to own up to 1,000 MW of generation capacity (World Bank, 2017a: 2). In 2013, *Actis* bought out *AES Corporation's* stake in *AES-SONEL* and two independent power plants, Kribi and Dibamba, for $220m. The company was renamed *ENEO Cameroun SA (Energy of Cameroon)* in 2014 (World Bank, 2017a).

Ivory Coast liberalised the energy sector through the Electricity Law of 1985, which allowed entry of IPPs (Oxford Business Group, 2020). In 1990, management of the highly indebted and poorly performing state-owned and vertically integrated utility, *Energie Electrique de Côte d'Ivoire* (*EECI*), was transferred, through concession, to the private operator, *Compagnie Ivoirienne d'Electricité* (*CIE – Ivorian Electricity Company*). The concession agreement, currently running from 2005 to 2020, entrusted *CIE* with the operation of state owned generation facilities as well as monopoly over transmission, distribution, marketing, importation and exportation of electricity throughout the country and in the sub-region (Oxford Business Group, 2020). As of 2019, *Eranove SA*, the main shareholders, managed *CIE* although the Ivorian government owned 15.0% of the shares (Eranove, 2019). The *National Electricity Sector Regulatory Authority* (*ANARÉ*), established in 1998, regulated the power sector (IFC, 2019).

In Gabon, electricity reforms began with the 1997 awarding of a 20-year concession to *Veolia*, a French owned company, to run the vertically integrated electricity and water utility, *Société d'Electricité et d'Eaux du Gabon (Energy and Water Company of Gabon - SEEG)* (Power Africa, 2017). The concession granted *Veolia* a 51% share of *SEEG's* capital, with the rest distributed among local investors (IFC, 2010: 2 and Power Africa, 2017). Under the deal, Veolia pledged to

reduce electricity and water tariffs by 17.5%. *Veolia* also agreed to invest at least, $130 million in tripling connections and upgrading and modernising the electricity system (IFC, 2010: 2). In return, *SEEG* was granted ownership of generation plants and monopoly in electricity transmission and distribution. After initially being renewed, in 2017, for five more years, the concession was cancelled in 2018 following disputes on water provision (Veolia, 2019: 77). Table 2.2 below shows the restructuring and privatisation in the five countries.

Table 2.2: Privatisation Models and Restructuring of the Electricity Industry in Africa

	Countries				
	Uganda	**Nigeria**	**Cameroun**	**Ivory Coast**	**Gabon**
Status of state utility	Vertically integrated	Vertically integrated	Vertically integrated	Vertically integrated	Vertically integrated
Sector unbundling	Yes	Yes	No	No	No
Privatised units	Generation and distribution	Generation and distribution	All	All	All
Privatisation model	Concession	Sale of Assets (competitive)	Concession	Concession	Concession
Competitive generation	Yes	Yes	Yes	Yes	No
Competitive transmission	No	No	No	No	No
Competitive distribution	No	Yes	No	No	No
Competitive retail	No	No	No	No	No
Independence of regulator	No	No	No	No	No

Source: Author's own interpretation of reviewed literature

2.6.2. Effect of Electricity Privatisation on Firm Performance in Africa

Zambia shares similar features with most African countries, especially those in sub-Saharan Africa. Therefore, the performance of privatised utilities in Africa could shed light on how ZESCO would fare once privatised.

2.6.2.1. Quality and Experience in Africa

Privatisation improved reliability of electricity supply in Uganda. Between 2005 and 2017, average power outage frequency and outage hours reduced by nearly 65% and 50%, respectively. Additionally, electric faults were restored within 16 hours as opposed to days (Umeme Limited, 2019). Service quality was improved by sensitising communities on the dangers of power theft

and illegal connections. Illegal users were disconnected, power thieves arrested and customer safety improved. *Umeme* also introduced prepaid metering (79% of all connections), a full time call centre and online presence (Umeme Limited, 2019). As a result, customer satisfaction levels rose to 65% while annual public fatalities reduced from 15 to only 1 (Umeme Limited, 2018: 32 and Umeme Limited, 2019: 21).

Nigeria's privatised generation and distribution systems operated well below international reliability standards (Dubagari, 2018). The systems faced major collapses owing to lack of updated equipment for maintaining balance. Above normal frequencies and voltage recordings in the distribution networks were a constant danger to the public. The system lacked distribution lines, substations and upgraded transformers (World Bank, 2017b: 5). In 2017, businesses lost 7% of sales on account of experiencing an average of 239 hours of power outages per month. Unwilling to pay for unreliable power, many consumers pursued costly off-grid alternatives. This caused annual economic losses in excess of $25 billion (World Bank, 2017b: 5). By failing to provide the contractually obliged pre-paid meters, DisCos put 70% of consumers at risk of fraudulent billings (Dubagari, 2018: 27). Average fault restoration time increased as DisCos became inefficient at responding to customer complaints. However, Dubagari (2018) and World Bank (2017: 5) blame the failure on the privatisation process being ill-conceived as fundamental issues and challenges were not addressed beforehand. Instead, government emphasised making electricity accessible to the poor at the expense of quality. Power firms were unconcerned as they made money regardless of how reliable power supply was (Audu, Paul and Ameh, 2017: 1226).

Similarly, privatisation worsened the quality of electricity supply in Cameroon (Pineau, 2005). The *AES Corporation* failed to diversify *SONEL's* production sources. With continued reliance on hydropower, the country continued to face power blowouts and blackouts, especially during the dry season. The ensuing unreliability contributed to a 1% decrease in the country's economic growth while lack of night street lighting compromised security (ENEO, 2019). With no penalties imposed for unreliability in supplying electricity, *AES-Sonel* preferred having blackouts rather than investing in new power plants. Consequently, between 2015 and 2018, average interruption duration increased by 10%, from 89 hours/year to 98 hours/year (2018: 4 and ENEO, 2019: 3). Nevertheless, fault repair time reduced from weeks to within 48 hours while customer satisfaction increased to 67% (ENEO, 2018: 15 and ENEO, 2019: 13).

CIE substantially improved reliability of Ivory Coast's power supply. Power interruptions occurred just 3.5 times per month, each lasting only a few hours (Eranove, 2019). This increased the country's reliability of supply index to 5 out of 8, above sub-Saharan Africa's average of 1.6 (World Bank, 2020d: 17). *CIE* also increased prepaid metering and drastically cut fault repair and connection time to within a few days rather than weeks. The company also started using concrete rather than wooden electricity pylons to increase durability and safety. Further, CIE managed to steadily increase customer satisfaction levels (Eranove, 2019).

Under *Veolia*, *SEEG* improved reliability by reducing the number and duration of power interruptions. Gabon's 2018 reliability of supply index stood at three, above the average in sub-Saharan Africa (World Bank, 2020e: 16). Customer satisfaction grew as the company developed innovative technologies like prepaid meters (IFC, 2010: 2). However, having isolated rather than an interconnected transmission grid contributed to high demand regions, especially urban areas, suffering from load shedding due to failure to access excess power from low demand grids (Oxford Business Group, 2018). Table 2.3 below shows changes in quality after privatisation.

Table 2.3: Quality and Experience in Africa

Performance Indicators		**Countries**				
		Uganda	**Nigeria**	**Cameroon**	**Ivory Coast**	**Gabon**
Reliability of Supply	**Annual outage hours**	Improved	Worsened	Worsened	Improved	Improved
	Fault restoration time	Improved	Worsened	Improved	Improved	Improved
Customer Service	**Safety**	Improved	-	Improved	Improved	Improved
	Prepaid metering	Increased	Reduced	Increased	Increased	Increased
	Call centres	Easily accessible	Less accessible	Easily accessible	Easily accessible	Easily accessible
	Customer satisfaction	Increased	Reduced	Increased	Increased	Increased

Source: Author's own interpretation of reviewed literature

2.6.2.2. Quantity and Experience in Africa

Spurred by private sector investments, Uganda's installed electricity generation capacity more than tripled from 240 MW in 2005 to 984 MW in 2018 (Umeme Limited, 2019: 17). The *Eskom* operated *Nalubaale* and *Kiira* hydroelectric power stations only supplied 380 MW of Uganda's electrical energy with the remainder supplied by IPPs (Umeme Limited, 2019: 17 and Wesonga, 2018). With peak demand of 600 MW, the country exported surplus power (Umeme Limited,

2019: 3). By the end of 2018, *Umeme* had doubled distribution lines and transformers (Umeme Limited, 2019: 16). National access rate increased from 4% in 2005 to 14.8% in 2010 and 26% in 2018 (Gore, 2008: 359; Umeme Limited, 2018: 24 and Umeme Limited, 2019: 22). Similarly, urban access rate increased from 36% in 2005 to 49.5% in 2010 and 57.5% in 2016 (Mawejje, et al., 2012: 22 and World Bank, 2020a). Access rate in rural areas increased from 1% in 2005 to 8.9% in 2010 and 19% in 2017 (Mawejje, et al., 2012: 22; Power Africa, 2018 and World Bank, 2020a). *Umeme* more than quadrupled customer connections from 290,000 in 2005 to 1.3 million in 2018, with 73% placed on pre-paid meters (Umeme Limited, 2018: 4 and Umeme Limited, 2019: 16). However, the country's low national electrification rate of 26% left 6.9 million households without power (Umeme Limited, 2019: 22; Wesonga, 2018 and Power, Africa, 2018). Limited effective demand, long distances and sparsely populated rural areas made the country unattractive for profit minded private distribution companies (Mawejje et al., 2013: 133).

DisCos and GenCos' shortcomings compromised Nigeria's electricity service delivery (World Bank, 2017b: 4). Although national electrification rate was moderate at 58% (41% in rural areas) 80 million people were left without access to the grid (World Bank, 2017b: 7). Available generated and dispatched capacity steeply declined from over 5,000 MW in 2016 to less than 3,500 MW in 2017. Consequently, economic activities contracted by 1.5% with 83% of business owners citing lack of electricity as their biggest obstacle (World Bank, 2017b). Those with access were subjected to exorbitant tariffs and poor distribution infrastructure.

Before privatisation, *SONEL* was incapable of generating, transmitting and distributing adequate power in the country. With the country's total installed capacity of just 819 MW, 452,000 connections and national electrification rate of less than 15%, most Cameroonians had no access to electricity (World Bank, 2017a and World Bank, 2016: 2). Rising household and industrial demand, coinciding with poor revenue collection, low tariffs and currency devaluation, resulted in blackouts and blowouts (World Bank, 2016: 2). Following privatisation, *AES-SONEL* constructed more power plants thus, increasing generation to 933 MW and expanded the number of connections by 77% (to 800,000) in 2013 (The AES Corporation, 2013: 1). *ENEO* further increased connections to over 1.2 million and also increased installed capacity to 998 MW (IPPs added another 362 MW bringing total installed capacity to 1,360 MW) (ENEO, 2019: 3). By 2018, Cameroon's national electrification reached 63%, one of the highest in sub-Saharan Africa

(ENEO, 2019: 3).

Allowing private firms to operate in the power sector gave Ivory Coast the ability to rapidly respond to growing energy needs. *CIE* increased generation capacity of *EECI*'s power plants and together with IPPs more than tripled Ivory Coast's installed generation capacity from below 700 MW in 1990 to 2,275 MW in 2019 (World Bank, 2017a and Eranove, 2019). *CIE* also increased transmission and distribution networks. At the time of privatisation, in 1990, only 36.65% of Ivoirians had access to electricity (69% in rural and 13.6% in urban rural areas) (World Bank, 2020a). However, *CIE* increased the number of connections to 1.9 million in 2019 (Eranove, 2019). This increased the country's national access rate to 64%, with 92% and 38% in urban and rural areas, respectively (IFC, 2019: 7). The country was also able to export around 15% of its excess power to six neighbouring countries (Eranove, 2019).

Between 1997 and 2017, *Veolia's* investments improved *SEEG's* installed capacity from 398 MW to 443 MW (Oxford Business Group, 2018). The state-owned *SDP* added another 282 MW, increasing Gabon's total installed capacity by 82%, from 398 MW to 725 MW (Oxford Business Group, 2018). During the same period, *Veolia* increased the lengths of *SEEG's* transmission and distribution networks, thus, tripling the number of electricity connections (IFC, 2010: 2 and Veolia, 2018). National electrification rate more than doubled from about 40% to 92% (IFC, 2010: 2; World Bank, 2020a and Power Africa, 2017). Urban and rural electrification rose from 72% to 97% and 10% to 55%, respectively (World Bank, 2020a). Table 2.4 below shows changes in quantity after privatisation.

Table 2.4: Quantity and Experience in Africa

Performance Indicators	**Countries**				
	Uganda	**Nigeria**	**Cameroon**	**Ivory Coast**	**Gabon**
Installed Generation Capacity	Increased (except for Eskom)	Reduced	Increased	Increased	Increased
Number of Connections	Increased (quadrupled)	-	Increased (nearly tripled)	Increased	Increased (tripled)
Network Length	Increased	-	Increased	Increased	Increased
National Electrification Rate	Increased significantly	Remained the same	Increased significantly	Increased significantly	Increased significantly

Source: Author's own interpretation of reviewed literature

2.6.2.3. Financial Performance and Experience in Africa

Under state control, Uganda's power sector faced years of poor investment leading to decay in infrastructure. Since taking over, *Umeme* invested a total of $627 million to improve the distribution system, significantly above the concession agreement (Umeme Limited, 2019: 11). The funds were used on substations, feeders, prepaid metering systems and expansion of the distribution grid. Through prepaid metering and a focus on industrial customers, revenue collection rose to 99% in 2018 compared to 50% at the start of the concession (Umeme Limited, 2019: 16 and Umeme Limited, 2018: 10). Private ownership enabled collection of revenue from government ministries, departments and agencies, categories the *Uganda Electricity Board* had trouble with (Umeme Limited, 2019). However, *Eskom* failed to make investments as set out in the concession agreement. By 2019, the company had only invested $29 million, from the mandatory $100 million (Businge, 2019). Without investments in rehabilitating the plants' ageing dam, cracks reduced their life span to only 10 years. With no assurances of renewal for a concession contract set to expire in three years, the company was hesitant to make telling investments. Meanwhile, *Eskom* was guaranteed a 12% annual return on investment regardless of performance (Businge, 2019).

Failure of electricity privatisation in Nigeria hinged on poor commercial performance of DisCos. Although revenue collection rose from 32% in 2013 to 54% in 2016, DisCos remained financially unviable on account of cost unreflective tariffs and a rise in revenue collection losses from 32% in 2013 to 54% in 2016 (Dubagari, 2018). Consequently, the electricity sector suffered losses of $678 million between 2013 and 2014 and $1.5 billion between 2015 and 2016, and over $5 billion in 2017 (Adedeji, 2017: 200). DisCos' weak financial situation constrained their ability to access local and international financing (Dubagari, 2018: 28).

In Cameroon, *AES-SONEL's* operations quickly became profitable as electricity sales and revenues spiked, enabling *AES-SONEL* (and latter *ENEO*) to pay annual dividends (World Bank, 2017a). For instance, revenue collection increased from 50% in 2002 to 101% in 2017 (ENEO, 2019). Between 2002 and 2012, *AES-SONEL* invested over US$510 million in rehabilitating and expanding generation, transmission and distribution networks (World Bank, 2017a: 2).

Under the concession agreement, major investments were the responsibility of the Ivorian government. However, *CIE* did invest in new connection equipment and changed from wood to

the safer and durable concrete pylons. The company also extended the life of the generation plants. Even with non-cost reflective tariffs, *CIE* remained profitable due in part to an over 90% bill collection rate (Eranove, 2019).

Five years into the concession, *Veolia* had already made 80% of the $130 million contractually required investments in *SEEG* (IFC, 2010: 2). By 2017, *Veolia* had invested around $600 million in improving *SEEG's* electricity infrastructure (Veolia, 2018). Through these investments, *SEEG* tripled connections, improved generation, modernised the electricity system and trained its personnel (Veolia, 2018). Prior to privatisation, *SEEG* faced accumulated financial losses exceeding $100 million due in part to a bloated workforce, non-reflective tariffs, poor revenue collection and technical and commercial losses (IFC, 2010: 2). Under *Veolia, SEEG's* financial performance improved with dividends rising, from a contractually agreed 6.5%, to 20% (IFC, 2010: 2 and Veolia, 2018). Table 2.5 below shows changes in financial performance after privatisation.

Table 2.5: Financial Performance and Experience in Africa

Performance Indicators		Countries				
		Uganda	**Nigeria**	**Cameroun**	**Ivory Coast**	**Gabon**
Investment in Infrastructure		Mixed	Poor	Improved	Improved	Significant improvement
Profitability	**Revenue collection**	Significant improvement	Remained the Same	Significant improvement	Significant improvement	Significant improvement
	Profit	Became profitable	Loses Increased	Became profitable	Became profitable	Became profitable

Source: Author's own interpretation of reviewed literature

2.6.2.4. Productivity and Experience in Africa

Under state control, the *Nalubaale* and *Kiira* power plants chronically operated below their 380 MW installed capacity. Serve for periods of low water levels, the two plants operated at full capacity under *Eskom* (Businge, 2019 and Mawejje et al., 2013: 129). *Eskom* also halved staff numbers at the plants. The company was able to keep generation costs at 1.5 cents, lower than the average of 8 cents charged by IPPs (Businge, 2019). *Umeme* reduced annual distribution losses from 38% in 2005 to 16.6% in 2018, increasing the distribution factor from 50% to 85.5% (Umeme Limited, 2019: 16 and 21). Prior to privatisation, *UEDCL* was overstaffed with over

1,500 employees serving 292,000 customers. By 2018, *Umeme* had only 1514 employees serving 1.3 million customers, thus increasing labour productivity by over 450% in 13 years (Umeme Limited, 2019: 22). This helped the company to reduce operating costs per customer from $100 to $47 (Umeme Limited, 2019: 11). However, suspicions were raised regarding the company's 'failure' to reduce system loses to the international target of 12%. This was because the Ugandan Government paid a compensation of US$4.5 million for every percentage lost (Businge, 2019). The government continued to spend highly on subsidising electricity.

Neither productivity nor system loses improved in Nigeria after privatisation. Largely due to rundown infrastructure and power grid collapses, transmission and distribution loses rose from 15% in 2013 to 16% in 2014 (World Bank, 2020a). Nigeria's GenCos generated between 3,000 MW and 5,000 MW of electricity from an installed capacity of 12,000 MW. This limited their productivity to between 25% and 42% (World Bank, 2017b and Dubagari, 2018). Yusuf (2018) notes that even if GenCos were to improve generation, DisCos could not manage to distribute. For instance, in 2018, about 417 MW and 680.5 MW of power could not be generated due to unavailability of transmission and distribution infrastructures, respectively (Yusuf, 2018). The government was forced to heavily subsidise the sector because generators and distributors were unable to keep costs low. Power companies responded with shutdowns whenever the government defaulted on paying the unsustainable subsidies (Harper, 2015 and World Bank, 2017b).

Unlike in Nigeria, Cameroon's transmission and distribution system improved as loses reduced from 25.7% in 2001 to 11% in 2014, below the 12% international threshold (World Bank, 2020a). However, under *ENEO*, distribution losses increased to 31.1% in 2018 (ENEO, 2019: 13). *AES-SONEL* failed to make the 50% staffing cuts needed to ensure optimal utilisation of labour thus, remaining overstaffed with 3,697 employees (ENEO, 2019: 4). On the bright side, excellent mastery of the maintenance programmes improved the performance of *ENEO's* generation plants. Measured by the availability rate of production facilities (outside of scheduled maintenance), the plants' performance increased from 83.88% in 2015 to 91.01% in 2017 (ENEO, 2018: 17 and 30). Distribution and transmission also improved with only 9% of generated electricity not transmitted and/or distributed compared to 39% in 2001 (ENEO, 2018).

Similarly, under *CIE*, transmission and distribution losses declined from 18.4% in 1990 to 11.8% in 1997, before increasing to 22% in 2018 (World Bank, 2020a). The situation was attributed to

aged infrastructure and pilferage. Nevertheless, *CIE* improved labour productivity by maintaining a lean workforce of 4,896 overseeing generation, transmission and distribution (Eranove, 2019). Performance of *CIE's* generation plants stood at 94% (Eranove, 2019). Despite increased distribution losses, the system managed to deliver most of the generated electricity.

In the same vain, *Veolia* improved *SEEG's* labour productivity by significantly reducing the bloated labour force and investing in the training and development of its human resources (Veolia, 2018). Performance of *SEEG's* generation plants was always near perfect as *Veolia* made alterations to make them more efficient. For instance, thermo plants were altered to enable them utilise both diesel and petrol. Oil lines were also directly connected from refineries to *SEEG's* thermo plants for uninterrupted fuel supply (Veolia, 2018). However, Veolia failed to improve SEEG's transmission and distribution infrastructure, which continued to age and dilapidate. As a result, transmission and distribution loses increased by 6% between 1997 and 2017, causing a major strain on the electricity system (World Bank, 2020a). Table 2.6 below shows changes in productivity after privatisation.

Table 2.6: Productivity and Experience in Africa

Performance indicators		**Countries**				
		Uganda	**Nigeria**	**Cameroun**	**Ivory Coast**	**Gabon**
Cost of Operation	**Cost per customer**	Improved (reduced)	Worsened (increased)	Mixed	Improved (reduced)	Improved (reduced)
	Subsidies	Worsened (Increased)	Worsened (Increased)	-	Improved (reduced)	-
Utilisation of Labour	**Number of employees**	Improved (reduced)	-	Improved (reduced)	Improved (reduced)	Improved (reduced)
	Labour productivity	Improved (increased)	No change	Slight improvement	Improved (increased)	Improved (increased)
Utilisation of Infrastructure	**Actual generated compared to installed capacity**	Improved (increased)	Worsened (reduced)	Improved (increased)	Improved (increased)	Improved (increased)
	System loses	Improved (Reduced)	Worsened (increased)	Fluctuated	Worsened (increased)	Worsened (increased)
	Unserved energy	Improved (reduced)	Worsened (increased)	Improved (reduced)	Improved (reduced)	-

Source: Author's own interpretation of reviewed

2.6.2.5. Competitiveness and Experience in Africa

In Uganda, entry of 10 IPPs made generation competitive. Nevertheless, *Eskom* neither increased installed capacity of its two plants nor built new power plants. Consequently, *Eskom*'s market share in generation fell by 62% by 2018 (UEGCL, 2018). Eskom will continue losing market share in electricity generation as new power plants are expected to increase installed capacity to 2,500 MW by 2020 (UEGCL, 2018: 30). On the other hand, through increased connections, *Umeme* increased its market share, distributing over 97% of all electricity consumed in Uganda (UEGCL, 2018). Nevertheless, tariffs were high compared to other countries in the region. Electricity cost US¢ 11.9/kWh before privatisation (Mawejje et al., 2012: 20). Immediately after signing the concession, *Umeme* increased domestic tariffs by 24% and 37% in 2005 and 2006, respectively (Harper, 2015). By 2019, consumers were charged US¢16.9/kWh, 30% more than the US¢ 13/kWh average for sub-Saharan Africa (World Bank, 2020b: 17). Although the *ERA* was expected to introduce competition throughout the sector, *Umeme* maintained monopoly in distribution (Mawejje, et al., 2012).

Nigerian GenCos did not improve their market shares as none of them invested in new plants (Audu et al., 2017: 1226). Neither could DisCos as they were legally required to operate in specific geographical areas (Adedeji, 2017: 195). Within three years of privatisation, DisCos increased electricity tariffs on four occasions despite public protests (Idowu, Ibietan and Olukotun: 2019: 395). With each adjustment increasing tariffs by 40%, Nigeria's 2018 electricity tariffs stood at US¢16.3/kWh, about 25% higher than the average for Sub-Saharan Africa (Audu et al., 2017: 1226 and World Bank, 2020f).

In Cameroon, *ENEO* retained monopoly in transmission and distribution. Even with incoming of IPPs, the company dominated generation, growing its market share by 4.7%, from 73% in 2015 to 77.7% in 2018 (ENEO, 2018: 25 and 30 and ENEO, 2019: 3). The company also innovatively structured its tariffs among low (households and small businesses), medium (large businesses) and high voltage consumers (*Aluminium du Cameroun - ALUCAM)*. For instance, low and medium voltage consumers were offered social prices and sales tax exemptions, respectively. This helped maintain average tariffs at a competitive US¢17/kWh, about 31% above the average for sub-Saharan Africa (World Bank, 2020c: 17). Every year, tariffs were slashed between July and December to reflect lower production costs in the wet season.

In Ivory Coast, *CIE* retained monopoly in transmission and distribution. Nevertheless, its market share in generation reduced by 69% between 1990 and 2018 (Eranove, 2019 and World Bank, 2017a). Ivory Coast maintained low tariffs at US¢12.6/kWh, about 3% lower than the average for sub-Saharan Africa (World Bank, 2020d: 17). However, the tariffs were kept artificially below inflation or the real costs of production.

Under *Veolia, SEEG* retained monopoly over transmission and distribution. Although *Veolia* increased *SEEG's* installed generation capacity, it lost 40% of its market share between 1997 and 2017 (Oxford Business Group, 2018). However, this did not reflect failure on *Veolia's* part. Rather, the concession's stipulation gave government the responsibility of investing in the construction of new plants. The Gabonese government in turn gave control of the new plants to *SDP* instead of *SEEG* (Oxford Business Group, 2018). Upon signing the concession, *Veolia* cut electricity tariffs by 17.5% (IFC, 2010: 2). Despite this, tariffs skyrocketed to US¢19.1/kWh by 2019, about 47% above the average for sub-Saharan Africa (World Bank, 2020e: 16). Table 2.7 below shows changes in competitiveness after privatisation.

Table 2.7: Competitiveness and Electricity Supply in Africa

Performance Indicators		**Countries**				
		Uganda	**Nigeria**	**Cameroun**	**Ivory Coast**	**Gabon**
Market Share	**Generation**	62% reduction	No change	4.7% increment	69% reduction	40% reduction
	Transmission	N/A	N/A	Monopoly	Monopoly	Monopoly
	Distribution	Increased	No change	Monopoly	Monopoly	Monopoly
Tariffs (compared to sub-Saharan Africa)		30% higher	25% higher	31% higher	3% lower	47% higher

Source: Author's own interpretation of reviewed literature

2.7. Privatisation of Electricity Supply and Firm Performance: Empirical Experience of Countries outside Africa

This section will establish findings from leading empirical literature on the models used to privatise and restructure the electricity industry in non-African countries. It will then assess the effects that the models and restructuring had on firm performance.

2.7.1. Privatisation Models and Restructuring of the Electricity Industry outside Africa

Privatisation of electricity utilities in highly liberalised European countries (the United Kingdom (UK), Sweden and Germany) included policy measures aimed at promoting competition by liberalising markets (Heddenhausen, 2007). To begin with, state utilities were vertically and horizontally unbundled into generation, transmission and distribution before being separately divested through sale of assets on competitive basis. Electricity producers are legally prohibited from owning the transmission grid to ensure open competition (Burger, 2018). Distributors buy wholesale electricity from transmitters and then supply either to retailers or directly to consumers (Van Gyes et al., 2009). Electricity consumers were thus, free to choose their own retailers. Electricity sector regulators enjoyed autonomy in their operations (Heddenhausen, 2007). For instance, in the UK, the vertically integrated state utility, *Central Electricity Generating Board (CEGB),* a monopoly, was vertically and horizontally unbundled into two generation, one transmission and twelve distribution units. Between 1991 and 1996, the unbundled units were then sold through a combination of Sale of Assets and Share Issue. Industrial and household customers were free to choose their suppliers as multiple retailers existed in each distribution region (Burger, 2018 and Heddenhausen, 2007: 10).

Sweden liberalised the electricity market before unbundling the vertically integrated state utility, *Vattenfall AB,* between 1991 and 1992. *Vattenfall* was then privatised by transforming it into a limited liability company, albeit still completely owned by the Swedish state (Heddenhausen, 2007: 11). However, *Vattenfall AB* was given competition by the entry of new private, state and municipal or co-operative companies in generation, transmission and distribution. Unlike the UK, only three companies produced 90% of Sweden's electricity: *Vattenfall*, *E.On* of Germany and *Fortum* of Finland (The Swedish Energy Markets Inspectorate, 2017).

Germany's electricity industry reverted to private hands with the 1998 liberalisation of the sector (Heddenhausen, 2007: 17). Similar to the UK, the vertically integrated state utilities, *VEBA AG* and *VIAG AG*, were unbundled and divested through sale of assets (Heddenhausen, 2007: 17). Overtime, the German electricity market became dominated by an oligopoly of four (formally eight) vertically integrated companies, which together controlled 90% of generation and 73% of the retail market. Another four companies owned the transmission grid. Nonetheless, around 700 other companies at regional and local level complement them (Burger, 2018).

Before privatisation, Australia's electricity was provided by vertically and horizontally integrated state government owned monopolies and operated as statutory authorities (Quiggin, 2014: 7). In the early 1980, the electricity authorities were corporatised before being vertically and horizontally disintegrated into separate units of generation, transmission, distribution and retailing before being sold off (Nepala, and Foster, 2015). For instance, according to Quiggin, (2014: 20) the *Electricity Trust of South Australia (ETSA)* was broken into separate enterprises providing generation (*Flinders, Optima and Synergen*), transmission (*ElectraNet*), distribution (*ETSA Utilities*) and retail (*ETSA Services*). The units were then sold separately, mostly through sale of assets. Post privatisation, distributors bought wholesale electricity from the *National Electricity Market (NEM),* an interconnection of electricity transmission grids. Price regulations were eliminated and electricity consumers were free to choose their own retailers (Quiggin, 2014: 20). The sector regulator, *Energy Regulator (AER),* enjoyed operational autonomy.

State-owned Latin American power utilities were vertically unbundled in the early 1990s. The sector was then liberalised. Some of the utilities were divested via sale of assets and concession (Balza, Jimenez and Mercado, 2013). In most countries, private and state-owned companies carried out generation in a liberalised and competitive environment. However, transmission and distribution continued to be highly regulated and less competitive (Kessides, 2012: 11). Retail supply remained competitive with lone distributors supplying power within a geographic location (Balza et al., 2013). Sector regulators encountered constant government interference. For instance, in Argentina, *Transener* acquired the state transmission utility *Compañia de Tranporte de Energía en Alta Tensión* in 1993 and monopolised the national electricity transmission grid. In the distribution sector, only three private companies dominated. Overall, private actors had market shares of 75% in generation, 100% in transmission and 75% in distribution (Balza et al., 2013). In Brazil, large government-controlled companies still dominate the electricity sector. Only 64% of distribution, 10% of generation and very few transmission assets were in the hands of private concessioners (Balza et al., 2013 and Kessides, 2012).

Electricity reforms in Asia concentrated on liberalising generation by allowing entry of IPPs. Transmission and distribution usually remained state monopolies (Nikomborirak and Manachotphong, 2007: 4). A single distributor serviced each geographical location. Sector regulators continued to experience political interference. For instance, the vertically integrated

Philippine state utility, *National Power Corporation*, was unbundled and subsequent units concessioned through competitive bidding (Nikomborirak and Manachotphong, 2007: 4). The *National Grid Corporation of the Philippines (NGCP),* with a 50-year concession, was the sole transmitter while generation was opened up to IPPs as well as concession holders. Distribution franchises where awarded to private companies, cooperatives and local government units. In 1990, Malaysia re-established the vertically integrated state utility *National Electricity Board (NEB)* as *Tenaga* before selling it on the Kuala Lumpur Stock Exchange in 1992 (Nikomborirak and Manachotphong, 2007: 5). However, *Tenaga* remained a vertically integrated monopoly (Tenaga Nasional, 2019). The state utilities, *Perusahaan Listrik Negara (PLN)* in Indonesia and *Electricity Generating Authority of Thailand (EGAT)* in Thailand, remained the only entities in transmission and distribution and monopolies in generation (Nikomborirak and Manachotphong, 2007: 5 and Tenaga Nasional, 2019). Table 2.8 below shows privatisation models and restructuring of the electricity industry outside Africa.

Table 2.8: Privatisation Models and Restructuring of Electricity Industry outside Africa

	Countries			
	Europe	**Australia**	**Latin America**	**Asia**
Status of State Utility	Vertically integrated	Vertically integrated	Vertically integrated	Vertically integrated
Sector Unbundling	Yes	Yes	Yes	Only Philippines
Privatised Units	All	All	Generation and Distribution	Mostly Generation
Privatisation Model	Sale of Assets and Share Issue	Sale of Assets	Concession and Sale of Assets	Concession, Sale of Assets and Share Issue
Competitive Generation	Yes	Yes	Yes	Mixed
Competitive Transmission	Yes	Yes	No	No
Competitive Distribution	Yes	Yes	No	No
Competitive Retail	Yes	Yes	No	No
Independence of Regulator	Yes	Yes	No	No

Source: Author's own interpretation of reviewed literature

2.7.2 Effect of Electricity Privatisation on Firm Performance outside Africa

A number of African countries took the cue to privatise in part due to the perceived effect it had in countries from overseas. Therefore, there is need to analyse how privatised utilities from

outside Africa have fared.

2.7.2.1 Quality and Experience of Countries outside Africa

Van Gyes et al., (2009) determined the levels of satisfaction of customers with the quality of electricity supply in six European countries. The study was a telephone survey of at least, 1,000 respondents in six European countries, most privatised (Sweden, Germany and the UK) and least privatised (Austria, Belgium, Poland). The study aimed at determining differences in levels of satisfaction in the quality of public services between most and least privatised countries. In both sets of countries, 88% of the respondents were satisfied with the quality of electricity (Van Gyes et al., 2009: 77). The implication is that privatising electricity had no impact on quality.

Quiggin's (2014) study determined whether the free market and competition that accompanied privatisation of electricity supply in Australia succeeded in reducing prices as well as improving quality and quantity. The study used aggregated data on the performance of privatised electricity companies in Australia. Quiggin (2014) found that private owners failed to make the necessary investments to improve quality in electricity production and supply. Consequently, electricity quality reduced, leading to a sharp rise in customer dissatisfaction. Customer complaints rose from 500 per year to over 50,000, a growth of nearly 10,000% (Quiggin, 2014: 5).

A study by Chisari et al., (1999) assessed the macroeconomic and distributional impacts of privatisation of utilities in Argentina between 1993 and 1995. Using the computable general equilibrium model as the framework of analysis, the study found that privatisation improved the quality of utilities. Specifically, Chisari et al., (1999) found a 10% improvement in the quality of electricity distribution. Balza et al., (2013) examined the relationship between private sector participation, institutional reform, and performance of the electricity sector in 18 Latin American countries over four decades (1971-2010). The study found that private sector participation did improve the quality of electricity supply. It was especially true in the presence of well-designed and stable sectorial institutions and good regulation.

Andres, Foster and Guasch (2006) analysed the impact of privatisation on the performance of 116 electricity utilities in 10 Latin American countries. The analysis covered three main periods: pure public (three years prior to the announcement of intention to privatise), transition (announcement of privatisation to one year after privatisation) and pure private (covering the

three years after the transition). The results suggest that changes in ownership generated 9.8% and 10.6% annual improvements in quality of electricity during transition and pure private periods, respectively (Andres et al., 2006: 16). Kessides (2012: 11) also found that waiting time for repair reduced from 5 to 2 hours after privatising Chilean power companies.

Lee, Cho, Koo and Park (2018) used a panel regression model to gauge how ownership structure affected investment in electricity facilities in Asian countries. Their empirical analysis uncovered that privatisation did little to improve quality as governments mostly divested power generation while maintaining state control of transmission and distribution.

2.7.2.2 Quantity and Experience of Countries outside Africa

According to Van Gyes et al., (2009), electricity production in highly privatised European countries increased following the privatisation of several power plants. This enabled the expansion of the transmission and distribution network thus, allowing for more customers to be added to the grid. Germany, Sweden and the UK all had 100% access to electricity compared to the 88.8% world average (World Bank, 2020a).

According to Quiggin (2014), while private electricity generators in Australia did manage to increase generation and connections, they failed to adequately meet demand. This resulted in increased power outages. However, the major hindrance was not the ownership structure but rather shortage of raw materials. Verrender (2017) found that although Australia was the second biggest supplier of gas in the world, it faced acute gas shortages as private gas suppliers, multinational corporations, preferred to ship the gas offshore for more profit. Nevertheless, nearly 100% of Australian had access to electricity (World Bank, 2020a).

In Latin America, Pollitt (2008) found a positive correlation between privatisation and quantity of electricity produced. For instance, between 1992 and 2002, Argentina's installed capacity rose by 77%. Private power companies no longer relied on climate sensitive hydropower by diversifying to other sources, including nuclear, thermal, gas and oil. Likewise, Kessides (2012: 4) found Colombia's electricity privatisation to have created an incentive for quantitative surges in production. A competitive electricity market increased power production by an additional 2,500 MW. Consequently, more customers were added to the grid and interruption time reduced

from 6.3 hours to 2 hours (Kessides, 2012: 11). Balza, et al., (2013) contended that this positive effect of privatisation on quantity was anchored on appropriate sectorial institutions as well as good regulations. This enabled Latin American countries to have over 95% accessibility to electricity at national level and 60% in rural areas (World Bank, 2020a).

2.7.2.3 Financial Performance and Experience of Countries outside Africa

Jefferys et al., (2009: 59) found an increase in both profits and infrastructure investments in highly privatised European countries. Companies become profitable by shifting electricity production technology from coal to the more efficient hydro, gas and nuclear. For instance, in the UK companies invested heavily in gas fuelled power stations, raising its production share from less than 2% in 1990 to 35.5% in 2006 (Jefferys et al., 2009: 59). While a state owned industry might have moved in the same direction, the speed and scale of change would have been slow.

In Australia, investors in power supply had close to 10% returns on their investments, outperforming almost all investment classes (Quiggin, 2014). However, private owners diverted resources to management and marketing rather than making investments to improve operational functions and efficiency. This led to increased costs and reduced service quality which, in turn, resulted into growing political opposition to privatisation driven by widespread perception that it benefits foreign interests' profit at the expense of the population at large (Quiggin, 2014).

Kessides (2012: 4) found that electricity privatisation created a surge in investment in a number of Latin American countries. For instance, in Colombia, the private electricity market significantly increased power distribution as $6 billion in foreign investment led to an additional 2,500 MW. In Argentina, high investments increased generation capacity by 75% in addition to renovation and expansion of distribution networks. However, increase in transmission capacity was insignificant and a number of companies experienced losses from their initial investments. Consequently, some companies reduced or withdrew subsequent investment in energy infrastructure (Kessides, 2012).

Lee et al., (2018) used a panel regression model to gauge how ownership structure affected investment in electricity facilities in Asian countries. Their empirical analysis uncovered that private enterprises reduced investment in electricity facilities because of the high uncertainty due to the large investment amounts and long construction time.

2.7.2.4 Productivity and Experience of Countries outside Africa

Investment in innovation and trimming of employee numbers helped Sweden, Germany and the UK to minimise costs of generating electricity. For instance, shift from coal to hydro, gas and nuclear improved efficiency. By thinning employee numbers and technological innovations, private suppliers were able to effectively utilise labour. Improvement in technology netted a 5-6% increase in labour productivity in the three countries (Flecker and Hermann, 2009: 59). Utilisation of infrastructure markedly improved with transmission and distribution loses falling below 10% by 2015 (Council of European Energy Regulators, 2017).

However, in Australia, productivity reduced because of shortage and poor training of lower level staff and a corresponding overstaffing of unproductive managerial and sales staff (Quiggin (2014). Similarly, Zhang, Parker and Kirkpatrick (2008: 182) concluded that without complete and independent regulation, privatisation did not raise productivity in Asia. Private electricity generators were able to exercise monopoly power rather than improve efficiency.

Most of the SOEs in Latin America had low labour productivity on account of being bloated (Andres et al., 2006: 15). To improve productivity, private owners shed labour. The average annual labour reduction was 6.6% and 9.9% during the pure public period and transition period, respectively. By the pure private period, the labour force had reduced by 38.1% (Andres et al., 2006: 15). Consequently, labour productivity improved with both connections per employee and output per employee growing by 5.5% annually in the pure private period. In Argentina, labour productivity in generation and distribution increased by 23.1% and 17.59%, respectively (Andres et al., 2006). Kessides (2012: 3) also saw modest gains in capacity utilisation from privatisation reforms in the presence of competition and regulation. However, losses of electricity during distribution and transmission increased by 1.3% post privatisation (Andres et al., 2006: 15).

2.7.2.5 Competitiveness and Experience of Countries outside Africa

Hermann and Verhoest (2009: 8) found that since privatisation came with market liberalisation, electricity supply become competitive as a result of increase in the number of providers arising from new entrants. Hermann and Verhoest (2009: 8) further found that Poland and the UK each had one provider of electricity before privatisation. Following their privatisation and subsequent

economic liberalisation, the former monopolies were rated as moderately and strongly competitive, respectively. In Sweden, *Vattenfall* still grew its market share despite competition from *Fortum* and *E.ON* (The Swedish Energy Markets Inspectorate, 2017). Germany's four main electricity suppliers grew their market share in generation from 79% in 1997 to 90% in 2007 (Heddenhausen, 2007: 17). The companies also raised their distribution market to 73% in 2004 compared to 50% in 1995 (Heddenhausen, 2007: 17). Consequently, 72% of the respondents from highly privatised countries were satisfied with the prices of electricity, compared to only 33% from least privatised countries (Van Gyes et al., 2009: 77).

However, Hermann and Flecker (2009: 7) found that in Germany, Belgium and Sweden, although privatisation came with market liberalisation, privatised electricity companies were uncompetitive. Rather than gaining market share, small-privatised electricity companies were bought by larger competitors. In Sweden, *Vattenfall* monopolised the market by taking over most of the privatised retail electricity companies (Hermann and Flecker, 2009: 7).

Similarly, competitiveness eluded electricity privatisation in Australia as companies rarely made moves to expand beyond their geographical locations (Quiggin, 2014). During nationalisation, Australia had one of the lowest electricity prices in the world. Following privatisation, prices skyrocketed as enterprises transferred the cost of corporate debt, as high as 10% interest per annum, to customers' bills (Quiggin, 2014). Although Australia was the second biggest supplier of gas in the world, preference for the profitable offshore market meant that it faced acute gas shortages. The shortages raised energy prices and in turn, electricity costs. Between 2003 and 2013, real electricity prices for Australian households increased by 72% (Verrender, 2017).

On the other hand, enhanced efficiency led to reduction in the prices of utilities in the early period of privatisation in Latin America. Specifically, tariffs charged on electricity distribution reduced by 9.5% (Chisari et al., 1999). In Argentina, wholesale prices decreased from $40/MWh in 1992 to $23/MWh in 2001. However, overtime, tariffs began to rise. Hall (2005: 15) discovered that many private power stations gradually forced up prices of electricity. Attempts by distributors to pass on the hike, priced out most low-income consumers. For instance, after acquiring the Dominican Republic's key power generation stations at $211 million, *Union Fenosa*, reduced charges. Nevertheless, it eventually demanded a 51% increase in charges. Using its monopoly position, the company deliberately instituted power cuts in response to distributors'

failure to pass on the increase to consumers. Public pressure forced government to renationalise the company at $434 million, more than double the initial sell price (Hall, 2005: 15).

In Asia, most states controlled distribution. Therefore, whenever private power generators increased charges, public distribution authorities absorbed the increases rather than pass them on to consumers. The distributors incurred huge financial burdens (Lee et al., 2018). Table 2.9 below shows the performance of privatised firms outside Africa.

Table 2.9: Privatisation of Electricity Supply and Firm Performance outside Africa

Performance indicators		Countries			
		Europe	**Australia**	**Lain America**	**Asia**
Quality	**Reliability of Supply**	No change	Reduced	Improved	No change
	Customer Service	No change	Reduced	Improved	No change
Quantity	**Installed Generation Capacity**	Increased	Increased (inadequate)	Increased	Increased (inadequate)
	Number of Connections	Increased	Increased (inadequate)	Increased	Increased
	Network Length	-	Increased	Increased	Mixed
Financial performance	**Investment in Infrastructure**	Increased	Reduced	Increased	Reduced
	Profitability	Improved	Improved	Mixed	-
Productivity	**Cost of Operation**	Improved	Improved	Improved	Improved
	Utilisation of Labour	Improved	Improved	Improved	Improved
	Utilisation of Infrastructure	Improved	Improved	Improved	Mixed
Competitiveness	**Tariff**	Reduced	Increased	Increased	Reduced
	Market Share	Mixed	No change	-	-

Source: Authors own interpretation of reviewed literature

2.8. Chapter Summary

This chapter reviewed literature on privatisation. Precisely, the chapter looked at the theoretical framework on privatisation, the rationale for privatisation and the performance of privatised electricity supply firms in Zambia, Africa and other countries. The study relied on three theories, the Agency Theory, the Theory of Cyclical Change and the Contingency Theory. The chapter also rationalised privatisation on grounds that it made enterprises run more effectively and efficiently thus, improving performance. Empirical literature revealed that privatisation had a positive effect on the performance of privatised electricity firms in Zambia, Africa and the rest of

the world. This was especially the case in countries with liberalised electricity industries which where coupled with independent regulators. The next chapter examines models used to privatise SOEs in Zambia.

CHAPTER THREE

MODELS USED TO PRIVATISE SOES IN ZAMBIA

3.1. Introduction

The previous chapter focused on the theoretical framework and literature review on privatisation. This chapter focuses on examining how each privatisation model affected performance of Zambian firms. Privatisation mirrored the arguments of the Agency Theory, Theory of Cyclical Change and Contingency Theory. As earlier mentioned, Zambia's 288 SOEs accounted for 80% share of economic activities in 1991 (Madimutsa and Pretorius, 2017 and United Nations, 2011: 9). However, it was observed that SOEs did not perform as expected (Rakner, 2003: 79). Rather, most were uncompetitive on account of government adopting policies, like the Import Substitution Industrialisation, aimed at insulating them from internal and external competition. They were also overstaffed on account of being used as employment vehicles for rewarding political supporters (Chigunta, et al., 1998). They also made losses and offered insufficient good and services of poor quality (Rakner, 2003: 79). In line with the Agency Theory, it was concluded that the malaise affecting SOEs was a result of poor management on account of lack of effective control from the government (Fundanga and Mwaba, 1997: 6 and Kaunga, 1993).

In line with the Theory of Cyclical Change, the government responded by changing the mode of enterprise ownership from public to private. This was premised on the belief that private owners would be better at running the enterprises owing to their superior management capabilities and profit motive. With this in mind, the government enacted the Privatisation Act in 1992 (amended in 1994 and 1996 before being repealed and replaced by the Zambia Development Agency Act in 2006) to guide the privatisation process (Republic of Zambia, 1996 and Republic of Zambia, 2006: 38). The Privatisation Act established the Zambia Privatisation Agency (ZPA) (replaced by the Zambia Development Agency in 2006) which was tasked with the responsibility of carrying out the privatisation process (Republic of Zambia, 1996: 5 and Republic of Zambia, 2006: 5). Consequently, between 1992 and 2010, 281 units, including multiple units from unbundled enterprises, were privatised (ZDA, 2010). By 2018, only about 30 SOEs remained (Republic of Zambia, 2018).

In line with the Contingency Theory, the government recognised the need to privatise each enterprise using models that reflected the unique factors facing each firm and the country at large. That is, rather than privatising all firms using one model, an analysis was performed on each firm before choosing, the most appropriate model (Republic of Zambia, 2006). The chosen model of privatisation was one, which gave the best opportunity for improved firm performance in light of the prevailing factors (Estrin and Pelletier, 2018: 87 and Republic of Zambia, 2006). After privatising each tranche, the effect of models on firm performance was assessed. Models with poorly performing enterprises were discarded in future privatisation decisions (Salimu, 1999 and United Nations, 2011: 69-70).

The chapter is comprised of four sections. Section one is the introduction. Section two explains the process followed in privatising an enterprise in Zambia. Section three focuses on the models that were used to privatise SOEs in Zambia. The section also examines the strengths and weaknesses of each model. It also examines the actual performance of firms that were privatised under each specific model. Section four summarises the pertinent contents of the chapter.

3.2. The Privatisation Process in Zambia

Zambia's privatisation process was guided by the 1992 Privatisation Act No. 21 under Chapter 386 of the Laws of Zambia, which was amended by Act No. 13 of 1994, itself amended by Act No. 9 of 1996 (Republic of Zambia, 1996). The Privatisation Act established the *Zambia Privatization Agency (ZPA)* as the sole institution responsible for the divestiture of state enterprises (Republic of Zambia, 1996: 5). The *ZPA* undertook this responsibility between 1992 and 2006. In 2006, ZPA was abolished and its responsibility was transferred to the *Zambia Development Agency (ZDA*) following the 2006 repeal and replacement of the Zambia Privatisation Act with the Zambia Development Agency Act (Republic of Zambia, 2006). Just like *ZPA*, a board of directors drawn from the public and private sectors governed the ZDA. The process or procedure for privatisation of SOEs was set out in these two Acts (Republic of Zambia, 1996: 13-18 and Republic of Zambia, 2006: 22-27). According to these two legal instruments as well as Fundanga and Mwaba (1997) and Kaunga (1993) the privatisation process was as follows:

a) *Produce sequence plan:* the *ZDA* (formally *ZPA*) produced a plan on how the sequence of events in the privatisation process would pan out.
b) *Tranching:* the process of selecting a group of companies to be privatised within a given period of time, called a tranche.
c) *Approval of the tranche(s) by Cabinet:* Cabinet sits and approves the companies in the tranche(s) as well as the time period for privatising each tranche.
d) *Obligations of the companies to be sold:* Companies in the tranche carry out necessary obligations in preparation for privatisation. These include keeping up to date all business records and books of account; not performing any action or actions that would result in the assets of the company being dissipated; and clearing as far as possible all contractual, legal and other obligations.
e) *Evaluation studies:* An independent valuator values the SOE and issues a certificate of valuation. The valuator uses current value or net asset value to evaluate an operational or non-operational SOE, respectively. Essentially, valuation should ensure that each SOE is sold for its market value.
f) *Propose price, modes of privatisation, type of payment and recommend approval:* Independent consultants propose the selling price for each SOE and the best model to adopt in privatising it. The consultants, in line with the recommended model, also determine whether buyers should defer payment, pay in cash or a combination of the two. Once this is completed, recommendations are made to *ZPA/ZDA* for approval.
g) *Prepare Company Profile and Bid documents:* ZPA*/ZDA* then prepare a comprehensive company profile showing information on the firm's history, number and quality of its human, financial and physical resources as well as organisational and management structure. Others include past, current and anticipated performance, its reputation and the standing of its goods and/or services. If necessary, ZPA*/ZDA* also prepared the necessary documents to guide the bidding process.
h) *Advertising and opening up of competitive bidding. ZPA/ZDA* then advertised the companies to be sold, on all public media before inviting eligible buyers to submit bids.
i) *Evaluation and short-listing of bidders:* To evaluate, *ZPA/ZDA* used prices offered and the potential buyers' business development plans to rank bidders. The top three bids were then shortlisted.

j) *Carry out negotiations with bidders:* A team of independent negotiators negotiated with the three shortlisted bidders before recommending the successful bidder.

k) *Approval of the sale by ZPA/ZDA Board:* Once negotiations are concluded, the results are presented to the *ZPA/ZDA* Board for approval.

l) *Preparation and signing of Sales Agreements:* After *ZPA/ZDA* board approval, the signature of the Minister of Finance concludes the deal.

m) *Publication of information:* After signing of sale agreements, the Agency publishes, in the Gazette, the following information:

1. The names of the approved SOEs to be privatised;
2. The registered consultants, valuators, lawyers, public accountants and merchant banks dealing with the privatisation process;
3. The bidders and bid prices;
4. The successful bidders and the reason for selecting such bidders;
5. The price of shares and any other special conditions of the sale of shares; and
6. Any other matters deemed appropriate.

The fourth and fifth stages are especially important as they determine which models would best help a firm to succeed once in private hands. It is for this reason that valuators and consultants have to be independent and qualified to offer impartial and informed advice.

3.3. Models Used to Privatise SOEs in Zambia

A privatisation model is the method through which a government divestures an SOE (Abioye, 2016: 50 and World Bank, 2003: 3). There is no single best model for privatising SOEs. It is thus, important to evaluate the various respective models and the potential for success or failure. Borrowing from the approach of Ghulam (2012), the success or failure of the models is best evaluated by looking at how enterprises have performed for at least, 20 years after their privatisation. Therefore, assessment will be made with regard to how privatised enterprises, under each model, had performed up to 2019. According to Republic of Zambia (2006), the Zambia Development Agency Act listed a number of models that can be employed in the divestiture process. In reality, there were seven models used to privatise Zambia firms namely; Management - Employee Buy-Out, Share Issue, Sale of Assets, Concession, Lease, Voucher

and Liquidation. These models differ with regard to who is in charge of certain aspects of management functions. For some cases, both the state and private owner are involved while in others it is the exclusive preserve of the private owner. Table 3.1 below shows the main characteristics of these models.

Table 3.1 Privatisation Models – A Comparative Analysis

Management Function	**Privatisation Models**						
	Management - Employee Buy-Out	**Share Issue**	**Sale of Assets**	**Concession**	**Lease**	**Voucher**	**Liquidation**
Privatisation type	Full	Full	Full	Partial	Partial	Full	Full
Management of operation	Private	Private	Private	Private	Private	Private	Non
Commercial Risk	Private	Private	Private	Private	Private	Private	Non
Operating Risk	Private	Private	Private	Private	Private	Private	Non
Investment Risk	Private	Private	Private	Private	Public	Private	Non
Ownership of Rolling stock	Private	Shared	Private	Private	Public	Private	Non
Ownership of Infrastructure	Private	Shared	Private	Public	Public	Private	Non

Source: World Bank (2003: 3) and Abioye (2016: 50)

The *Zambia Development Agency* failed to keep track of the performance of privatised enterprises (United Nations, 2011). The *ZDA* only produced status updates regarding which firms were privatised, the model used to privatise them, when they were privatised, who bought them and for how much. The latest of these updates was published in 2010 (ZDA, 2010). Therefore, this study was the first to comprehensively breakdown the post-privatisation performance of Zambian firms according to privatisation models. As a result, the author had to compile information from a myriad of sources. The classification of enterprises by size, sector and tranche was based on ZPA (1992) as cited in Craig (1999: 222-229). The statistics below excludes those of privatisation by liquidation. This is because the post-privatisation performance of liquidated enterprises can never be evaluated as they cease to exist immediately upon liquidation (OECD, 2004: 44).

Tables 3.2 below shows the post-privatisation performance of Zambian firms. The table shows that from a total of 240 enterprises, 40.9% showed improvement across all performance indicators, 28.3% had mixed performance while the performance of 30.8% had declined. The table also indicates that of the 182 small-scale enterprises, 34.1% improved their performance, 30.7% had mixed performance while 35.2% had declined performance. Of the 33 medium scale enterprises, 57.6% improved their performance, 15.1% had mixed performance while 27.3% had declined in performance. In addition, of the 25 large-scale enterprises, 72% improved their performance, 24% had mixed performance and only 4% had declined performance.

Table 3.2: Performance of Zambia Enterprises after Privatisation

Category	**Number of Enterprises**	**Performance of Enterprises after Privatisation**			
		Improved	**Mixed**	**Declined**	**Total**
Small Scale Enterprises	182	62 (34.1%)	56 (30.7%)	64 (35.2%)	182 (100%)
Medium Scale Enterprises	33	19 (57.6%)	5 (15.1%)	9 (27.3%)	33 (100%)
Large Scale Enterprises	25	18 (72%)	6 (24%)	1 (4%)	25 (100%)
Total (All privatised firms)	**240**	**99 (41.3%)**	**67 (27.9%)**	**74(30.8%)**	**240 (100%)**

Source: Author's own interpretation of reviewed literature

This implies that while less than half of the enterprises had improved performance after privatisation, over two-thirds (69.2%) had either improved or mixed performance. It is also important to note that the performance of most, if not all enterprises would have continued to decline had they remained SOEs (Kaunga, 1993; Banerji et al., 1996; Fundanga and Mwaba, 1997; Chipwende, 2001: 35; Rakner, 2003; United Nations, 2011 and Balbuena, 2014). The size of an enterprise also seemed to have an impact on its likely success post-privatisation. This is because large-scale enterprises had the highest proportion of improved performance followed by medium scale enterprises and finally, small scale enterprises.

Table 3.3 below shows that from a total of 240 enterprises, 73.3% remained active while 26.7% became defunct (ceased operation). The table also indicates that of the 182 small-scale enterprises, 69.2% remained active while 30.8% became defunct. Of the 34 medium scale enterprises, 78.8% remained active while 21.2% became defunct. Of the 25 large-scale enterprises, 96% remained active with only 4% ceasing operation. This is significant considering that prior to privatisation, the government was financially overwhelmed and had considered

shutting down poorly performing SOEs (Rakner, 2003 and United Nations, 2011). According to Chipwende (2001: 35), this would have meant over half of the enterprises closing.

Table 3.3: Current Operational Status of Privatised Enterprises in Zambia

Category	**Number of Enterprises**	**Current Status of Enterprises**		
		Active	**Defunct**	**Total**
Small Scale Enterprises	182	126 (69.2%)	56 (30.8%)	182 (100%)
Medium Scale Enterprises	33	26 (78.8%)	7 (21.2%)	33 (100%)
Large Scale Enterprises	25	24 (96%)	1 (4%)	25 (100%)
Total (All privatised enterprises)	**240**	**176 (73.3%)**	**64 (26.7%)**	**240 (100%)**

Source: Author's own interpretation of reviewed literature

Table 3.3, therefore, shows that through privatisation nearly three quarters of enterprises remained active. Once again, the size of an enterprise seems to have an impact on its ability to remain operational post-privatisation. This is because nearly all large-scale enterprises remained active compared to over three quarters of medium scale enterprises and just over two-thirds of small-scale enterprises. The study will now show the impact of each privatisation model.

3.3.1. Management-Employee Buy-Out (MEBO)

Management-Employee Buy-Out (MEBO) involves selling an SOE, at market price, to managerial and/or non-managerial employees (Boutifour and Miraoui, 2016: 146). Because of the likely dispersal of ownership, privatisation via MEBO may attract high levels of political support (Protsiv, 2008). Managers and employees may also be better informed about product market and have an incentive not to misrepresent the state of the firm. However, the new owners could lack fiscal or entrepreneurial accompaniment, may be untrained in shareholding and could have difficulty accessing bank credits (Boutifour and Miraoui, 2016). The lack of financial muscle is so acute that it is common for small and poorly performing SOEs to be sold to managers and/or employees in lieu of their terminal benefits. Muogbo (2013) contends that MEBO is likely to have statistically insignificant effect on the performance of privatised SOEs. Protsiv, 2008: 29) opines that this model of privatisation is best suited to small enterprises.

Between 1993 and 2001, a total of 23 enterprises were disposed of using MEBO. Most of them were small enterprises sold for less than $200,000 each. For instance, Kacholola Hotel cost the MEBO team only $14, 000 (ZDA, 2010). Only Roan Air ($3.0 million) and *ZAFFICO – Kafubu*

Sawmill ($1,150,000) were sold for $1 million or more (ZDA, 2010). In the majority of cases, the MEBOs only paid 10% of the total price, with the balance deferred and to be paid from either future profits or in lieu of terminal benefits. Others like *ZCCM – Bulk Transport* had assets extinguished as debt-swaps between the government and the MEBOs strategic partners (ZDA, 2010). Table 3.4 below shows performance of Zambian enterprises privatised through MEBO.

Table 3.4: Performance of Enterprises privatised through Management-Employee Buy-Out

Size of Enterprise	**Number of Enterprises**	**Performance of Enterprises After Privatisation**			
		Improved	**Mixed**	**Declined**	**Total**
Small Scale Enterprises	20	1 (5%)	6 (30%)	13 (65%)	20 (100%)
Medium Scale Enterprises	3	0	1 (33.3%)	2 (66.7%)	3 (100%)
Large Scale Enterprises	0	N/A	N/A	N/A	N/A
Total	**23**	**1 (4.4%)**	**7 (30.4%)**	**15 (65.2%)**	**23 (100%)**

Source: Author's own interpretation of reviewed literature

The table shows that the performance of only 4.4 % of the 23 enterprises improved compared to 30.4% and 65.2% with mixed and declined performances, respectively. In addition, only 5% of the 20 small-scale enterprises improved their performance compared to 30% with mixed performance and 65% with declined performance. In addition, none of the 3 medium scale enterprises improved their performance while 33.3% had mixed performance and the performance of 66.7% had declined. No large-scale enterprise was privatised through MEBO. The implication is that MEBO failed to improve enterprise performance. Only *ZAL Elevators Limited* showed improvement in performance. Salimu (1999) found that within two years of privatisation, most enterprises failed to make investments to expand their operations. Their profit margins dwindled while employee quality reduced due to lack of training. They also failed to introduce new products and services as well as compete with new entrants in the market. Table 3.5 below shows operational status of enterprises privatised through MEBO.

Table 3.5: Operational Status of Zambian Enterprises Privatised Through MEBO

Privatisation Model	**Number of Enterprises**	**Current Status of Enterprises**		
		Active	**Defunct**	**Total**
Small Scale Enterprises	20	8 (40%)	12 (60%)	20 (100%)
Medium Scale Enterprises	3	1 (33.3%)	2 (66.7%)	3 (100%)
Large Scale Enterprises	0	N/A	N/A	N/A
Total	**23**	**9 (39%)**	**14 (61%)**	**23 (100%)**

Source: Author's own interpretation of reviewed literature

The table shows that from a total of 23 enterprises, 39% remained active while 61% became defunct. Of the 20 small-scale enterprises, 40% remained active while 60% were defunct. In addition, 33.3% of the 3 medium scale enterprises remained active while 66.7% were defunct. No large-scale enterprise was privatised through MEBO. This implies that MEBO failed as nearly two thirds of enterprises ceased to operate. Outstanding among these was *Roan Air* (renamed *Zambian Airways*) which ceased operating in 2009. At the time of its collapse, the airline owed various firms in excess of $29 million (PANA, 2011). Most of those which survived only did so after being resold by the MEBO teams. Nevertheless, they remained uncompetitive and significantly lost their market share. For instance, the *Zambia National Insurance Brokers Ltd,* a monopoly at the time of privatisation, had less than 5% presence in the brokering market.

One reason for MEBO's failure is that it rarely involved the injection of new capital into the firms' operations. The buyers lacked funds to make the needed investments into the firms. The lack of funds was so acute that the buyers even failed to finish paying for the assets (Salimu, 1999). By negotiating to pay using their terminal benefits, the new owners could not utilise their terminal benefits to fund firm operations. Secondly, MEBO did not allow the transfer of management functions to individuals with new ideas. Rather, the same management that had failed the firms during the parastatal phase continued to run them. This meant that the same parastatal culture that the privatisation process intended to abolish continued to permeate. The unattractive performance of enterprises sold under MEBO led *ZPA* to discard the model in later years (Fundanga and Mwaba, 1997: 14; Salimu 1999 and United Nations, 2011: 69-70).

Based on the above experience, MEBO should only be employed in situations where the government fails to sale enterprises using better-placed models. Ideally, MEBO should be employed in the divesture of small poorly performing firms as an alternative to liquidation. This way, the firms' success and especially failure does not have significant repercussions. However, the model should not be seen as a way for the government to avoid paying employees their terminal benefits by selling them poisoned chalices.

3.3.2. Share Issue (Public Offering and Negotiated/Competitive Bidding)

Under this model, the government sales part of existing shares in an SOE to private individuals or undertakings (Bel, 1999: 1). Under public offering, the government offers shares of a

parastatal for purchase to members of the general public by listing it on a stock exchange. Under negotiated sale, the government pre-selects a private purchaser they wish to sale part of an SOE's shares to and negotiate with them to reach an amicable sale price and other terms. Under competitive bidding, interested private buyers are invited to bid for shares in the SOE (Kotowski and Zagoździńska, 2015). In either case, the percentage of shares held by the government in the enterprise is diluted. Regardless of who owns the majority of the shares, management and control is transferred to the private purchaser of the shares. The issued shares inject much needed finances for new investments to boost the firm's overall performance. The firm may become productive as it retains the potential for the government, as interested shareholders, to protect it from competitors (Bel, 1999: 2). One downside could be political interference owing to government retention of share ownership. Table 3.6 below shows the performance of Zambian firms privatised through Share Issue.

Table 3.6: Performance of Zambian Enterprises Privatised through Share Issue

Privatisation Model	**Number of Enterprises**	**Performance of Enterprises After Privatisation**			
		Improved	**Mixed**	**Declined**	**Total**
Small Scale Enterprises	1	0	0	1 (100%)	1 (100%)
Medium Scale Enterprises	3	3 (100%)	0	0	3 (100%)
Large Scale Enterprises	16	11 (68.8%)	5 (31.2%)	0	16 (100%)
Total	**20**	**14 (70%)**	**5 (25%)**	**1 (5%)**	**20 (100%)**

Source: Author's own interpretation of reviewed literature

Between 1993 and 2010, a total of 20 enterprises were sold through Share Issue (Craig, 1999; ZDA, 2010 and United Nations, 2011). The performance of 70% of the enterprises improved, 25% had mixed performance and only 5% saw their performance decline. The small scale enterprise had declined in performance. The performance of all three medium scale enterprises improved. In addition, the performance of 68.8% of the 16 large-scale enterprises improved, 31.2% had mixed performance with none declining. Therefore, Share Issue was good model for privatising, especially medium and large scale enterprises.

Among the success stories were mines formerly under the *Zambia Consolidated Copper Mines (ZCCM)*. Politicians manipulated *ZCCM* and used it as a cash cow, milked to fund politically prestigious projects and luxury consumption (Adam and Simpasa, 2010). Used as a vehicle for employing political supporters, most mines were overemployed. Some had more than three times

the required number of employees (Larmer, 2010: 41). Expenditure on investments fell to less than a quarter of its early 1970s value. No new mines were opened as finances were not allocated towards prospecting. By 2000, mining output reduced to one-third of its peak 1969 production as some mines halted operations (Adam and Simpasa, 2010: 65). Between 1997 and 1998, *ZCCM* had pre-tax losses of approximately US$650 million, equivalent to almost $2 million per day and more than 20% of total turnover (Adam and Simpasa, 2010: 65).

It was, therefore, prudent that the mines be sold. In response, *ZCCM* was unbundled, with 12 out of the 13 mines sold using Share Issue (ZDA, 2010 and United Nations, 2011: 69-70). Other than the four mines under the *Konkola Copper Mines (KCM)* package, the rest of the mines improved their performance (Frazer, 2010: 13). Production capacity and profits significantly increased. Labour productivity improved as a result of a lean workforce, improved pay, safety and training. Employee fatalities drastically reduced while remuneration soared to more than 18 times the *ZCCM* era (Mining for Zambia, 2016). The private investors brought more money into mining, saving pits threatened with closure, and opening new mines. Installation of smelters at most mines enabled the exporting of financially viable processed, rather than raw copper (Mining for Zambia, 2016). With financing of prospecting, coupled with technological developments, the prospective economic life of the mines sharply rose from 2020, as estimated in 1974, to at least, the final decades of the twenty-first century (Adam and Simpasa, 2010:70). Between 2005 and 2006, mines earned $2.78 billion from copper exports (Fraser and Lungu, 2007). At *Kansanshi Smelter* alone, *First Quantum Minerals* had invested $800 million (Mining for Zambia, 2016).

Performance of Non-ZCCM companies also improved. For instance, the 2007 sale of *Zanaco* to *Rabobank* turned a perennial loss making SOE into a profitable entity (Musonda, 2011). The bank had one of the widest branch and Automated Teller Machine networks in the country. It also became the largest in terms of assets, number of employees and market share. The bank also improved customer experience moving it away from being the worst performer in the industry (Cooper, Esser, Hlophe, Ferreira, and van Vuuren, 2019). Similarly, through private management and investment, *Maamba Collieries Limited* moved from being on care and maintenance to a profitable monopoly in coal mining after its 2009 sale to *Nava Bharat of Singapore*. In addition to investing in efficient coal mining technology, the company built a 300 MW coal fired electricity generating plant (ERB, 2020: 54).

Four of the six companies with mixed performance were mines under the *KCM* package. However, *KCM's* mixed performance stemmed from the government's decision to re-sale the company, without proper vetting, to *Vedanta Resources*, out of desperation following *Anglo American corporation's* exit in 2002 (Adam and Simpasa, 2010). Nevertheless, unlike *KCM*, the mixed fortunes of *Indeni Petroleum Refinery Company Limited* can be traced to government interference. Although it was the only refinery in the country, government meddling in the company's internal operations meant that *Total International*, the private controlling shareholder, failed to make the company financially successful. The company experienced frequent and lengthy shut downs. Unable to gain the necessary management freedom, *Total International* sold its shares to the Zambian government in 2009. *Kapiri Glass Products*, a glass manufacturer, was the only share issued company whose performance declined (Mseteka, 2018). The company owed its demise to a mountain of debt and weak market for glass bottles at the time.

Table 3.7: Operational Status of Zambian Enterprises Privatised Through Share Issue

Privatisation Model	**Number of Enterprises**	**Current Status of Enterprises**		
		Active	**Defunct**	**Total**
Small Scale Enterprises	1	0	1 (100%)	1 (100%)
Medium Scale Enterprises	3	3 (100%)	0	3 (100%
Large Scale Enterprises	16	16 (100%)	0	16 (100%)
Total	**20**	**19 (95%)**	**1 (5%)**	**20 (100%)**

Source: Author's own interpretation of reviewed literature

Table 3.7 above shows operational status of enterprises divested through Share Issue. The table shows that from a total of 20 enterprises, 95% remained active while only 5% (one enterprise) were defunct. In addition, only the small scale enterprise went out of business. All three medium-scale and 16 large-scale enterprises remained active. This once again affirms that Share Issue was a good model for ensuring the enterprises remained operational. *Kapiri Glass Products* was the only Share Issued Company to close down (Mseteka, 2018). Despite enjoying monopoly, debt and lack of market for glass bottles meant that the company ceased operations in 1998, barely three years after *Floco of Hamburg* had acquired it (Mseteka, 2018 and ZDA, 2010).

Zambia's experience shows that Share Issue demonstrates promise of success whenever government interference is kept to a minimum. The model also appears to be ideal for privatising

large firms as multinationals are attracted to make bids. In the author's opinion, *Kapiri Glass Products*, the only company that failed, was an unsalvageable insolvent firm which should have been liquidated rather than being sold through Share Issue.

3.3.3. Sale of Assets (Through Negotiated and/or Competitive Bidding)

Under this model, the entire SOE is sold as either one unit or unbundled into separate units (Republic of Zambia, 2006: 24). The model applies to cases where the government sales its remaining shares in an SOE such that 100% of the firm's shares are in private hands. Under negotiated sale, the government pre-selects a private purchaser they wish to sale the SOE to and negotiates with them to reach an amicable sale price and other terms. Under competitive tender government solicits bids from interested private buyers (Kotowski and Zagoździńska, 2015: 2). Once the bids are received, the government then scrutinises them in line with some predetermined criteria and sales to the best bidder (Kotowski and Zagoździńska, 2015: 2). Sale of assets may be the best model for attracting the best investors, especially foreign multinationals, to purchase large and strategic SOEs (Estrin and Pelletier, 2018). However, Megginson (2000) notes that privatisation through sale of assets may be plagued by non-transparency, insider dealing and corruption. Well-connected individuals may purchase a country's most valuable firms for a price well below their true value (Estrin and Pelletier, 2018: 89). These individuals may not even possess the necessary skills or capital to improve or even maintain the performance of these enterprises (Birdsall and Nellis, 2003).

Table 3.8: Performance of Zambia Enterprises Privatised Through Sale of Assets

Size of Enterprise	**Number of Enterprises**	**Performance of Enterprises After Privatisation**			
		Improved	**Mixed**	**Declined**	**Total**
Small Scale Enterprises	112	51 (45.5)	35 (31.3)	26 (23.2)	112 (100%)
Medium Scale Enterprises	25	15 (60%)	3 (12%)	7 (28%)	25 (100%)
Large Scale Enterprises	8	7 (87.5%)	0	1 (12.5%)	8 (100%)
Total	**145**	**73 (50.3%)**	**38 (26.2%)**	**34 (23.5%)**	**145 (100%)**

Source: Author's own interpretation of reviewed literature

Table 3.8 above shows performance of Zambian firms privatised through Sale of Assets. The table shows that out of a total of 145 enterprises, 50.3% of the enterprises posted improved

performance, 26.2% had mixed performance while the performance of 23.5% declined. In addition, 45.5% of the 112 small scale enterprises had improved performance, 31.3% had mixed performance while the performance of 23.2% had declined. Of the 25 medium scale enterprises, the performance of 60% had improved, 12% had mixed performance while the performance of 28% had declined. The 87.5% of the 8 large scale enterprises improved, none had mixed performance while the performance of 12.5% had declined. The implication is that while just half of the enterprises saw improved performance, Sale of Assets had a more positive effect on the performance of medium and especially large scale enterprises.

Among the success stories is *Zambia Sugar Company Limited*. Before its sale to *Tate and Lyle* and the *Commonwealth Development Corporation* (latter sold to *Illovo Sugar Group*), in 1995, the company was unable to meet local demand for sugar. Soon after, the private owners undertook major investments in agricultural and factory expansion projects (Zambia Sugar Limited, 2019). The company opened more cane estates and sugar factories. It also set up internal electricity generation powered from bagasse. These investments reduced production costs while increasing quantity, quality and profit. The company became one of the lowest cost producers of sugar globally. Total annual sugar production capacity increased by about 350%, from around 100,000 tons in 1995 to 450 000 from 2010 onwards (Zambia Sugar Limited, 2019). With subsequent improvement in quality, the company was able to export a third of its sugar into the regional market, another third to Europe and sold the remaining third locally. Through quality and competitive pricing, the company had a 90% share of the local market (Zambia Sugar Limited, 2019). The company also improved labour productivity by employing seasonal workers.

Most companies with mixed or reduced performance had failed to compete with new entrants in the market. For instance, the mixed performance of the *Zambia Seed Company Limited* rested in its inability to compete with new entrants in the seed market (Mabaya, Miti, Mwale and Mugoya, 2017). While still profitable and productive, the company failed to make necessary investments to improve seed quality and price competitiveness. From being a monopoly in the 1990s, the company only held less than 10% share of the seed market (Mabaya et al., 2017). Similarly, during nationalisation, the three prominent textile manufacturers in Zambia, *Kafue Textiles, Mulungushi Textiles* and *Kabwe Industrial Fabrics Limited* held 80% of the domestic textile market (Sutton and Langmead, 2013: 82). However, after being sold, the three firms shut down

due to their inability to compete with the influx of low priced but quality imported Chinese textile (Sutton and Langmead, 2013: 82). Other enterprises like *Elephant's Head Hotel* owed their demise to lack of financial resources from their new owners.

Table 3.9: Operational Status of Zambian Enterprises privatised through Sale of Assets

Size of enterprise	**Number of Enterprises**	**Current Status of Enterprises**		
		Active	**Defunct**	**Total**
Small Scale Enterprises	112	91 (81.3%)	21 (18.7%)	112 (100%)
Medium Scale Enterprises	25	20 (80%)	5 (20%)	25 (100%)
Large Scale Enterprises	8	7 (87.5%)	1 (12.5)	8 (100%)
Total	**145**	**118 (81.4%)**	**27 (18.6%)**	**145 (100%)**

Source: Author's own interpretation of reviewed literature

Table 3.9 above shows the operational status of Zambian enterprises privatised through Sale of Assets. The table shows that from a total of 145 enterprises, 81.3% remained active with only 18.7% ceasing operations. The table also indicates that 81.3% of the 112 small scale enterprises remained active while only 18.7% were defunct. In addition, 80% of the 25 medium scale enterprises remained active with only 20% being defunct. And 87.4% of the large scale enterprises remained active compared to only 18.6% which had closed down. This, generally, indicates that Sale of Assets was ideal for keeping enterprises active.

A cursory look at the names of buyers as indicated in ZDA (2010) revealed that true to the observations by Megginson (2000); Estrin and Pelletier (2018: 89) and (Birdsall and Nellis (2003), most of the firms with mixed or poor performance were those corruptly sold to political cronies who lacked the necessary skills and capital to run them. Therefore, one would argue that had the sale of assets model been properly followed, the degree of success would have been higher than what was obtained.

3.3.4. Concession

A concession is a model where the state gives the right to operate an SOE to a private entity, the concessionaire, while maintaining ownership of the enterprise's infrastructure (Kwak et al., 2009:53). The concessionaire enters into an agreement with the government to have the exclusive right for operating, maintaining and carrying out investment in a public utility for a

specified period of time (World Bank, 2003). The concessionaire then splits earnings with the government. The state may decide to hand a short period concession contract of about 5 to 15 years to enable it assess the concessionaire's performance before deciding to either renew, re-negotiate or revoke the contract (Abioye, 2016: 52). This creates incentives for the private concessionaire to increase effectiveness and efficiency in the enterprise's performance (Kisitu, 2018: 35). This also enables the government to cancel non-performing concessions, take over management or transfer to another concessioner. Nevertheless, concessions may be detrimental to firm performance on account of susceptibility to corruption and political pressure. With the possibility of contracts being cancelled on flimsy grounds, concessionaires may resort to corrupting officials or falling prey to political pressures (World Bank, 2003).

Only two enterprises, the *Zambia Railways Limited* and *Mulobezi Railway*, were privatised through concession (ZDA, 2010). In 2003, the *Railway Systems of Zambia* was awarded 20-year concession to operate *Zambia Railways Limited*. In the same year, *Leasons General Contractors* were awarded a 10-year concession to operate *Mulobezi Railway* (Zambia Railways Limited, 2013). The concessionaires were given rights to operate both freight and passenger trains on the rail network, in return for a fixed concession fee and a percentage of the turnover (Zambia Railways Limited, 2013). For instance, *Railway Systems of Zambia* was to be paid a fixed concession fee of $253,500,844 over 20 years in addition to a 5% share of turnover. The company then pledged to invest over $64 million over the concession period (ZDA, 2010). Table 3.10 below shows how the two enterprises performed under concession.

Table 3.10: Performance of Zambian Enterprises Privatised Through Concession

Size of Enterprise	**Number of Enterprises**	**Performance of Enterprises After Privatisation**			
		Improved	**Mixed**	**Declined**	**Total**
Small Scale Enterprises	0	N/A	N/A	N/A	N/A
Medium Scale Enterprises	1	0	1 (100%)	0	1 (100%)
Large Scale Enterprises	1	0	1 (100%)	0	1 (100%)
Total	**2**	**0**	**2 (100%)**	**0**	**2 (100)**

Source: Author's own interpretation of reviewed literature

Table 3.10 shows that both enterprises had mixed performance. In other words, both the medium and large scale enterprise had mixed performances. Although two enterprises are not statistically

significant to draw meaningful conclusions, concession seems to have failed to improve the performance of both enterprises. Even though rail travel continued to be the cheapest mode of transport, the two companies continued to make losses. In addition, no new trains were added to the fleet and the lines became dilapidated (ZIPAR, 2016). The concessioners also failed to make contractually obliged investments. Poor infrastructure meant that the rail network only managed to handle 12% of the total cargo on the market (Zambia Railways Limited, 2013 and ZIPAR, 2016).

For instance, *Mulobezi Rail* had a single train running once a week, carrying both humans and livestock. The train took two days to cover the 163 km between Livingstone and Mulobezi. Poor conditions of the line limited the train's speed to 15km/h (ZIPAR, 2016). This inconvenienced passengers, who relied on rail services on account of local roads being impassable. Despite this poor performance, concessioners continued to demand for their concession fees and a share of turnover (Zambia Railways Limited, 2013). In response, the government cancelled *Zambia Railways Limited*'s concession in 2012 before deciding not to renew *Mulobezi Rail*'s when it expired in 2013 (Zambia Railways Limited, 2013 and ZIPAR, 2016). Table 3.11 below shows operational status of Zambian enterprises privatised through Concession.

Table 3.11: Operational Status of Zambian Enterprises Privatised Through Concession

Size of Enterprise	**Number of Enterprises**	**Current Status of Enterprises**		
		Active	**Defunct**	**Total**
Small Scale Enterprises	0	N/A	N/A	N/A
Medium Scale Enterprises	1	1 (100%)	0	1 (100%)
Large Scale Enterprises	1	1 (100%)	0	1 (100%)
Total	**2**	**2 (100%)**	**0**	**2 (100%)**

Source: Author's own interpretation of reviewed literature

As Table 3.11 above shows, both enterprises remained active. In other words, both the medium and large scale enterprise remained active. This implies that the concession model was able to prevent enterprises from closing. To some extent, this experience was the result of poorly structured concession agreement, which lacked penalties for poor performance. One would argue that had the concession agreements been well-structured with harsh penalties for failure to reach targets, concessionaires could have been motivated to succeed.

3.3.5. Lease

Lease is a privatisation model where the government enters into a contract with a private firm to use the fixed assets of SOEs in exchange for regular payment of a fee (Mescht, 2005: 998). The government, as the leaser, retains ownership of the assets, while the private firm, as the leasee, obtains the right to use the asset in return for regular payment of an agreed fee (Bullock, 2009: 46). The leasee takes charge of managing, maintaining and operating the leased asset for the entire lease period. The lease contract specifies the period and conditions the leasee has to abide to with regard to the use of the assets of the enterprise. For an electricity supply enterprise, generation plants, transmission lines and distribution lines may be the assets that are leased. Leases are rationalised on grounds that the entity retains the features of an SOE but is run more efficiently and effectively by exploiting private sector skills, innovation and management competencies. However, due to its nature, the leaseholder is not expected to make investments to improve or expand the leased assets. This is because the government remains responsible for all investments while the leaseholder assumes only the risks to the operation's revenue and costs (Bullock, 2009: 46). Asian Development Bank (2008: 34) argues that when monitoring is poor, the leaseholder may concentrate on maximising profits at the expense of maintaining long-lived assets. In these instances, the government bears higher financial risk. Government retaining ownership may lead to political interference, suspicious contracts and failure to fund capital investments for expansion and improvement (Kisitu, 2018: 28). Table 3.12 below shows the performance of leased enterprises in Zambia.

Table 3.12: Performance of Zambian Enterprises Privatised Through Lease

Size of Enterprise	**Number of Enterprises**	**Performance of Enterprises After Privatisation**			
		Improved	**Mixed**	**Declined**	**Total**
Small Scale Enterprises	38	7 (18.4)	13 (34.2)	18 (47.4)	38 (100%)
Medium Scale Enterprises	0	N/A	N/A	N/A	N/A
Large Scale Enterprises	0	N/A	N/A	N/A	N/A
Total	**38**	**7 (18.4%)**	**13 (34.2%)**	**18 (47.4%)**	**38 (100%)**

Source: Author's own interpretation of reviewed literature

All leased enterprises were small scale and in the tourism sector. They were mostly small game camps and lodges located in various national parks. Table 3.12 shows that only 18.4% of the 38

enterprises had improved performance. In contrast, 34.2% showed mixed performance while 47.4% saw their performance decline. It is not possible to determine the impact of leasing on the performance of medium and large scale enterprises. Nevertheless, the model generally, failed to improve firm performance with nearly half of them seeing their performance decline.

Most leased enterprises whose performance improved owed their triumph to factors external to the leasing itself. For instance, the *Rainbow Lodge* was only upgraded into a full-fledged hotel because its lease was part of *Sun International*'s purchase of *Intercontinental Hotel Livingstone* through sale of assets (ZDA, 2010). However, most leased enterprises with mixed or poor performance owed this to the leasing itself. For instance, the mixed performance of the *Shoebill Island Camp* in the Bangweulu Game Management Area was the result of lease transferring. The camp only reopened in 2007 when *African Parks* took over the lease from *G.W. Safaris Limited* who had abandoned it in 1997 (Dixey, 2005: 20). *African Parks* then subleased the camp to *Kasanka Trust* that made major strides in improving it. Nevertheless, *African Parks* decided against renewing *Kasanka Trust's* sublease when it expired in 2016, deciding instead to take back management (Kasanka Trust, 2016). Consequently, the improvements made by *Kasanka Trust* were halted by its subsequent re-possession. In addition, a number of leased enterprises failed because they were dilapidated prior to being leased. For instance, Moshi Camp had been derelict for several years before being leased to *Star of Africa* in 1999. Although attempts were made to revive it, the camp permanently closed in 2001 (Dixey, 2005). Table 3.13 below shows the operational status of leased enterprises in Zambia.

Table 3.13: Operational Status of Zambian Enterprises Privatised Through Lease

Size of Enterprise	**Number of Enterprises**	**Current Status of Enterprises**		
		Active	**Defunct**	**Total**
Small Scale Enterprises	38	22 (57.9%)	16 (42.1%)	38 (100%)
Medium Scale Enterprises	0	N/A	N/A	N/A
Large Scale Enterprises	0	N/A	N/A	N/A
Total	**38**	**22 (57.9%)**	**16 (42.1%)**	**38 (100%)**

Source: Author's own interpretation of reviewed literature

The table shows that 57.9% of the 38 leased enterprises remained active while 42.1% became defunct. Although over half of the enterprises remained active, too many closed down. This implies that the model generally, failed to keep most firms operational.

It is clear from the above that the Zambian government was not in favour of using leasing for privatising important SOEs. In addition, the majority of lease agreement were defective as they did not compel leaseholders to make investments to improve and expand the enterprises. Also, allowing leaseholders to easily terminate lease agreements was not ideal. To complicate the situation, government retaining responsibility for all investments meant that firms essentially continued to encounter the same financial challenges faced by SOEs. It was, therefore, a welcome relief when the government abandoned leases in favour of concessions for new tourism sites. Unlike under leasing, concessioners were awarded contracts over sites in national parks wherein they put up various safari infrastructures.

3.3.6. Voucher Privatisation

Voucher privatisation is a model in which the SOE is deliberately undervalued and transferred at zero or nominal price (Estrin and Pelletier, 2018: 87). Estrin and Pelletier (2018: 88) note that SOEs may be sold on voucher because of the belief that *"they will be made more productive in private hands, or because the SOEs were loss making and the short-term requirement to balance the budget overwhelmed longer-term state asset portfolio criteria".* And in instances where nationalisation was done without compensation, governments may employ voucher privatisation to return enterprises to previous owners. In cases where new owners have the necessary capital and managerial knowhow, the former SOE can perform positively and grow (Bennett, Estrin, and Urga, 2007: 662). However, it is the model most at risk of corruption as it offers an opportunity for rapid enrichment of connected cronies or political supporters who lack the ability to improve the enterprises (Bennett et al., 2007).

In Zambia, the Voucher model was only employed for enterprises which had been nationalised without compensation. At the height of nationalisation, certain enterprises deemed strategic, but whose owners refused to sell, were nationalised without compensation. Therefore, the government decided to return these firms to the previous owners, at minimal or no cost (Craig, 1999; United Nations, 2011).

Table 3.14 below shows the performance of vouchered enterprises in Zambia. The table shows that out of a total of 12 enterprises, 33.3% posted improved performance, 16.7% had mixed performance while the performance of 50% had declined. In addition, 27.3% of the 11 small

scale enterprises had improved performance, 18.2% had mixed performance while the performance of 54.5% declined. Only the medium scale enterprise had improved its performance. This entails that voucher failed to improve the performance of two-thirds of the vouchers enterprises, with half of them declining.

Table 3.14: Performance of Zambian Enterprises Privatised Through Voucher

Size of Enterprise	**Number of Enterprises**	**Performance of Enterprises After Privatisation**			
		Improved	**Mixed**	**Declined**	**Total**
Small Scale Enterprises	11	3 (27.3)	2 (18.2)	6 (54.5)	11 (100%)
Medium Scale Enterprises	1	1 (100)	0	0	1 (100%)
Large Scale Enterprises	0	N/A	N/A	N/A	0
Total	**12**	**4 (33.3%)**	**2 (16.7%)**	**6 (50%)**	**12 (100)**

Source: Author's own interpretation of reviewed literature

Nevertheless, the model proved successful in instances where the owners had retained financial and technical knowhow. An example of a successful vouchered firm is *Ndole Lodge* which was originally privately owned, but was taken by the government in 1989, only to be placed on care and maintenance in the early 1990s. Once it reverted to its previous owners, in 1996, it thrived. This was an astounding achievement considering that its competitor, the government owned *Kasaba Bay Lodge*, ceased operations and lay in ruin**.** In addition, the majority of enterprises whose performance was mixed or declined were on the verge of total collapse prior to being vouchered. This negatively affected their chances of having improved performance even in private hands. Table 3.15 below shows operational status of vouchered enterprises in Zambia.

Table 3.15: Operational Status of Zambian Enterprises Privatised Through Voucher

Size of Enterprise	**Number of Enterprises**	**Current Status of Enterprises**		
		Active	**Defunct**	**Total**
Small Scale Enterprises	11	5 (45.5%)	6 (54.5%)	11 (100%)
Medium Scale Enterprises	1	1 (100)	0	1 (100%)
Large Scale Enterprises	0	N/A	N/A	N/A
Total	**12**	**6 (50%)**	**6 (50%)**	**12 (100%)**

Source: Author's own interpretation of reviewed literature

The table shows that 50% of the 12 vouchered enterprises remained operational. The table also indicates that 45.5% of the 11 small scale enterprises remained active while 54.5% were defunct.

In addition, the medium scale enterprises remained active. It is worth noting that the majority of the defunct enterprises which closed down had been performing poorly prior to being vouchered. This negatively affected their chances of survival in private hands. As a case in point, by the time government vouchered *Chimba Crocodile Farm*, it was already on the verge of total collapse and the new owners tried but failed to make it viable (United Nations, 2011). Therefore, the government should have liquidated them rather than passing problems to the new owners.

3.3.7. Liquidation

Liquidation involves government selling a company's assets in order to pay outstanding debts, after which the company ceases to operate (OECD 2004: 44). The model applies to disposal of non-functional as well as highly indebted and/or insolvent enterprises. It is also used for disposing holding companies whose unbundled units are divested separately (Beck, Crivelli and Summerhill, 2005). When applied to operational enterprises, it involves dismantling of the SOE by disposing off its assets, usually to its creditors or other entities so as to raise funds to pay off debt (OECD, 2004: 44). In most cases, operational SOEs are only liquidated if they are unviable. This is because once liquidated, the enterprise goes out of business. The model is hailed as a means of preventing transfer of unviable enterprises. It also shields the government from sinking funds in unviable concerns. Likewise, the model enables raising funds to pay off creditors. When applied to monopolies, it enables better placed entities to take over the sector without complications from a government supported company (Beck et al., 2005). Nevertheless, liquidation is incapable of improving the post-privatisation performance of an enterprise. This is because once liquidated, the enterprise goes out of business (OECD, 2004: 44).

Tables 3.16 and 3.17 below show the performance and operational status of Zambian enterprises privatised through liquidation. As can be noted from the two tables below, between 1992 and 2003, Zambia liquidated 18 small scale, 13 medium scale and 11 large scale enterprises. And as expected, all 42 enterprises folded upon being liquidated (Craig, 1999, United Nations, 2011 and ZDA, 2010). As a result, Craig (1999: 150) noted that liquidation was the least favoured divesture model in Zambia, especially for enterprises which were growing concerns. The model was mostly employed to dissolve non-operational enterprises which had already ceased operations prior to the divesture. Enterprises like *Anros Industries Limited, Zambia Housing*

Development Fund Ltd and Zambia National Shipping Line had ceased operations long before they were struck off (Craig, 1999 and United Nations, 2011). Liquidation was also employed for holding companies whose units had been sold off after unbundling. For instance, *Zambia Cold Storage Corporation* was liquidated after its meat processing plants had been sold off, through sale of assets (Craig, 1999 and United Nations, 2011). Since the operating units were sold off, the liquidation of the residual holding company was appropriate as it had become an empty shell (Craig, 1999: 150).

Table 3.16: Performance of Zambian Enterprises Privatised Through Liquidation

Size of Enterprise	**Number of Enterprises**	**Performance of Enterprises After Privatisation**			
		Improved	**Mixed**	**Declined**	**Total**
Small Scale Enterprises	18	N/A	N/A	N/A	N/A
Medium Scale Enterprises	13	N/A	N/A	N/A	N/A
Large Scale Enterprises	11	N/A	N/A	N/A	N/A
Total	**42**	**N/A**	**N/A**	**N/A**	**N/A**

Source: Author's own interpretation of reviewed literature

3.17: Operational Status of Zambian Enterprises Privatised Through Liquidation

Size of Enterprise	**Number of Enterprises**	**Current Status of Enterprises**		
		Active	**Defunct**	**Total**
Small Scale Enterprises	18	0	18 (100%)	18 (100%)
Medium Scale Enterprises	13	0	13 (100%)	13 (100%)
Large Scale Enterprises	11	0	11 (100)	11 (100%)
Total	**42**	**0**	**42 (100%)**	**42 (100%)**

Source: Author's own interpretation of reviewed literature

It took pressure from creditors to force the Zambian Government to liquidate enterprises that were going concerns. For instance, *ZPA* intended to privatise the *Zambia Airways Corporation Limited* and *United Bus Company* through sale of assets. However, its hand was forced after creditors seized three *Zambia Airways* planes and 40 of the 55 working buses for the *United Bus Company* (Craig, 1999: 150).

Looking at Zambia's experience with liquidation, it is easy to agree with the United Nations (2011) contention that owing to their insolvency and indebtedness, liquidated enterprises had no chance of remaining operational regardless of the privatisation models employed. Rather,

liquidation prevented these enterprises from suffering the same fate that befell other insolvent and indebted enterprises which were made to remain operational after privatisation. In addition, with liberalisation, better placed entities took over sectors without complications from government supported companies. This proved true for the *United Bus Company* whose demise enabled the proliferation of private owned transporters. Within five years of the company's demise, the number of passenger buses grew tenfold (United Nations, 2011).

3.4. Chapter Summary

This chapter examined how firms performed under each model of privatisation. Precisely, the chapter explained the process followed in privatising an enterprise in Zambia. It further highlighted the models that were used to privatise SOEs in Zambia before examining their strengths and weaknesses. It also examined the actual performance of firms under each model. Zambia's privatisation was generally, a success as the performance of 40.9% of the enterprises improved while 73.3% remained active. This is significant because had they remained SOEs, most of them would have declined performance and closed down. The next chapter gives an overview of Zambia's electricity industry.

CHAPTER FOUR

OVERVIEW OF ZAMBIA'S ELECTRICITY INDUSTRY

4.1. Introduction

The previous chapter examined models used to privatise SOEs in Zambia. This chapter gives an overview of Zambia's electricity industry. Electricity supply is a prerequisite for proper functioning of nearly all sectors of an economy. Key industries such as manufacturing, mining, construction and even service provision use machinery and equipment powered by electricity (Quiggin, 2014). Electricity is, thus, an essential component whose availability and quality determines success or failure of any development endeavours. Studies by Dubagari (2018); Kessides (2012); Quiggin (2014) and World Bank (2017) show positive correlation between economic growth and electricity supply. They also revealed that insufficient electricity supply has a negative impact on economic development, especially for countries striving to industrialise. For instance, inadequate electricity supply caused a 1.5% decline in Nigeria's economic activities (World Bank, 2017b).

It, therefore, becomes imperative to put in place necessary institutional, legal and regulatory framework that would best exploit electricity sources for effective and efficient supply of electricity to meet current and future demand (Phiri and Ziba, 2018 and Republic of Zambia, 2018). It is also important that a country's electricity supply industry has sufficient players capable of adequately generating, transmitting and distributing electricity (Quiggin, 2014 and World Bank, 2017b).

The chapter is divided into nine sections. Section one is the introduction while Section two is the country profile which highlights Zambia's geography, topography and climate, demographics, as well as political and economic situation. Section three gives a brief description of the historical evolution of the electricity sector in Zambia whereas Section four scrutinises the regulatory institutional framework for Zambia's electricity supply industry. Section five highlights the electricity policies, plans and legislations and Section six examines the electricity Generation Potential in Zambia. Section seven assesses the main players in generation, transmission and distribution. Section eight focuses on the structure of electricity demand. Section nine is a chapter summary.

4.2. Country Profile

4.2.1. Geography, Topography and Climate

Zambia, named after the *Zambezi River*, is a landlocked country in South-Central Africa. It shares boundaries with eight countries namely; *Malawi* to the east, *Mozambique* to the southeast, *Zimbabwe* and *Botswana* to the south, *Namibia* to the southwest, *Angola* to the west, the *Democratic Republic of Congo* to the north and *Tanzania* to the northeast (United Nations, 2011: 7). The country lies in the tropics between latitudes 8° and 18° south and longitudes 22° and 34° east (Central Statistical Office, 2018: 6). With a total surface area of 752,618 km^2, and a perimeter of 6,043.15 km, it is the 39th largest country in the world (Woods et al., 2019: 18).

Figure 4.1: Political Map of Zambia

Source: Woods et al., (2019: 17)

The Country's topography mostly consists of wide and high plateau lying between 1,000 and 1,600 meters above sea level. It also has mountains exceeding 1,800 meters as well as valleys of

the major river systems lying below 600 meters (Woods et al., 2019: 18). These features give the country an average altitude of 1,200 meters, conducive for a moderate tropical climate (Central Statistical Office, 2019a). The country's three seasons comprises cool and dry from May to August, hot and dry from September to November, and warm and wet from December to April. However, average monthly temperatures remain above 20° Celsius for most of the country (Central Statistical Office, 2019a).

Zambia houses 40% of the water resources in Southern Africa (Owen, 2016: 19). It has five main rivers including the *Zambezi*, the fourth longest river in Africa. Other rivers are *Kafue, Luangwa, Luapula* and *Chambeshi.* Major lakes include *Tanganyika, Mweru, Mweru Wa Ntipa, Bangweulu* and the man-made lakes *Kariba* (the world's largest reservoir by volume) and *Itezhi Tezhi* (Woods et al., 2019: 18). The country is endowed with abundant natural resources including arable land, wildlife, water, forest and minerals (United Nations, 2011: 7).

4.2.2. Demographics

Zambia's population is estimated at 17,381,169 people, of which 50.5% are female and 49.5% male (Central Statistical Office, 2019a: 5). Boosted by a fertility rate of 5.5, the country's population has been growing at approximately 3% per year since 2010 and is projected to reach 27 million by 2035 (Central Statistical Office, 2018: 11 and Woods et al., 2019: 18). The country's population density of 23/km2 is significantly lower than the sub-Saharan African average of 46/km2 (Central Intelligence Agency, 2020). Zambia is highly urbanised with 47.4% of the population living in urban areas compared to 40.5% in sub-Saharan Africa (Central Statistical Office, 2019a: 5). The country's population is young with over half (56.4%) of the residents being less than 19 years old (Central Statistical Office, 2019a: 6). Life expectancy at birth stood at 54.6 years (56.9 years for females and 52.2 years for males) (Central Statistical Office, 2018: 11). Lusaka, the political and administrative capital and largest city, has 2.5 million inhabitants (Central Intelligence Agency, 2020).

According to the 2010 population census, 99.2% Zambians were black Africans while 0.8% consisted of major racial groups, mostly, Chinese and Indians. The black population comprises 73 different ethnicities grouped into nine Bantu ethnolinguistic groups: *Bemba, Nyanja-Chewa, Tumbuka, Tonga, Lunda, Luvale, Kaonde, Nkoya* and *Lozi* (United Nations, 2011: 7). The

country's 73 indigenous languages are dialects falling within seven broad categories namely; *Bemba, Nyanja, Tonga, Lozi, Kaonde, Lunda and Luvale*. English is the official language used for education, commerce, and law (Central Intelligence Agency, 2020 and United Nations, 2011: 7). Central Intelligence Agency (2020) states that Zambia is predominantly Christian with about 75.3% of the population Protestant, 20.2% Roman Catholic, 1.8% Atheist, 0.5% Muslim and 2.2% other (includes Animist, Baha'I, Buddhist, and Hindu). Although the quality of education remains low, about 63.4% of adults are literate.

4.2.3. Political and Administrative Situation

Zambia, then named *Northern Rhodesia*, was under British rule from 1894 to 1964 (United Nations, 2011, 7). It gained independence on 24 October 1964 and was ruled by President *Kenneth Kaunda* of the *United National Independence Party (UNIP)* for 27 years (United Nations, 2011, 7). The country abandoned multiparty politics in 1972 in favour of a one party state (Central Statistical Office, 2018: 6). Consequently, general elections of 1973, 1978, 1983 and 1988 had *UNIP* as the sole political party. Kaunda was the sole presidential candidate while all candidates for parliamentary positions were members of *UNIP*. National policies were formulated by *UNIP's* Central Committee and executed by the cabinet (Rakner, 2003).

Growing opposition to *UNIP's* monopoly, exacerbated by an economic crisis in the late 1980s, forced *Kaunda* to re-introduce multi-party politics in 1990 (Rakner, 2003: 11). In the October 31, 1991 general elections, the *Movement* for *Multiparty Democracy (MMD)* formed government, with *Frederick Chiluba* as president (Frazer, 2010: 10). *Chiluba* was re-elected in 1996 before *Levy Mwanawasa*, also of *MMD,* was elected president in 2001 (Rakner, 2003: 13). Having won re-election in 2006, *Mwanawasa*'s second term of office ended after his death in August 2008. *Rupiah Banda,* the then Vice-President, assumed the presidency before winning the by-elections held in October 2008 (United Nations, 2011, 7). *Michael Sata* of the *Patriotic Front (PF)* emerged victorious in the 2011 general elections, bringing an end to *MMD*'s 20-year rule. The 2015 by-election to replace the deceased *Sata* saw the *PF's Edgar Lungu* elected president, a position he retains having been re-elected in August 2016 (Woods, 2019: 21).

Zambia's executive branch is headed by the president who appoints and presides over both the political and civil executives. The political executive constitutes a Cabinet comprising of the

president, vice president and Cabinet ministers appointed from among the serving members of parliament (Republic of Zambia, 2016). The political executive is charged with formulating and supervising the implementation of policies. The civil executive is headed by the Secretary to the Cabinet and ministerial permanent secretaries. It is in charge of actual implementation of policies. The country has 29 ministries, including the Ministry of Energy (Central Statistical Office, 2018: 5). To aid administrative efficiency and effectiveness, most ministries are divided into departments, which are themselves decentralised to all 10 provinces, and 106 districts (Central Statistical Office, 2019b: 1). Each province is headed by a provincial minister and permanent secretary. Each district, headed by an elected council, is in charge of local governance. The districts are subdivided into 156 constituencies and over 1,430 wards (Central Statistical Office, 2019b: 1).

The unicameral National Assembly of Zambia is the country's legislative body. The current National Assembly, formed following the 2016 general elections, has a total of 158 (150 directly elected and 8 presidentially appointed) members (Republic of Zambia, 2016). It is presided over by the Speaker with the vice president as the leader of the house. The legislature is in charge of formulating laws and ratifying presidential appointments and major executive decisions (Republic of Zambia, 2016).

Justice is administered by the judiciary which comprises a hierarchy of courts. The main judicial hierarchy has the *Supreme Court* (highest court and the court of appeal), the *High Court*, *Magistrate Court* and *Local Courts* (Woods, et al., 2019: 21). The *Industrial Relations Court*, at the same level as the *Magistrate Court*, handles labour disputes. There also exists the *Constitutional Court*, at par with the *Supreme Court*, which interprets provisions of the Constitution as well as matters relating to appeal of election results (Republic of Zambia, 2016)

4.2.4. Economic Situation

At independence, Zambia’s economy was liberalised with 86% of economic activities in private hands (Fundanga and Mwaba, 1997: 5). Perceived unequal distribution of wealth and profit repatriation led the Kaunda government to adopt socialist policies (McGrath and Whiteside, 1989: 169). Through the *Mulungushi* and *Matero Reforms* in 1968 and 1969, respectively, the economy was reconfigured by nationalising major enterprises (Saasa, 1996: 5). By the mid-

1970s, the public sector made up over 80% of the economy (Republic of Zambia, 1993). However, increase in oil prices and corresponding decline in copper prices in the mid-1970s resulted in economic hardships (Rakner, 2003: 79). This reduced the country's GDP growth rate from 11.4%, between 1966 and 1970, when the economy was dominated by private enterprises, to -8.6% by 1990, when SOEs dominated the economy (Central Statistical Office, 1972 and Rakner, 2003: 79). Once in power, the *MMD* government instituted World Bank and IMF backed economic reforms to privatise and liberalise the economy (Saasa, 1996: 4; Fundanga and Mwaba, 1997 and Madimutsa, 2016). Between 1992 and 2010, over 90% of SOEs were privatised (ZDA, 2010).

Currently, Zambia's economy is dependent on copper mining which accounts for about 70% of export revenue and 10% of GDP (Central Statistical Office, 2018). This lack of economic diversification leaves the economy vulnerable to internal and international shocks. For instance, Zambia had one of the world's fastest growing economies for the ten years up to 2014, with real GDP growth averaging 6.7% per annum (Mwila, Sinyenga, Buumba, Muyangwa, Mukelabai, Sikwanda, Chimbaka, Banda, Nkowani and Bwalya, 2017: 1). By 2011, the World Bank recognised Zambia as a lower middle-income country. Nevertheless, from 2015 onwards, economic growth slowed due to falling copper prices, constrained electricity generation, contracted agricultural output and depreciation of the local currency, the *Zambian Kwacha* (Woods et al., 2019: 21).

In 2019, GDP growth significantly declined to about 2.0% from 4.0% in 2018 (Ng'andu, 2020: 1). The 2019 GDP of $27.86 billion was up from $26.72 billion in 2018 but down from a high of $28 billion in 2013 (Central Intelligence Agency, 2020 and Ng'andu, 2020: 2). Inflation rose from 7.9% in 2018 to 11.7 in 2019 leading to a spike in food and fuel prices (Ng'andu, 2020: 2). Moreover, growing government borrowing left the country with an unsustainable external debt of $11.2 billion, equal to 40.2% of GDP (Ng'andu, 2020: 2). The *Kwacha* is highly volatile and has significantly depreciated over the recent past thus, affecting importing and exporting. From January 2018 to December 2019, the Kwacha depreciated by 24.86%, from ZMW 11.10/US$ to ZMW13.86/US$ (ERB, 2020b: 1 and Ng'andu, 2020: 2).

Zambia's economic woes are compounded by widespread poverty standing at 54.4% nationally and 76.6% in rural areas (Central Statistical Office, 2018: 32). In addition, unemployment levels

are high with 13.2% of the labour force jobless and 71.5% informally employed (Central Statistical Office, 2019a: 13 and 14). The situation is worsened by the country having 11.5% (1.2 million) of its adults living with HIV or AIDS, the eighth highest prevalence rate in the world (Central Intelligence Agency, 2020). In addition, a high birth rate leads to unsustainable population growth while extreme corruption levels (34 points out of 100) waste already meagre resources. Nevertheless, Zambia's current development plans, the *Vision 2030* and *the Seventh National Development Plan (2017 – 2021),* aim at creating a diversified and resilient middle-income country by 2030 (Republic of Zambia, 2018: 7 and 8).

4.3. Historical Evolution of Sector Reforms in Zambia's Electricity Supply Industry

The Zambian electricity industry traces its origin to 1906 when a small thermal station was established in *Livingstone* to serve a small section of the town (Kapika and Eberhard, 2013: 131). Overtime, several independent thermal stations were constructed. Power stations sold generated electricity to local authorities who, in turn, distributed it in their respective districts. Beginning in 1925, focus shifted to hydro, with the first 2 MW hydro powered plant being installed at the *Mulungushi Power Station.* Two 6 MW generators were added to the station in 1927 (Kapika and Eberhard, 2013: 132). A second hydro station was installed in 1938 at a gorge below the *Victoria Falls*. A further 6 MW generator was installed at *Mulungushi* in 1941. *Lunsemfwa Power Station,* with two generators rated at 6 MW each, was commissioned in 1945 (Kapika and Eberhard, 2013: 132). Coordination of power generation was only achieved in the early 1950s when four stations, with a combined capacity of 120 MW, were connected to a central switching station in *Kitwe*. Then in 1956, a 220Kv transmission line was constructed, connecting Copperbelt power systems to a transmission system in *Katanga* (in the then *Belgian Congo*). This enabled importation of power to satisfy growth in demand from mines on the *Copperbelt.* In 1956, a second transmission line was laid from *Katanga* to *Kitwe* on the *Copperbelt*. The line enabled importation of power to meet increased demand from mines in the *Copperbelt*. The line (and distributing infrastructure) was operated by the *Rhodesia Congo Border Power Company*, renamed *Copperbelt Power Company* (*CPC*) in 1966 (CEC, 2019).

To reduce overreliance on imported power, the *Kariba Dam* and consequently, the *Kariba North Power Station* were constructed between 1956 and 1962 (Jarosz, 1992). This necessitated the

construction of 2,700 Kilometres of 330 Kv transmission lines to connect the power plant, in the south, to copper mines, in the north of the country. Bulk supply centres and intermediate substations, at *Leopards Hill* and *Kabwe*, were also erected (ZESCO Limited, 2018). Another milestone was the expansion of the *Victoria Falls Hydro Power Station* by 60 MW in 1969 and 48 MW in 1972, increasing installed capacity to 108 MW (ERB, 2020b). Additionally, Kafue Gorge Power Station was completed in 1973, with initial capacity of 600 MW, latter increased to 900 MW (ZESCO Limited, 2018). The power stations were grid connected through 330 Kv lines at *Leopards Hill Substation*. Improvement in interconnections meant that the transmission system managed to serve most areas in the country, from *Mongu* in the West, *Livingstone* in the South and *Lusaka* to *Copperbelt* in the North.

Isolated transmission systems were also developed for rural and provincial areas considered too remote from the main grid. They were set up as isolated systems around individual generating stations. They included *Lunzua* (0.75 MW) serving *Mbala District*, *Chishimba Falls* (6.0 MW) serving *Kasama District*, *Musonda Falls* (5.0 MW) serving *Mansa District* and *Lusiwasi* (12.0 MW) serving *Serenje* and *Chipata Districts* (ZESCO Limited, 2018). Two hydro stations were developed at *Mulungushi* (20 MW) and *Lunsemfwa River* (18 MW) to supply power to the copper, zinc and cobalt mine in *Kabwe* (Owen, 2016). A number of isolated diesel powered stations were also constructed in various locations.

The first distribution company, the *Victoria Falls Electricity Board*, was established in 1951 and transmitted and distributed power in the southern part of the country. The *Central Electricity Corporation Limited* was established in 1953 to distribute electricity to consumers in *Lusaka* and its surrounding areas (ECFA, 2006: 4-C-1). In the same year, a privately-owned power utility, the *Rhodesia-Congo Border Power Corporation*, latter changing its name to the *Copperbelt Power Company* in 1966, was established to operate the interconnected grid on the Copperbelt linking into the *DRC*. The grid supported the sourcing, transmission and supply of power to mining operations in the two countries (Kapika and Eberhard, 2013: 132). In 1960, a number of small hydropower stations in the northern part of the country were merged to form the *Northern Electricity Corporation Limited* which supplied electricity to mining companies. It also purchased electricity from *Copperbelt Power Company* and retailed it to consumers in the *Copperbelt* distribution network (CEC, 2019).

In 1970, the *Zambia Electricity Supply Act* was enacted (Phiri and Ziba, 2018). Among others, the Act called for the nationalisation of the electricity industry. Consequently, the three companies, *Victoria Falls Electricity Board*, *Central Electricity Corporation Limited* and *Northern Electricity Corporation Limited*, were merged into the *Zambia Electricity Supply Corporation Limited*, a newly created parastatal (ZESCO Limited, 2018: 22). The company took over ownership and control of their generation plants and transmission lines. It also took distribution networks away from local authorities (Phiri and Ziba, 2018: 3). In 1982, the nationalised *Copperbelt Power Company* was renamed *Power Division* and placed under *ZCCM*, which also took ownership of *Lunsemfwa* and *Mulungushi* power stations (CEC, 2019). In addition, the *KNBC*, now government owned, continued to run the *Kariba North Hydro Power Station*, selling its generated electricity to the *Zambia Electricity Supply Corporation Limited* (ECFA, 2006: 4-C-2).

In 1994, the *National Energy Policy* was promulgated. A key policy measure was restructuring of the electricity industry by opening it up to the private sector (ERB, 2015: 4). In the same year, the name "*Zambia Electricity Supply Corporation Limited*" was changed to "*ZESCO Limited*" to reflect commitment to becoming customer and commercially focused (ZESCO Limited, 2018: 22). In 1995, the *Zambia Electricity Supply Act* was repealed, legalising the participation of the private sector in the electricity industry (Republic of Zambia, 1995). In the same year, the *Ministry of Energy* and *ERB* were created (Phiri and Ziba, 2018: 3). The *Energy Regulation Board* established through the *Energy Regulation Act*, was created as an independent regulator of the entire energy sector (Republic of Zambia, 1995: 4). One of *ERB*'s functions was to regulate against monopolistic tendencies in the sector (ERB, 2015: 4).

The 1997 privatisation of ZCCM saw the establishment of *Copperbelt Energy Corporation* (CEC) as the first privately owned power utility company in the country (Phiri and Ziba, 2018: 3). In 1997, *ZCCM*'s *Power Division* was sold to *CEC* (ZDA, 2010). *Copperbelt Energy Corporation* purchased bulk electricity from ZESCO and sold it to mines in the Copperbelt and residential customers within the area (CEC, 2019: 10). In 1999, the *Office for the Promotion of Private Power Investors (OPPPI)* was created under the Ministry of Energy. *Office for the Promotion of Private Power Investors was* solely dedicated to the promotion of private investments in the energy sector by streamlining investment procedures and reducing the

complexity and red tape associated with obtaining investment approvals, permits and licenses in the electricity sector (Phiri and Ziba, 2018: 3). In 2001, *Lunsemfwa* and *Mulungushi* power stations were sold to *Lunsemfwa Hydro Power Company Limited*. According to Phiri and Ziba (2018), *LHPC* became the first IPP, generating power and selling to ZESCO under a *Power Purchase Agreement (PPA).*

In 2003, the *Rural Electrification Act* was enacted. The Act established the *Rural Electrification Authority (REA)* and mandated it with electrification of rural areas (Republic of Zambia, 2003). In 2004, ZESCO took over direct running of *Kariba North Hydro Power Station* (ECFA, 2006: 4-C-2). In 2008, *North Western Energy Corporation Limited (NWEC)* was granted a license to distribute electricity to mining townships in *North-Western Province* (ERB, 2020b: 54). Between 2008 and 2019, more IPPs entered the market and signed PPAs with ZESCO. They included *Zengamina Power Limited (ZPL)* in 2008, *Ndola Energy Company Limited (NECL)* in 2013, *Itezhi Tezhi Power Corporation Limited (ITPC)* in 2016 and *Maamba Collieries Limited (MCL)* also in 2016 (ERB, 2020b: 52-56).

The literature above clearly indicates that Zambia's electricity industry has evolved from a small thermal station in 1906 to a complex network of generation plants as well as transmission and distribution networks. This gives the country the best opportunity to achieve economic diversification and industrialisation.

4.4. Regulatory Institutional Framework of the Electricity Supply Industry

The country has a robust set of institutions responsible for electricity and energy in general. *The Ministry of Energy*, through the *Department of Energy*, takes an overall lead (Phiri and Ziba, 2018: 5). It is responsible for the formulation and implementation of policies, programmes and projects on electricity and power development (Owens, 2016: 13). The department also facilitates and approves the construction, rehabilitation and maintenance of energy infrastructure. It also arbitrates appeals on disputes that arise when *ERB* rejects license applications (Phiri and Ziba, 2018: 4). It is also responsible for compiling inventories of energy resources so as to detail patterns of production, distribution, consumption, and pricing of energy. This helps to maintain an energy information system used for planning, forecasting and policy analysis. It is also responsible for promoting the efficient management of energy and has the mandate to change regulations governing the industry (Republic of Zambia, 2018: 20).

The department has a specialised unit, *OPPPI,* responsible for promoting private investments in electricity generation and transmission. The unit streamlines investment procedures thereby reducing the complexity and red-tape associated with obtaining investment approvals, permits and licenses (Phiri and Ziba, 2018: 3, 5). The Ministry also houses the *Cluster Advisory Groups (CAGs)* which coordinates, monitors and evaluates developmental outcomes to ensure achieving energy targets set in the *Seventh National Development Plan* (Republic of Zambia, 2018: 21).

The *Energy Regulation Board* is responsible for regulating the energy industry. With regard to electricity, *ERB* is responsible for licensing of operators, adjusting tariffs and monitoring competition in the market (Phiri and Ziba, 2018: 3 and Owens, 2016: 13). The *Energy Regulation Board* also establishes and monitors the application of the *Zambia Grid Code*. The Board also ensures that operators post reasonable returns on investment while providing consumers with quality, safe and reliable electricity at affordable prices (Republic of Zambia, 2018 and Owens, 2016: 13). Further, under its *Consumer and Public Affairs Department*, *ERB* safeguards the interests of consumers by enforcing the *Consumer Charter*. This is achieved through creation of public awareness and enhancing systems for consumer advocacy as well as complaints and dispute resolution (ERB, 2007).

The *Rural Electrification Authority (REA)* was established by the *Rural Electrification Act* of 2003 and houses the *Rural Electrification Fund* (Republic of Zambia, 2018: 21 and Phiri and Ziba, 2018: 3). The *Rural Electrification Authority* oversees the development and implementation of all rural electrification projects. The *Rural Electrification Authority* undertakes the construction of generation plants and extension of the electricity grid into remote areas. The Authority also grants incentives and subsidises capital costs for projects designed to supply energy in rural areas (Owens, 2016: 22). *Rural Electrification Authority* also provides government with suitable policy guidance in ensuring that marginalised rural populations have enhanced access to electricity (Republic of Zambia, 2018: 20 and Phiri and Ziba, 2018: 3).

The *Industrial Development Corporation (IDC)* was incorporated in 2014 and is an SOE, under the Ministry of Finance, positioned as government's shareholder of viable SOEs. The *IDC* is responsible for repositioning SOE through recapitalisation, change of business models, optimisation of asset utilisation and divestiture (Phiri and Ziba, 2018: 5). The *Industrial Development Corporation* also lowers investment risk and maximises long-term shareholder

value by serving as a co-investor alongside private sector entities. The *Industrial Development Corporation* is an investor in the energy industry and government's shareholder in ZESCO (Phiri and Ziba, 2018: 5). It is also spearheading the *Scaling-up Solar Initiative* with a target of installing a total 600MW grid-connected Solar PV (Republic of Zambia, 2018: 21).

The Zambia Development Agency (ZDA) is an agency responsible for fostering the country's economic growth and development by creating an economic environment conducive for a private sector driven economy (Republic of Zambia, 2006: 5). *ZDA* provides investors with incentives and market information (Phiri and Ziba, 2018: 5). In addition, it is a one-stop-facility aimed at streamlining bureaucratic procedures and requirements faced by all investors, including those in the electricity industry. This is expected to promote efficiency and competitiveness in setting up and running businesses in Zambia (Republic of Zambia, 2006).

The Zambia Bureau of Standards is a statutory body under the Ministry of Commerce, Trade and Industry that was established in 1982 (Republic of Zambia, 2018: 21. It implements the *Standards Act* and the *National Quality Policy*. The bureau specialises in standardisation, standards formulation, testing, quality control, quality assurance, import and export quality inspections, product certification and removal of technical barriers to trade. The bureau, therefore, ensures that electricity firms and their products adhere to set standards and quality (Republic of Zambia, 2018: 21).

The Zambia Environmental Management Agency (ZEMA) is a statutory body established by the Environmental Management Act of 2011 to provide for integrated management, protection and conservation of the environment and natural resources (Republic of Zambia, 2018: 55). *ZEMA* conducts environmental assessments of any proposed policies, plans and programmes likely to have an impact on the environment. Therefore, *ZEMA* is required to conduct an environmental impact assessment and approval for any project involving construction and operation of electricity infrastructure.

The information above shows that the country has a robust set of institutions responsible for electricity and energy in general. The various ministries, departments, units, agencies and statutory bodies are adequatly setup to regulate and improve the industry. However, there is need to avoid duplication of functions and institutional overlap.

4.5. Electricity Policies, Plans and Legislations

A number of policy and legal instruments support developments in the energy sector. The framework is intended to create an enabling environment for private sector participation by introducing cost-reflective electricity tariff regime and establishing an open and non-discriminatory transmission access. The following are the major policies, plans and legislations:

The National Energy Policy, adopted in 2008, provides the overarching sector policy framework (Owen, 2016: 13). Its main aim is to create conditions that will ensure the availability of adequate supply of energy from various dependable sources and at the lowest economic, financial, social and environmental cost. This is to be achieved by diversifying the energy mix and encouraging private participation (Republic of Zambia, 2018: 22).

The Power Systems Development Master Plan (PSDMP, 2010), part of the implementation of the *National Energy Policy*, provides a blueprint for developing Zambia's power system up to 2030. The plan draws attention to least cost expansion alternatives for generation, transmission and distribution in the country. It also prioritises development of power generation projects with capacity to add 4,337 MW to the national grid by 2030 (Republic of Zambia, 2018: 22).

The Rural Electrification Master Plan (REMP, 2009 - 2030), developed by *REA* in 2008, has the objective of guiding Zambia's rural electrification agenda up to the year 2030 (Republic of Zambia, 2018: 23 and Woods et al., 2019: 28). *The Rural Electrification Master Plan* intends to electrify 1,217 *Rural Growth Centres* through extension of the national grid, mini hydro and standalone solar systems (Woods et al., 2019: 28). Through *REMP*, *REA* is expected to increase rural electrification rate from 3% in 2008 to 51% by 2030, at an estimated cost of about US$ 1.1 billion (Owen, 2016: 14).

The Renewable Energy Feed in Tariff (REFIT) Strategy (2017) aims at increasing national generation output through the promotion of private sector investment in small and medium size renewable energy plants of up to 20 MW (Woods et al., 2019: 28). This is to be achieved through ensuring cost-reflective tariffs, transparency, competition as well as quick deployment of private investment (Republic of Zambia, 2018: 23).

The Electricity Act (1995, amended 2003), provides the overall legal framework for regulating the generation, transmission, distribution and supply of electricity in Zambia (Phiri and Ziba,

2018: 3). The Act includes the *Electricity (Licensing) Regulations* and the *Electricity (Supply) Regulations*. Through these regulations, the Act liberalised the electricity sector by opening up all electricity segments to private operators in addition to providing for the importation of power in case of deficit (Phiri and Ziba, 2018: 4 and Woods et al., 2019: 28).

The Energy Regulation Act (1995, amended 2003) established the *ERB* and defined its functions and powers. It also repealed the *National Energy Council Act* and the *Zambia Electricity Supply Act* (Woods et al., 2019: 28).

The Rural Electrification Act (2003) established *REA* and defined its functions and powers. The Act also established the Rural Electrification Fund to be housed under *REA* (Republic of Zambia, 2018: 20 and Phiri and Ziba, 2018: 3).

The Zambia Electricity Grid Code (Statutory Instrument Number 79 of 2013) legally established technical requirements for facilitating open and non-discriminatory access to Zambia's electricity transmission network (Owen, 2016: 14). This allowed for the connection to and use of the electrical transmission system by IPPs and ITCs. To this effect, ZESCO was, in 2018, issued with a System Operator's license for five years. ZESCO is then expected to grant third-party access to the network (Phiri and Ziba, 2018: 17).

The Zambia Distribution Code (2016) provides clear rules, procedures, requirements and standards for the operation, maintenance, and development of a safe, reliable and efficiently operated electricity distributions system in Zambia (Phiri and Ziba, 2018: 14 and Woods et al., 2019: 28). The distribution code also seeks to complement the *Zambia Electricity Grid Code* by facilitating non-discriminatory access to the electricity distribution network by avoiding undue discrimination between *Distribution Network Service Providers (DNSP*s*)* and other categories of participants (Ministry Energy, 2018: 23 and Phiri and Ziba, 2018: 14).

The Electricity Consumer Charter of Zambia (2007), developed by *ERB,* aims at protecting electricity consumers and clearly defining the obligations of service providers. Consumers were expected to meet their obligations and responsibilities while ensuring they get value for their money, and are aware of their rights, complaint procedures and regulations that exist for electricity suppliers. Service providers were responsible for rendering acceptable services and handling consumer complaints in an efficient and cost-effective manner. The regulator, *ERB,* has

to ensure that the appropriate quality of service is provided and arbitrates conflict between consumers and service providers (ERB, 2007).

The information above shows the country had put in place a robust legal framework comprising various policies, plans and legislations aimed at regulating the electricity industry. The framework is clearly adequate enough to create an enabling environment for private sector participation. With the above policies and legislations, the country is able to achieve its objective of introducing cost-reflective electricity tariff regime. However, there is need to set up laws and policies that clearly promotes competition throughout the industry. For instance, the *Zambia Electricity Grid Code* only served to increase ZESCO's dominance by giving it monopoly control over the transmission network. Consequently, giving ZESCO power to grant third-party access to the network contradicts the objective of facilitating open and non-discriminatory access to the country's transmission network. There is also need to avoid duplication of regulations.

4.6. Electricity Generation Potential in Zambia

Zambia is endowed with a wide range of domestic energy resources. The country has large deposits of coal, biomass, hydro, solar, wind and geothermal resources (Owen, 2016: 19). The country also imports petroleum which is used for electricity generation in addition to other applications (ERB, 2020).

Hydro: Zambia houses 40% of the water resources in Southern Africa. This gives the country estimated hydropower reserves, consisting of small, medium and large-scale hydro, of 6,000 MW (Owen, 2016: 19). However, only about 2400 MW (40%) has been exploited (Republic of Zambia, 2018). Nevertheless, hydro power remained vulnerable to drought (Owen, 2016: 19).

Coal: Zambia's proven coal deposits, located in Southern Province, are estimated at between 80 and 100 million tonnes (Owen, 2016: 19). Other probable coal reserves in Luangwa and Western Province are estimated in the region of 700 million tonnes (ZDA, 2014: 9). The country's two coal mines, *Maamba Collieries Limited* and *Collum Coal Mine*, only extracted about 600,000 tonnes annually (ZCCM-IH, 2019: 9). Major domestic customers include the copper mines, brewery companies, tobacco farmers and manufacturers. Exports to *Tanzania*, *DRC* and *Malawi* is estimated at 200, 000 tonnes annually (ZDA, 2014, 9). The country's two coal fired power

plant had an installed capacity of only 330 MW, utilising 200,000 tonnes of coal to generate power annually (ZDA, 2014: 9 and ZCCM-IH, 2019: 9).

Solar: Zambia has high solar radiation levels with small seasonal variations thus giving it a high potential for Photovoltaic (PV) power generation (Phiri and Ziba 2018: 8). Specifically, the country has about 186,121 km^2 of suitable land area for utility-scale PV implementation. This accounts for 24.73% of Zambia's total surface area (Mwanza, Chakchak, Çetin and Ulgen, 2017: 113-114). This area corresponds to geographical solar energy potential of 392,701 TWh per year. Capacity factor, if Polycrystalline Photovoltaic technologies are used, is estimated at 22.55%. With a power density of 55.6 MW/km^2, the country has technical solar energy potential of about 20,442TWh/year, equivalent to 2,333,561.64 MW (Mwanza, et al., 2017: 114). Despite this huge potential, high investment capital costs meant that solar only contributed 55.1 MW to Zambia's energy mix (Republic of Zambia. 2018: 26). Nevertheless, the government promoted solar through the development of the *Solar Resource Mapping Atlas* aimed at delivering high quality solar resource mapping and measurement services. Through the World Bank Group's *International Finance Corporation (IFC) Scaling Utility-Scale Solar Program*, Zambia targets to develop 600 MW of on-grid solar generation by 2021 (Republic of Zambia, 2018: 26).

Biomass: Biomass comprises agricultural, forestry, industrial/municipal organic, products and animal wastes as well as energy crops (Walimwipi, 2013: 7). With a total land area of 70 million hectares, Zambia's Biomass is estimated at 2.15 million tonnes, sufficient to support electricity generation of approximately 500 MW. Agricultural waste would fuel about 447 MW, a further 46 MW from forest waste and 4 MW from municipal waste (Republic of Zambia, 2018: 29). However, Zambia has only one plant using biomass (bagasse from sugar cane production) to generate 40 MW of electricity (Zambia Sugar Limited, 2019).

Geothermal: Surveys have identified about 80 hot springs, with 35 offering potential for energy exploitation (Phiri and Ziba, 2018: 2). However, only one miniature geothermal power plant, at *Kapisya* hot springs, had been exploited. Nevertheless, despite its total installed capacity of 0.24 MW and potential to generate 2 MW, the plant had never been commissioned due to lack of transmission lines to load centres (Kachapulula-Mudenda, Makashini, Malama and Abanda, 2018: 13 and Phiri and Ziba, 2018: 2). Nonetheless, five more potential sites have been identified for exploration by private developers, with positive indications (Republic of Zambia, 2018: 53).

Wind: Wind resources are estimated to be low to fair by international standards. The minimum wind speed that can make electricity generation economically feasible is 5m/s. However, available data indicates that Zambia has an average wind speed of approximately 2m/s, limiting prospects for large-scale electricity generation (Republic of Zambia, 2018: 51). The wind is only appropriate for domestic water-pumping and irrigation (Kachapulula-Mudenda et al., 2018: 13).

Petroleum (Heavy Fuel Oil and Diesel): Although a 1971 geological assessment indicated that Zambia had potential for petroleum, subsequent explorations in the 1980s failed to uncover any oil. Consequently, explorations were abandoned in 1988, only resuming in 2005 (Yaluma, 2017: 2). However, although preliminary prospects in North-Western Province showed encouraging results, there has been no definitive discovery of petroleum in Zambia. The country thus, meets all its petroleum requirements through imported feedstock, in the form of spiked crude oil (ERB, 2020b: 5).

Table 4.1: Potential Compared to Exploited Electricity by Source

Source of Electricity	**Total Potential (MW)**	**Total Exploited (MW)**
Hydro	6,000	2,398.55
Coal	Unknown	330
Solar	2, 333,561.64	55.1
Biomass	500	40
Geothermal	Unknown	0.24
Wind	Nil	Nil
Petroleum (Diesel and Heavy Fuel Oil)	Unknown	196.3
Total	**Unknown**	**3,020.19**

Source: Author's own interpretation of reviewed literature

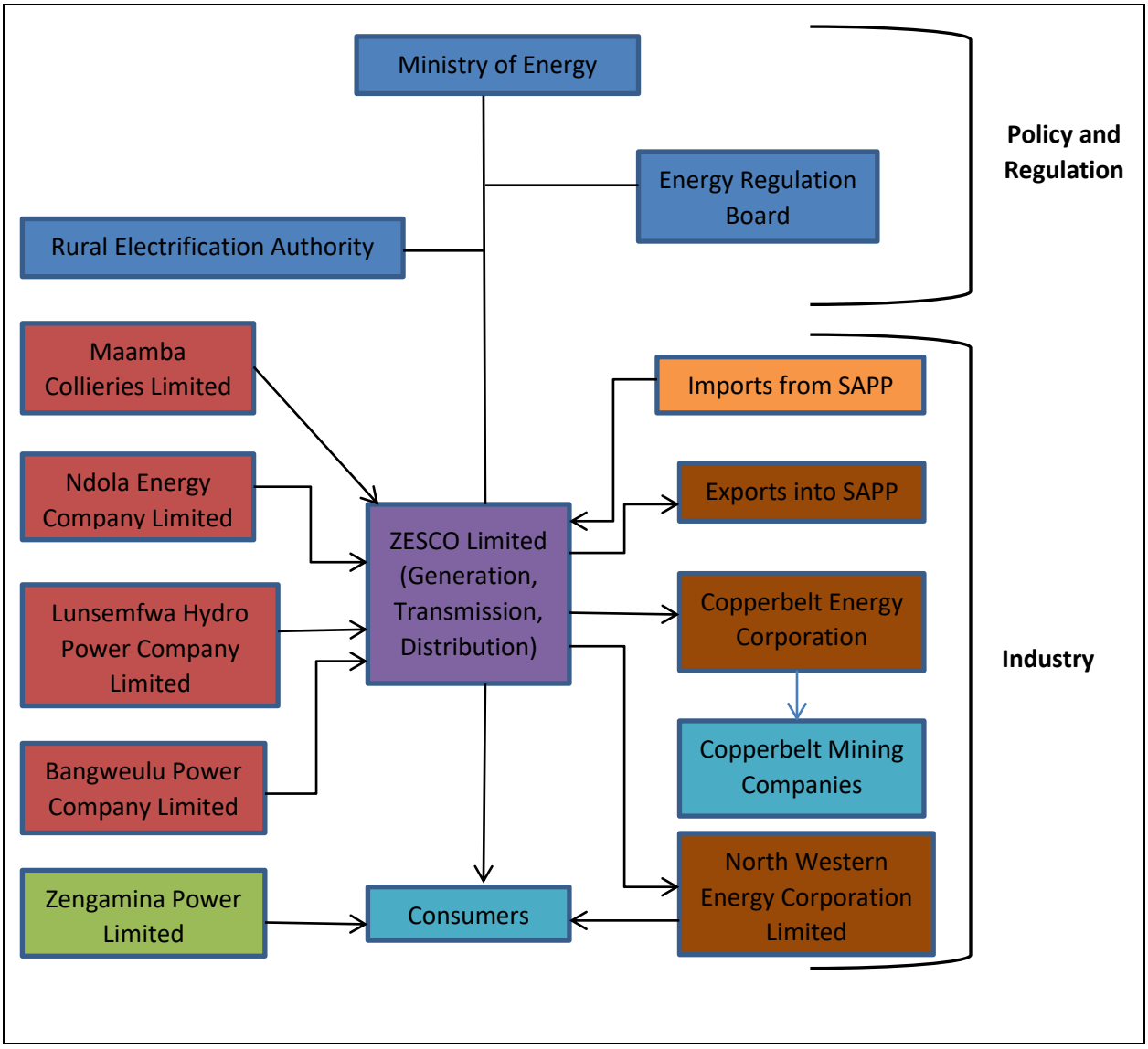
Table 4.1 above shows that Zambia has a huge unexplored potential for power generation. It is, therefore, important that the country diversifies away from over reliance on hydro, a source vulnerable to climate change. Investments should be concentrated on developing biomass, geothermal and especially solar powered electricity.

4.7. The Main Players in Generation, Transmission and Distribution of Electricity

According to Phiri and Ziba (2018: 9), Zambia's electricity industry is comprised of generators, transmitters, a system operator and distributors. The country's electricity sector operates under

the single buyer model with several IPPs, transmitters and distributors. The single buyer functions are assumed by ZESCO which is the off-taker for power generated by the IPPs (Owen, 2016: 8). ZESCO further enhanced its dominance by holding a five-year license to operate the country's transmission network (Phiri and Ziba, 2018: 7). ZESCO also owns the majority of generation, transmission and distribution capacity (Owen, 2016: 8). Below is a breakdown of the main players in generation, transmission and distribution of electricity in Zambia.

Figure 4.2: Relationship among the Key Institutional Stakeholders in the Electricity Sector



Source: Author's own interpretation of reviewed literature

4.7.1. Installed Generation Capacity

Electricity is Zambia's second most dominant energy source after wood fuel. It provides about 10% of the national energy supply (ERB, 2020b: 37). Simply put, generation is the production of electricity from various sources using different technologies (Phiri and Ziba, 2018: 9). Zambia's electricity generation consisted of large power stations with generating capacity of over 20 MW, small power stations with generating capacity of between 1 MW and 20 MW, and mini power stations with generating capacity of less than 1 MW (ERB, 2020b: 37). The national installed capacity increased by 83.1 MW, raising total installed capacity to 2,981.3 MW in 2019, from 2,898.2 MW in 2018 (ERB, 2020b: 37). The 2.9% increase was mainly due to commissioning of the 54 MW *Bangweulu* and 34 MW *Ngonye* solar power plants (ERB, 2020b: 37).

Zambia's electricity generation mix continued to be predominantly hydro with its 2398.55 MW installed capacity accounting for 80.45% of the total (ERB, 2020b: 37). The remainder of the generation mix was made up of Coal with installed capacity of 300 MW (10.06%), Heavy Fuel Oil 110 MW (3.69%), Diesel 83.6 MW (2.80%) and Solar 89.16 MW (2.80%) (ERB, 2020b: 37). Commissioning of the *Bangweulu* plant meant that solar had the highest percentage increase. Below is a breakdown of ZESCO and the 8 IPPs that generate electricity in Zambia.

ZESCO Limited

ZESCO generated 78.67% (2,345.40 MW) of the total installed capacity, with IPPs generating the remaining 21.33% (ERB, 2020a: 2). ZESCO owned a total of 12 generation plants. However, the majority of ZESCO's installed capacity, about 98% (2,298 MW), came from its five large hydro power plants. According to ERB (2020a: 2), these are *Kafue Gorge Upper* (990 MW), *Kariba North Bank* (720 MW), *Kariba North Bank Extension* (360 MW), *Itezhi-Tezhi* (120 MW) and *Victoria Falls* (108 MW). *Kariba North Bank Extension Power Corporation Limited (KNBE),* a subsidiary of ZESCO, was established to run the *Kariba North Bank Extension*. The *Kariba North Bank Extension* is a peaking plant which operates 3.5 hours per day during peak period. According to Phiri and Ziba (2018: 6) the *Itezhi-Tezhi* hydro power plant is owned and operated by *ITPC*. *ITPC* is a Public Private Partnership (PPP) jointly owned by *Tata Africa Holdings (SA) Pty Limited* (50%) and ZESCO (50%), on a 25-year Build-Own-Operate-Transfer (BOOT) concession term (ERB, 2020b: 55). ZESCO is the sole off-taker of the power generated at both plants under long-term PPAs (Phiri and Ziba, 2018: 6).

ZESCO also utilises five small-scale hydro generation plants and seven small-scale diesel generation plants. It also owns a mini scale diesel generation plant as well as a non-operational mini geothermal plant (Kachapulula-Mudenda et al., 2018: 13). Most of ZESCO's off-grid diesel plants were decommissioned once the national grid reached their locations (Woods et al., 2019). ZESCO is a member of the *Southern Africa Power Pool (SAPP).*

Maamba Collieries Limited (MCL)

The original coal mine at *MCL* had been operational since 1971, but low-grade coal was left to stockpile as waste (Owen, 2016: 10). This resulted in severe environmental pollution and health hazards due to spontaneous combustion and acid mine drainage. The company realised that the low grade coal reserves were thermal grade and adequate to meet the fuel requirement of running a power plant (ZDA, 2014). Consequently, since 2016, *MCL* operated the largest coal-fired Thermal Power Plant in Zambia. It is currently Zambia's largest IPP with its 300MW mine-mouth power plant accounting for nearly 10% of generation capacity (ERB, 2020b: 54). The power plant used about 200, 000 tonnes of low grade coal to generate power annually (ZDA, 2014: 9 and ZCCM-IH, 2019: 9). The power is then up-taken by ZESCO under a 20 year PPA (Republic of Zambia, 2018: 20).

Ndola Energy Company Limited (NECL)

Ndola Energy Company Limited is an IPP that owns and operates a Heavy Fuel Oil power plant in *Ndola* (Republic of Zambia, 2018: 20). The plant has a total installed capacity of 110 MW, representing 3.69% of national installed capacity (ERB, 2020a: 2). The plant is strategically located adjacent to *Indeni Petroleum Refinery Limited* for ease of access to the Heavy Fuel Oil produced at the refinery. The power is sold to ZESCO under a 15 year PPA (ERB, 2020b: 52).

Copperbelt Energy Corporation (CEC)

Copperbelt Energy Corporation owns and operates five generation plants with a total of 81 MW (ERB, 2020b: 51). Six diesel stand-by generators, at four strategic locations in the *Copperbelt*, have total installed capacity of 80 MW (CEC, 2019: 10). According to ERB (2020b) the plants are *Luano* (40 MW), *Bancroft* (20 MW), *Luanshya* (10 MW) and *Mufulira* (10 MW). The

generators are meant to improve reliability in case of interruptions to ZESCO's supplies. *Copperbelt Energy Corporation* also owns a 1 MW grid connected solar plant in *Riverside*. The plant sits on 1.2 hectares of land with 3,824 solar modules rated 270W each (CEC, 2019: 10). Unlike other Zambian IPPs, *CEC* utilises its generated power within its transmission and distribution lines. *Copperbelt Energy Corporation* is also a member of *SAPP*.

Lunsemfwa Hydro Power Company Limited (LHPC)

Lunsemfwa Hydro Power Company, the first IPP in Zambia, owns and operates *Lunsemfwa* (24 MW) and *Mulungushi* (32 MW) power plants in *Central Province* (ERB, 2020b: 53). Both plants comprise a reservoir, a canal and penstocks to a surface powerhouse. All the power generated is sold to ZESCO under a 15 year PPA. *Lunsemfwa Hydro Power Company* is also a member of *SAPP* (Phiri and Ziba, 2018).

The Bangweulu Power Company Limited

The *Bangweulu Power Company Limited* is owned by the French company *Neoen* (55.2%), the American company *First Solar Inc.* (25.15%) and the *Industrial Development Corporation* (19.65%). Since 2019, the Bangweulu Power Company Limited owns and operates a 54 MW solar PV power plant in the *Lusaka South Multi-Facility Economic Zone*. Part of the Scaling Solar project, the plant is Zambia's first utility-scale solar photovoltaic (PV) farm. It is also the country's largest solar renewable energy project. The generated power is up-taken by ZESCO, via a 33kV underground cable, under a 25 year PPA (ZESCO Limited, 2019).

Zengamina Power Limited (ZPL)

Zengamina Power Limited, an IPP based in *Kalene, North-Western Province*, is owned by the *North-West Zambia Development Trust*. Since 2007, the company has owned and operated an off-grid mini-hydro plant with an installed capacity of 0.75 MW (ERB, 2020b: 56. The plant is a run of the river design consisting of a weir, canal, penstock and tailrace fitted to a surface powerhouse. The company distributes and supplies all its generated power to *Kalene Mission Hospital, Ikelengi central business district* and surrounding areas (Phiri and Ziba, 2018: 5). Table 4.2 below shows Zambia's installed generation capacity as at 31 December 2019.

Table 4.2: Zambia's Installed Electricity Generation Capacity as at 31 December 2019

Ownership	Generation Plant	Capacity (MW)	Source	Notes	Utility Total Capacity (MW)
ZESCO	Kafue Gorge Upper	990	Hydro		**2,345.4**
	Kariba North Bank	720	Hydro		
	Kariba North Bank Extension	360	Hydro	Peaking plant	
	Itezhi-Tezhi	120	Hydro	Joint venture (Tata Africa)	
	Victoria Falls	108	Hydro		
	Lunzua	14.8	Hydro		
	Lusiwasi	12	Hydro		
	Musonda Falls	10	Hydro		
	Chishimba Falls	6	Hydro		
	Shiwang'andu	1	Hydro	Off-grid	
	Luangwa	2.6	Diesel	Off-grid	
	Shangombo	1	Diesel	Off-grid	
MCL	Maamba	300	Coal		**300**
NECL	Ndola HFO	110	Heavy Fuel Oil		**110**
CEC	Luano	40	Diesel	Stand-by	**81**
	Bancroft	20	Diesel	Stand-by	
	Luanshya	10	Diesel	Stand-by	
	Mufulira	10	Diesel	Stand-by	
	Kitwe-Riverside	1	Solar		
LHPC	Mulungushi	32	Dam		**56**
	Lunsemfwa	24	Dam		
BPCL	Bangweulu	54	Solar		**54**
Ngonye Power Limited	LSMFEZ	34	Solar		**34**
Zengamina	Ikelengi	0.75	Hydro	Off-grid	**0.75**
REA	Samfya	0.06	Solar	Off-grid	**0.06**
Muhanya Solar Ltd	Sinda Village	0.03	Solar	Off-grid	**0.03**
Engie Power Corner	Chitandika Village	0.028	Solar	Off-grid	**0.028**
Solera Power	Luangwa Bridge	0.0128	Solar	Off-grid	**0.0128**
Standard Microgrid	Kafue	0.0162	Solar	Off-grid	**0.0162**
Mugurameno	Chirundu	0.01	Solar	Off-grid	**0.01**
	IPPs Sub-Total	**637.01**			
	Installed Total	**2,981.31**			

Source: ERB (2020a: 2)

Other Off-grid IPPs

Zambia Sugar employs a low-pressure combustion system to generate 40 MW of electricity using bagasse from sugar cane production (Zambia Sugar Limited, 2019). All the generated power is used for processing sugar at its *Nakambala* sugar plant, in *Mazabuka* (Zambia Sugar Limited, 2019). Similarly, *Dangote Cement Zambia Plc* owns and operates a 30 MW coal fired thermal plant used to power its cement manufacturing plant in *Ndola* (ERB, 2020b: 56). *Rural Electrification Authority* also owns and operates 0.06 MW worth of solar plants in various rural areas across the country (Woods et al., 2019: 37). *Muhanya Solar* owns and operates a 0.03 MW solar plant in *Sinda Village*, *Eastern Province,* and *Standard Micro* owns and operates a 0.01 MW solar plant in *Mugurameno Village* in the *Chiawa Game Management Area* (Woods et al., 2019: 37).

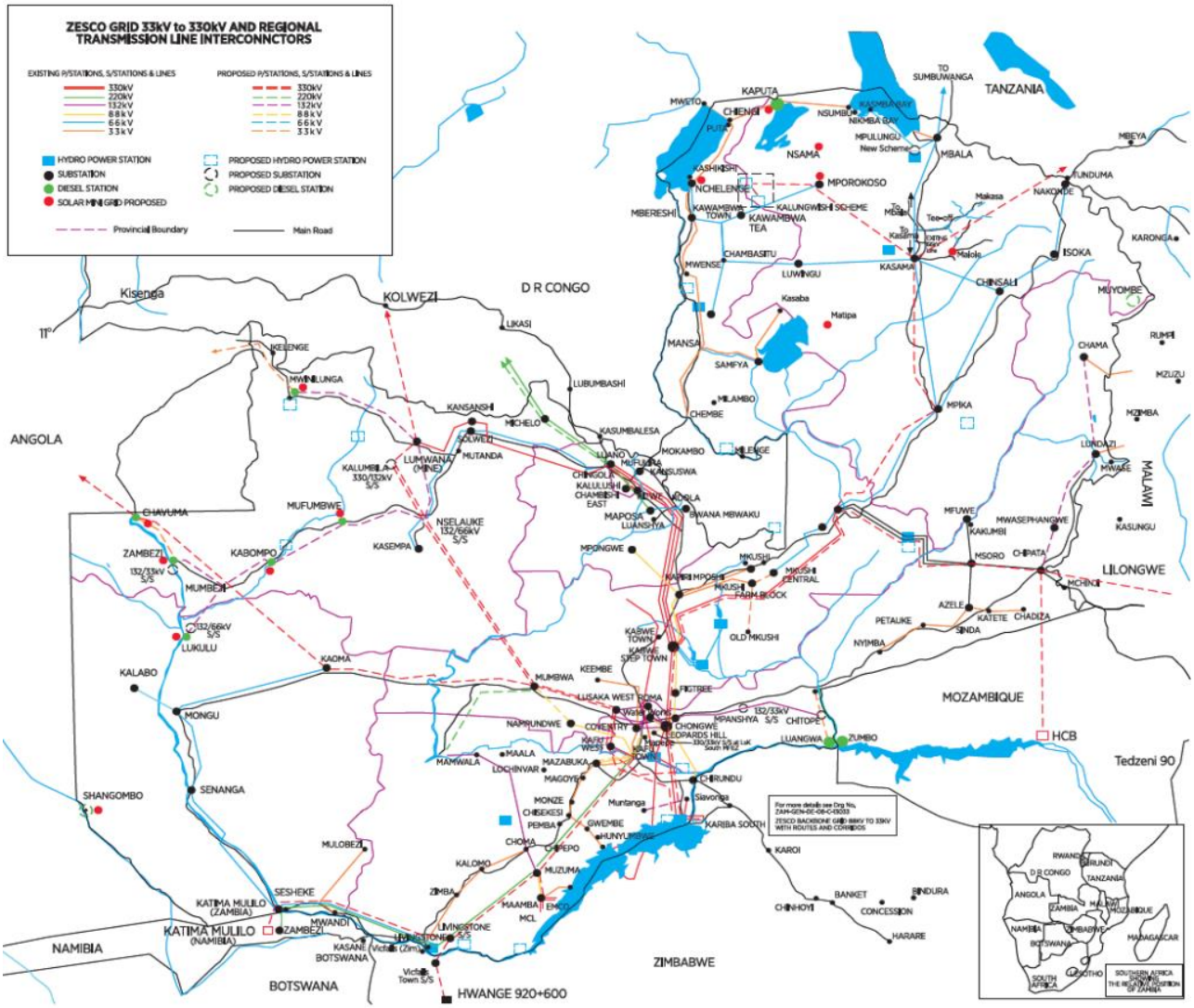
As Table 4.1 shows, Zambia's electricity generation lacks competition as it is dominated by ZESCO. In addition to dominating production, ZESCO's role as the sole purchaser of all the generated grid connected power discourages private investments. This is because IPPs are forced to enter into lopsided trade agreements with ZESCO for them to sale their power. Additionally, ZESCO's insistence on fifteen-year PPAs discourages long-term investments. This is because potential investors fear that ZESCO might refuse to renew PPAs once they expire.

4.7.2. The Transmission Network

A transmission network comprises transmission lines and substations. Transmission is *the "transportation of generated electricity at high voltage over a network of copper or aluminium wires, on poles or towers, or sometimes underground or underwater"* (Hunt, 2002). The electricity is delivered to local distribution systems for onward supply to end-consumers. The transmission grid is thus, a highway for electricity delivery across the country and forms part of the regional grid used for power exchange with other countries. *"When electricity is produced, it leaves the generating plant, travels at the speed of light via transmission lines, through the distribution system and is consumed within a millisecond"* (Hunt, 2002). There is, therefore, need for a system operator to manage the network in real time to avoid system overloaded. The system operator achieves this by balancing the amount of electricity generated by power plants with the amount of power demanded by all customers utilising electricity at that exact time

(Hunt, 2002). This happens instantaneously. Only ZESCO and CEC own transmission lines in Zambia, which only extends to parts of the country, leaving others, especially rural areas, off-grid (ERB, 2020).

Figure 4.3: Transmission and Distribution Network in Zambia



Source: ZESCO Limited (2019)

ZESCO Limited

ZESCO holds a five-year license to operate and coordinate access to Zambia's transmission grid (Phiri and Ziba, 2018: 7). ZESCO operates the system through its *National Control Centre* (Chimbaka, 2017). This implies that all electricity generators and distributors have to enter into

trade agreements with ZESCO to access the grid (Phiri and Ziba, 2018: 10).

ZESCO also owns the bulk (91.34%) of Zambia's 11,541 Km long transmission network (ZESCO Limited, 2018). The backbone of ZESCO's transmission grid is built on a robust 330 kV system from the southern part of the country, where the major generating stations are located, through Lusaka and Central provinces to the Copperbelt (ERB, 2020b). The grid is made up of 102 substations ranging from 66 kV to 330 kV with installed capacity of 15,518 MVA, transmission network lines of 10,541 km, and installed capacity of 34,737 MVA (ZESCO Limited, 2018). The 66kV and 330kV voltage lines represent 42% and 31% of the total length of the transmission network, respectively. They are supplemented by 220 kV, 132 kV and 88 kV voltage lines (ZESCO Limited, 2018: 4). The lines are used to transmit electricity for distribution to customers countrywide. ZESCO also utilises *CEC*'s transmission network to domestically wheel electricity to the northern parts of the country (ERB, 2020b). To enable wheeling in the *SAPP*, ZESCO's network is also connected radially to *Tanzania* and *Botswana* on 66 kV, *Namibia* on 220 kV and is interconnected to *Zimbabwe* on 330 kV (ZESCO Limited, 2018).

Copperbelt Energy Corporation (CEC)

Copperbelt Energy Corporation owns the transmission lines traversing the Central and Copperbelt Provinces of Zambia. *Copperbelt Energy Corporation*'s network comprises 1,000 km of primary transmission lines at 220kV and 66kV, with 700 km embedded with optic fibre (CEC, 2019: 10). It also has 42 high voltage substations as well as a number of transmission transformers spread over an area measuring 31,328km^2 (CEC, 2019: 10 and Phiri and Ziba, 2018: 9). The lines are used to transmit electricity for distribution and supply to the mines on the Copperbelt and residents in surrounding areas. *Copperbelt Energy Corporation* also co-owns and operates, with the DRC's national utility, *SNEL*, the 220kV dual circuit Zambia-DRC transmission interconnector. The line has a firm capacity to carry 550MW and is used to supply power to mines in *Katanga Province* (CEC, 2019: 10). Being the only connection between DRC and Southern Africa, the line also forms an integral part of the *SAPP*'s central transmission corridor. This enables *CEC* to internationally wheel power on behalf of regional utilities including ZESCO, *SNEL* and *Eskom* of *South Africa* (CEC, 2019: 10).

It is clear from the discussion above that Zambia's transmission system is very uncompetitive as

it is dominated by ZESCO. The situation is worsened by ZESCO possessing sole control over the transmission network. ZESCO's power to grant third-party access to the transmission network stifles competition. The company is likely to block new entrants in transmission as well as disadvantage current ones. This is because transmitters are forced to enter into lopsided trade agreements with ZESCO for them to access the transmission network. This scenario discourages private investment in transmission.

4.7.3. The Distribution and Supply Network

Distribution, closely linked to retail supply, involves the transportation of electricity from the transmission system to consumers through wires (Hunt, 2002). Retail supply of electricity to final consumers comprises a number of customer service operations such as household and commercial connections, metering, billing, sales and payment collections (Hunt, 2002). In the Zambian setup, the distributor also retails the electricity. Zambia's distribution grid is separated into On-grid, Mini Grid and Micro Grid (Woods et al., 2019).

4.7.3.1. On-Grid Distribution and Supply

On-grid distribution begins by stepping-down transmission voltage to 33kV and 11kV for distribution at substations (Hunt, 2002). Zambia's On-grid distribution is dominated by ZESCO, which distributes power to domestic and commercial consumers throughout the country. Others are *CEC* and *North-Western Energy Corporation* (ERB, 2020b and Phiri and Ziba, 2018).

ZESCO Limited's Distribution

ZESCO has a 44,259 km distribution network with installed capacity of 2,824 MVA (ZESCO Limited, 2018: 4). The system is divided into four divisions, *Lusaka*, *Southern, Copperbelt* and *Northern*. These divisions distribute power to domestic, commercial, agriculture and social customers. Bulk distribution and supply is mostly for mines outside the Copperbelt Province such as *Kalumbila*, *Kansanshi and Lumwana*. However, ZESCO also supplies to non-mine bulk customers like *Lafarge* and *Zambezi Portland Cement* (ZESCO Limited, 2018: 11). In total, ZESCO has 1,017,341 customers connected to its grid (ZESCO Limited, 2019).

Copperbelt Energy Corporation

Copperbelt Energy Corporation distributes and supplies power to mines on the *Copperbelt* (Zambia) and *Katanga (*DRC) provinces. Its Zambian customers include *Konkola Copper Mines Plc, Mopani Copper Mines Plc, Lubambe Copper Mines Limited, Chibuluma Mines, Chambishi Copper Mines, Chambishi Metals and Cosak, CNMC Luanshya Copper Mines, China Copper Mines, China Civils NFC Africa Mining* and *Yong Jia Resources* (CEC, 2019: 43). The power is sourced from ZESCO under a Bulk Supply Agreement set to expire on 31 March 2020. In 2019, *CEC* purchased over 50% of the power generated by ZESCO (ERB, 2020). In case of inadequate supply from ZESCO, *CEC* imports power from the *SAPP* and uses its standby generators (CEC, 2019: 43).

North Western Energy Corporation Limited (NWEC)

ZESCO constructed transmission and distribution lines to supply power to *Lumwana, Kalumbila* and *Kansanshi* copper mines in *North-Western Province*. Overtime, residential townships sprung up near the mines. In 2008, *North Western Energy Corporation* (NWEC), a private utility company, acquired a fifteen-year license to purchases 20 MW from ZESCO and distribute it in parts of *North-Western Province* (ERB, 2020b: 54). The company thus, owns and operates power distribution and supply infrastructure that retails electricity to the residential townships of the aforementioned mines (ZESCO Limited, 2018). Its distribution lines are linked to the transmission system through a connection agreement with ZESCO and individual mines. *North Western Energy Corporation Limited* has a total of 3,326 customers, comprising residential 3,234 (97.2%), commercial 89 (2.8%) and social 3 (0.1%) customers (ERB, 2020a: 9).

4.7.3.2. Mini Grid Distribution and Supply - Zengamina Power Limited (ZPL)

Zengamina Power Limited is the only mini grid distributor and supplier in the country. *Zengamina Power Limited* 's mini grid has a distribution network consisting of a 1 MVA, 400V/33 kV Step-up transformer and 35 km of 33 kV line (Woods et al., 2019: 32 and 36). It also has 36 km of 400 V lines for farms, hospitals and industrial customer as well as 230V lines for residential customers (Woods et al., 2019: 32 and 36). *Zengamina Power Limited* uses its grid to distribute and supply its own generated power to Ikelengi central business district, Kalene Mission Hospital, clinics, schools, telecom towers, commercial farms and 600 households (ERB,

2020b: 56 and Woods et al., 2019: 62). However, grid encroachment by *NWEC* posed challenges for *ZPL*'s expansion plans (ERB, 2020b: 56).

4.7.3.3. Micro-Grid Distribution and Supply

Various companies run off-grid micro solar powered distribution grids in remote areas of the country. Since 2017, *Muhanya Solar Limited* operated a micro-grid supplying about 0.03 MW of its generated solar power, at 30 kW, into a distribution network stretching about 1.1 km (ERB, 2020b: 78). The micro-grid, located in *Sinda Village*, *Eastern Province*, has about 60 households and 5 businesses connected to it (Woods et al., 2019: 37). The load per household is limited to 300 W, only enough to power lighting and entertainment (Woods et al., 2019: 62). *Standard Micro* owns a 10 kW micro grid supplying 0.01 MW of its generated solar PV power to a school and 32 households in *Mugurameno Village*, in the *Chiawa Game Management Area* (Woods et al., 2019: 37). Since 2006, *REA* has implemented a number of solar powered mini grids in rural areas throughout Zambia. They include the *Lunga* (300 kW), *Chunga* (200 kW) and *Mpanta* (60 kW) solar mini-grids (Woods et al., 2019: 62). The *Mpanta* mini-grid in *Samfya District*, operational since 2013, supplies power to a school, health centre, market, churches, fish refrigeration depots and 450 households (Woods et al., 2019: 37).

Table 4.3: The Main Players in Generation, Transmission and Distribution in Zambia

Player	Generation	Transmission	Distribution and Supply
ZESCO Limited	✓	✓	✓
Maamba Collieries Limited	✓		
Ndola Energy Company Limited	✓		
Copperbelt Energy Corporation	✓	✓	✓
Lunsemfwa Hydro Power Company Limited	✓		
The Bangweulu Power Company Limited	✓		
Ngonye Power Limited	✓		
Zengamina Power Limited	✓		✓
North Western Energy Corporation Limited			✓
REA	✓		✓

Source: Author's own interpretation of reviewed literature

The information above shows lack of competition in distribution as, once again, ZESCO dominates the sector. ZESCO is the sole purchaser of all on-grid generated power, owns the

majority of the transmission network, and is the sole transmission controller. This means that all distributors have to purchase power from ZESCO. This discourages private investments because distributors are forced to enter into lopsided Bulk Purchase Agreements (BPA) with ZESCO. Private distributors also fear that ZESCO might refuse to renew BPAs. For instance, ZESCO announced that it would not renew its BPA with *CEC* once it expired on 31st March 2020. This will cause problems since CEC owns the transmission network in the Copperbelt and holds supply contracts with the mines. Similarly, *NWEC*'s plans for expansion are curtailed as ZESCO was only willing to sale them a maximum of 20 MW. In addition, there is no guarantee that the Bulk Purchase Agreement would be renewed once it expires in three years' time.

4.8. Electricity Demand and Consumption

While the Country's total installed generation capacity is 2,981.31 MW, actual available capacity is 2,730 MW (ERB, 2020a: 2). This is able to meet current national peak demand estimated at 2,500MW (CEC, 2019: 16). However, Woods et al., (2019: 28) note that the country has low national electricity access rate of 33% only (67% in urban areas and 4% in rural areas). Nevertheless, the government had set an official target of achieving universal access in urban areas and 51% in rural areas by 2030 (Republic of Zambia, 2018: 17). The implication is that Zambia's electricity demand is expected to grow by an average of about 3% annually (CEC, 2019: 16). It is, thus, expected to reach approximately 3,525 MW and 4,000 MW in 2030 and 2040, respectively (CEC, 2019: 16 and Republic of Zambia, 2018: 18).

Table 4.4: Zambia's National Electricity Consumption by Economic Sector, 2018 and 2019

Sector	2018 (GWh)	2018 (%)	2019 (GWh)	2019 (%)
Mines	6,681.88	51.08	6,360.29	50.77
Services (Households)	4,336.92	33.16	4,022.54	32.11
Finance and Property	713.87	5.46	721.53	5.76
Manufacturing	442.15	3.38	463.71	3.70
Agriculture	297.03	2.27	312.56	2.50
Quarries	147.61	1.13	227.25	1.81
Others	235.08	1.80	193.25	1.54
Trade	113.85	0.87	103.36	0.83
Energy and Water	68.54	0.52	82.94	0.66
Transport	32.47	0.25	31.23	0.25
Construction	10.83	0.08	8.35	0.07
Grand Total	**13,080.23**	**100.00**	**12,527.02**	**100.00**

Source: ERB (2020b: 9)

As Table 4.4 above indicates, total national electricity consumption reduced by 4.2% from 13,080.23 GWh in 2018 to 12,527.02 GWh in 2019 (ERB, 2020a: 9). This was on account of low generation levels in 2019. The mining customers consumed the bulk of the power followed by domestic customers. These sectors accounted for approximately 82.88% of total national electricity consumption (ERB, 2020a: 9).

4.9. Chapter Summary

This chapter provided an overview of the electricity industry in Zambia. Precisely, the chapter highlighted the country's profile before describing the historical evolution of power sector reforms. Further, the chapter focused on the structure of electricity demand as well as scrutinises the legal and institutional framework for Zambia's electricity supply industry. The chapter also assessed the main players in generation, transmission and distribution. It was uncovered that solutions to Zambia's economic challenges partially rested on effective and efficient supply of electricity. The chapter uncovered that Zambia's electricity industry evolved from a small thermal station in 1906 to a complex network of generation plants as well as transmission and distribution networks. The next chapter explains the research methodology and design.

CHAPTER FIVE

RESEARCH DESIGN AND METHODOLOGY

5.1. Introduction

The previous chapter provided an overview of Zambia's electricity industry. This chapter explains the research design and methodology. One important component of research is determining the appropriate approach to be utilised. Research approach refers to plans and procedures to conduct research that details the methods of data collection, analysis and interpretation (Creswell, 2014: 1). The research approach intersects the research assumptions, paradigms, philosophical perspective and design. The adopted research approach depends on the nature of the research problem, the personal experiences of the researcher and the targeted audience for the study (Creswell, 2014: 2). For this study, the research approach is one that guides the examination of the strengths and weaknesses of previous models used to privatise Zambian SOEs; analysing how stakeholders viewed the performance of ZESCO as an SOE; establishing the likelihood of ZESCO improving its performance once privatised; and establishment of the best model for the successful privatisation of ZESCO.

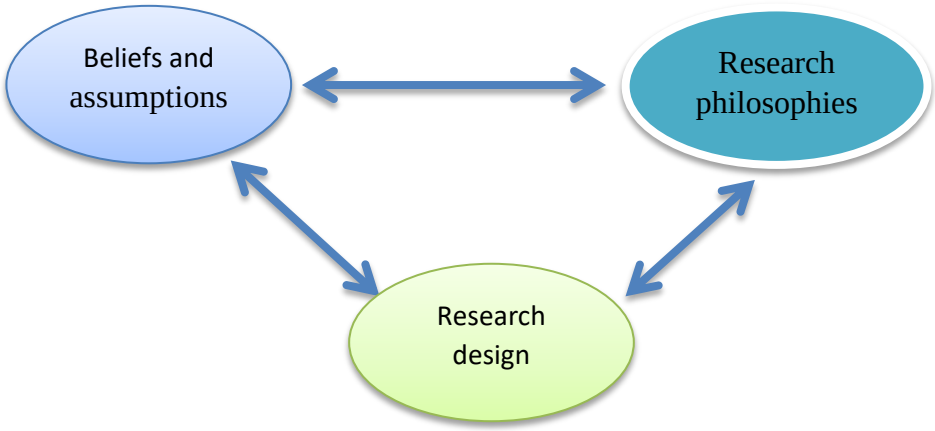
The chapter is comprised of twelve sections. Section one is the introduction. Sections two, three and four show the research assumptions, paradigms and philosophical perspective, respectively. Section five explains the study's approach. Section six is the research design comprising of study type, research strategy, sources of data, target population, sampling frame, sample size and sampling methods, methods of data collection, validity and reliability of research instruments and methods of data analysis. Section seven highlights the limitations to the research and how they were overcome. Section eight gives the delimitations of the research. Section nine gives the significance of the study. Section ten explains the ethical considerations. Section eleven indicates the conceptual framework that guided the research. Section twelve is a summary.

5.2. The Research Assumptions

Saunders et al., (2016: 124), states that before horning on a preferred philosophical perspective, researchers should be aware of the assumptions that they, consciously or unconsciously, make at every stage in the research. These assumptions dictate the ideal philosophical perspective and

research design. These assumptions are also used to interpret objectivism and subjectivism of the research. Objectivism argues that the social reality that is researched on is external to the social actors. On the other hand, subjectivism asserts that social reality is based on the perceptions and consequent actions of social actors (Saunders et al., 2016: 128 and 130). Figure 5.1 below shows the development of a research approach.

Figure 5.1: Development of a Research Approach



Source: Saunders et al., (2016: 126)

Cohen, Manion and Morrison (2000: 40) define a research assumption as *"a framework which comprises perception, beliefs and understanding of several theories and practices that are used to conduct a research."* It can also be characterised as a precise procedure which involves various steps through which a researcher creates a relationship between the research objectives and questions. Research assumptions inevitably shape research questions, methods used to collect and analyse data as well as how findings are interpreted (Guba and Lincoln, 1994: 106-110). Saunders et al., (2016: 124) urge that research often involves the assumptions of ontology, epistemology and axiology.

5.2.1. The Ontology Assumption

Ontology refers to assumptions about the nature of reality. Ontology, therefore, determines how a researcher sees the world and, therefore, his/her choice of what to research for in their research project (Saunders et al., 2016: 127). Ontology argues that the interpretations and experiences of social actors do not influence the existence of the social world, rather, social realities exist

independently of how actors think of them, label them or become aware of them. That is, all social actors experience the same social reality. As such, social researchers should adopt methods used in natural science (Saunders et al., 2016: 128). Nevertheless, ontology also agrees that while there is a single reality, each social actor experiences and interprets this reality based on their perceptions and consequent actions. Therefore, a researcher should uncover different opinions and narratives on a social phenomenon from different social actors.

Similarly to Abioye (2016: 80), this study identifies two areas under this assumption. Firstly, this is a study of the opinions of stakeholders rather than facts. Nevertheless, these opinions are based on what is true and exists in reality. The researcher firmly believes that based on the agency theory and theory of cyclical change, a privately run enterprise is likely to vigorously pursue profit maximisation better than an SOE.

Secondly, the study is subjective in that it is based on the opinions of respondents and the researcher. In addition, the study subjectively measures the performance of ZESCO by only focusing on quality, quantity, financial performance, productivity and competitiveness. These are criteria based on private sector ideologies and as such, might favour privately run enterprises (Fatemi and Behmanesh, 2012). Performance criteria such as, maximising public good and employment creation, which are favoured by SOE, are not vigorously pursued. It is logical to assume that had the study focused on these criteria, SOEs would emerge as best performers. However, having deliberately formed an opinion that privately run enterprises are better performers than SOEs, data was collected to test the efficacy of this opinion. Based on the knowledge unearthed, judgment was made to either prove or disprove the opinion.

5.2.2. The Epistemology Assumption

Saunders et al., (2016: 127) citing Burrell and Morgan (1979) see epistemology as being concerned with assumptions about how knowledge is acquired, what constitutes acceptable, valid and legitimate knowledge, and how the knowledge can be communicated to others. Epistemologically, objectivists seek to discover the truth about the social world, through the medium of observable and measurable facts. For instance, using the Theory of Cyclical Change, it is logical to assume that a poorly performing SOE is likely to be privatised (Schlesinger (1949). By applying the Agency Theory, it is logical to assume that once privately run, the firm

may become profitable due to managers advancing the interests of shareholders (Jensen and Meckling, 1976 and Milgrom and Roberts, 1992).

It is logical to assume that in a privately run enterprise, management would aggressively focus on quality, quantity, financial performance, productivity and competitiveness. This would lead to high profitability allowing shareholders to recoup their initial investment outlay and maximise their return on investment (Abioye, 2016: 80). The multidisciplinary nature of management means that information communicated in form of factual, numerical, textual and visual data can all be considered legitimate knowledge.

5.2.3. The Axiology Assumption

Axiology refers to the role values and ethics play in the research process. It is, in essence, the point at which the researcher's belief and expectation are met (Abioye, 2016: 80 and Saunders et al., 2016: 128). This combines questions about how researchers deal with both their own values and those of their research participants. It calls for researchers to detach themselves from the research process to prevent their values and beliefs biasing the research (Saunders et al., 2016: 129). Heron (1996) adds that some researchers write their own statement of personal values in relation to the topic they are studying. This helps heighten their awareness of value judgments they are making in drawing conclusions from their data. By giving a clear position on their values, researchers are able to seamlessly decide what is appropriate ethically (Saunders et al., 2016: 128).

For instance, a researcher who accepts the postulations of the Agency Theory and Theory of Cyclical Change will believe that ZESCO's performance as an SOE is poor and can only be improved through privatisation. However, the opinions of the research participants might contradict this belief by showing that ZESCO is actually performing well as an SOE and does not need to be privatised. In essence, the researcher needs to untangle this discrepancy between his/her belief and reality without compromising the integrity of research results. In this study, the researcher ensures that his beliefs and expectations about the performance of ZESCO in its current state as an SOE does not prejudice how data is collected, analysed and interpreted. This is done by presenting, analysing and interpreting findings as they were.

5.3. Research Paradigms

A research paradigm is another dimension that helps researchers to choose the right philosophical perspective. A research paradigm is *"the political or ideological orientation of researchers towards the social world they investigate"* (Saunders et al., 2016: 132). The main research paradigms are regulation and radical change. Under regulation, researchers are concerned with the need for the regulation of societies and human behaviour (Burrell and Morgan, 1979). They seek to suggest ways of improving social or organisational affairs within the existing framework rather than radically challenging it. For instance, one would seek to find ways of improving ZESCOs performance through commercialisation rather than privatisation.

The radical change paradigm questions the way things are done in society and offers methods that can be used to help fundamentally change the setup (Saunders et al., 2016: 132). While regulation focuses on maintaining the status quo, radical change attempts to overturn the existing state of affairs. Such research is often concerned with alternatives to the accepted prevailing position (Burrell and Morgan, 1979). For instance, one would seek to improve the performance of ZESCO by radically changing it from a government to private owned and controlled entity.

5.4. The Research Philosophical Perspective

Saunders et al., (2016: 124) defines research philosophy as *"a system of beliefs and assumptions about the development of knowledge."* When embarking on a research, the researcher is developing knowledge in a particular field. The knowledge developed could be in the development of new theory in social science or answering a specific problem in a particular organisation or society. It could also apply to, as this study seeks, the development of a model to guide the privatisation of ZESCO. When a researcher clearly explains his/her philosophical worldview, reasons why they chose a particular study design become clear (Creswell, 2014: 6). The main philosophical perspectives are positivism and interpretivism.

5.4.1. The Positivist Philosophical Perspective

Positivism originated in the works of early twentieth-century philosophers and scientists like Auguste Comte and Francis Bacon. It is a philosophical stance which entails working with an observable social reality to produce law-like generalisations (Saunders et al., 2016: 135). This is because positivism views reality as being objective and capable of being measured and

uncovered (Galukande, 2019: 69). It further holds the view that only observable and measurable phenomena would lead to the production of credible knowledge (Crotty, 1998). As such, the philosophy emphasises the application of methods used in natural science. Researchers are expected to yield pure (value free) research data and facts by remaining neutral and detached from their research in order to avoid influencing or biasing results (Gill and Johnson, 2010 and Crotty, 1998). For instance, by using questionnaires instead of in-depth interviews, a positivist can predetermine the list of possible responses. He or she can, therefore, claim that their values did not influence the answers given by the respondents (Saunders et al., 2016: 137-138). The positivist philosophy is usually quantitative as it calls for the collection of measurable (numeric and alpha-numeric) data and relying on statistical tools for data analysis and interpretation (Galukande, 2019: 69). In addition, positivist researchers use existing theory to develop hypotheses which are then tested and confirmed or refuted (Saunders et al., 2016: 135).

5.4.2. The Interpretivist Philosophical Perspective

Interpretivism emerged in the early 1960s as an intervention to the challenges and constraints of positivism in social science research (Galukande, 2019: 69). Unlike positivism, interpretivism is subjectivist by arguing that human beings and their social worlds cannot be studied in the same way as physical phenomena (Bryman, 2012). In other words, social science researchers should avoid overreliance on research methods employed in natural sciences (Crotty, 1998). Different people from different cultural backgrounds, circumstances and times, experience different social realities. Therefore, there are no universal laws that apply to everybody. Focusing on producing law-like generalisations leads to loss of rich insights into humanity (Saunders et al., 2016: 140).

Interpretivism, thus, focuses on creating new and richer understandings and interpretations of social worlds by looking at society from the perspectives of different groups of people (Crotty, 1998). For instance, different stakeholders see and experience ZESCO's performance differently. Therefore, researchers should get views of all ZESCO stakeholders based on the stakeholders' recollections and interpretations of their lived experiences. Axiologically, interpretivists recognise that researchers' own values and beliefs play an important role in the research process (Saunders et al., 2016: 140). It is, therefore, crucial that researchers adopt an empathetic stance by understanding the social world of participants from the participants' point of view.

Interpretivists favour qualitative research methods as they enable them to study social phenomena as they unfold in particular contexts and times (Galukande, 2019: 69).

5.5. Research Approach Adopted in this Study

The study evaluates the performance of ZESCO and then develops an appropriate model to guide its privatisation. To gain a deeper understanding of the research and appreciate the various empirical studies of privatisation already conducted, the study corroborates with evidence from the privatisation experiences of Zambia and other countries that have implemented privatisation in the electricity sector. Empirical evidence is also collected regarding various success and failure points from the implementation of privatisation in other sectors of the Zambian economy. This is done to assess the claim that privatising ZESCO, using an appropriate model, would lead to future success.

The study leans heavily on the Ontology assumption. This is because it is a study of the opinions the researcher and stakeholders have on the performance of ZESCO. However, these opinions are expected to reflect the reality of how ZESCO would run after privatisation. The study also leans on the radical change paradigm as it seeks to improve the performance of ZESCO by radically changing it from an SOE to a privately-owned and controlled firm. The study adopts both the positivist and interpretive philosophical perspective. This is because while the study agrees with positivism's emphasis on the application of natural science methods, it also agrees with interpretivism's assertion that social phenomena should not be studied exactly as physical phenomena (Bryman, 2012). Therefore, while the study tries as much as possible to apply natural science research methods, it also recognises that different stakeholders perceived ZESCO's performance differently. As such, the study uses scientific methods that also allow the collection of diverse views of various ZESCO stakeholders based on their recollections and interpretations of their lived experiences (Crotty, 1998). Based on the above, the study adopts a mixed-methods research design to enable the qualitative design supplement and sequence the quantitative design.

5.6. Research Design

According to Yin (2014), research design is a blueprint that guides the investigator in the process of collecting, analysing, and interpreting data. It determines the questions to be studied, data to

be collected, the means of analysing the data and ethical considerations (Saunders et al., 2016: 163). Therefore, the research design guides collecting, analysing, and interpreting data on the performance of ZESCO and the best model for its successful privatisation. Below are the main components of the research design.

5.6.1. Type of Study

The study is descriptive in nature so as to gain an accurate picture of a particular event, situation or phenomenon and the relationships that exist between or among them (Saunders et al., 2016: 175). It attempts to describe, explain and interpret a specified phenomenon (Salaria, 2012). The descriptive method is chosen as it provides input regarding the impact of the proposed model in privatising ZESCO and how this model can be developed.

The study is also a mixed-method (a quantitative and qualitative) design. In mixed-methods research, a researcher(s) combines elements of quantitative and qualitative data collection techniques and analytical procedures in order to broaden and deepen understanding and corroboration (Johnson, Onwuegbuzie and Turner, 2007: 123 and Saunders et al., 2016: 169). The general agreement is that quantitative research has high validity, reliability and ability to generalise findings. Nevertheless, it lacks credibility/trustworthiness and fails to prompt detailed responses (Creswell, 2014: 12). On the other hand, qualitative research is trustworthy, reliable and robust. However, information uncovered is not generalisable (Saunders et al., 2016: 168). To overcome this, researchers are encouraged, if possible, to use a mix of the two. Mixed-method design enhances the integrity, contextual understanding, trustworthiness, internal and external validity, reliability and generalisation of findings (Bryman, 2006). Ultimately, mixed-method design complements the strengths and overcomes the weaknesses of a single design.

Based on the three selected theories, a mixed-method design is ideal. Qualitative and quantitative data provides a detailed understanding and statistical information needed to ascertain the Agency Theory's assertion that ZESCO would perform poorly due to weak monitoring of managers by the state (Boycko et al., 1996: 317 and Estrin et al., 2009: 7). In addition, qualitative and quantitative data help to assess the Theory of Cyclical Change's view that the solution is changing the company's ownership and control to private (Bresser-Pereira, 1993). Qualitative data helps analyse the Contingency Theory's view that the internal and external environments

surrounding a firm as well as previous models used to privatise SOEs in Zambia are key to the choice of the privatisation model for ZESCO (Carter, 2013: 111) and Estrin and Pelletier, 2018: 96-97). Qualitative and quantitative data are then used to develop an appropriate model of privatising ZESCO in order to improve its performance.

Specifically, the research was qualitative dominant mixed method research. That is, qualitative data is collected and analysed then quantitative data is then collected and analysed so as to confirm, cross-validate, or corroborate findings (Johnson et al., 2007: 126). The qualitative approach consists of data gathered through interviews with key informants. The quantitative approach involves statistical representation and interpretation of information gathered from respondents, financial reports and other relevant documents.

5.6.2. Research Strategy

In line with the requirements of a descriptive research, the research uses case study and survey strategies. A case study is *"an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used"* (Yin, 2014:16). A case study considers one or two social units, such as ZESCO, in great detail (Madimutsa, 2016: 97). Yin (2014: 10) adds that ideally, a case study strategy should be used when answering how or why questions, when the researcher has little or no control over events under study and when the research focuses on contemporary phenomenon within some real-life context. A case study qualified for this research as it seeks to establish how and why ZESCO would perform in a certain manner once privatised. Also, the performance of ZESCO is a real life contemporary event. Additionally, case studies also offer high conceptual validity as they allow for the identification and measurement of indicators, like performance of a privatised company, that are difficult to measure. Further, case studies are ideal for mixed method research as they allow for both quantitative and qualitative analyses of the data (Saunders et al., 2016: 186).

The study also employs the survey strategy. A survey strategy *"provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population*" (Creswell, 2014: 171). The purpose of the survey is to generalise from a sample to a population so that inferences are made about some characteristic, attitude or behaviour of this

population (Saunders et al., 2016: 181). Data is collected at one point in time using questionnaires (Fowler, 2014: 4). The survey strategy is employed because it allows for the collection of quantitative data which is analysed descriptively (Saunders et al., 2016: 182). It also allows for the collection of standardised data in a cost effective manner. The findings are also easy to explain and understand (Fowler, 2014: 8). In addition, the data collected is used to suggest possible reasons for relationships between privatisation and improvement in ZESCO's performance as well as to produce a model for its successful privatisation (Saunders et al., 2016: 182).

5.6.3. Sources of Data

The study uses both primary and secondary data. Secondary data is information, usually published, that is not directly collected from respondents by the researcher (Creswell, 2014: 214). Secondary data is sourced from published literature on SOEs and privatisation. It consists of annual reports and various publications from ZESCO, ERB and the Zambia Development Agency (ZDA). Journal articles, book chapters, textbooks, working papers, research reports, conference papers, seminar papers, dissertations and theses is also used. This literature is obtained from the internet, libraries, individuals and government institutions. Secondary data helps make primary data collection more specific by enabling identification of gaps and deficiencies and what additional information is needed (Dunn, Arslanian-Engoren, DeKoekkoek, Jadack and Scott, 2015: 1297).

Primary data is unpublished information that is collected and analysed, for the first time, by the researcher (Avasarikar and Chordiya, 2007). For this study, the sources of primary data is management officials from ZESCO, ERB, ZDA and other relevant institutions. Others are business associations as well as owners/managers of businesses and organisations which represent domestic electricity consumers in Lusaka. These categories of the population are chosen as they have the necessary information with regard to the topic. Further, primary data enables collection of information specific to the research as it is customised according to the requirements of the researcher. That is, it is tailored to elicit information on the performance of ZESCO, its expected performance once privatised, and the best model for privatising it. The information collected is also accurate, up-to-date, unbiased, reliable, valid and authentic because it is collected directly from the population (Avasarikar and Chordiya, 2007).

5.6.4. Target Population

The study is conducted in Lusaka District and targets management officials at ZESCO, ERB, ZDA and other relevant government institutions. Other targets are owners/managers of businesses and representatives of electricity consumers.

5.6.5. Sampling Frame

The sampling frame of this study is the Patents and Companies Registration Authority's (PACRA) database. Specifically, it consists of PACRA's list of registered businesses and organisations which represented domestic consumers in Lusaka District.

5.6.6. Sample Size and Sampling Methods

Since it is not possible to collect data from the entire population, only a sample is used. A sample is a small, but representative, part of the whole population (Ilker et al., 2016: 1). Therefore, sampling is the process of selecting a representative part of a population for the purpose of determining the characteristics of the whole population (Ilker et al., 2016: 1). A sample is used because a small number is easy to contact with minimum time, efforts and cost. The sample size of the study is 816 (consisting of 16 key informants, 300 officials from organisations which represent electricity consumers and 500 business owners/managers). Key informants provide qualitative data while officials from organisations which represent electricity consumers and business owners/managers, provide quantitative data.

Purposive sampling is the main sampling technique used for qualitative data. Purposive Sampling, also called Judgment Sampling, is the deliberate choice of an informant, by the researcher, based on the qualities the informant possesses (Ilker et al., 2016: 2). Simply put, the researcher seeks to find individuals or groups of individuals who are willing to provide the information by virtue of being proficient, knowledgeable or experienced with privatisation as well as ZESCO's performance (Ilker et al., 2016). Purposive sampling is employed because the informants are able to provide insight on the current performance of ZESCO as an SOE, its likely performance once privatised, and the best model to use when privatising it. Informants are also proficient, knowledgeable and experienced enough to provide insight on assertions by the Agency Theory, the Theory of Cyclical Change and the Contingency Theory with regard to

privatisation and performance of ZESCO. The breakdown of the qualitative sample is shown in table 5.1 below.

Table 5.1: Sample Distribution and Sampling Methods for Qualitative Data

Organisation	Number	Type of Informant	Sampling Method
ZESCO	6	Officials from Appropriate Departments	Purposive Sampling
Energy Regulation Board	3	Officials from Appropriate Departments	Purposive Sampling
Competition and Consumer Protection Commission	2	Management Official	Purposive Sampling
Other Relevant Government Institutions	3	Official - Industrial Development Corporation	Purposive Sampling
		Official – Rural Electrification Authority	
		Official - Ministry of Energy	
Business Associations	2	Management Officials	Purposive Sampling
Total	**16**		

Source: Developed by the researcher

Simple random sampling is used to select the sample for quantitative data. Simple random sampling is a sampling method in which every element of the population has an equal and non-zero chance of being selected as a part of the sample (Alvi, 2016: 16). To sample representatives of domestic consumers, a list of registered organisations which represent domestic consumers in Lusaka, is downloaded from the Patents and Companies Registration Authority (PACRA) website. Using Microsoft Excel, 300 organisations are randomly selected. Then one official, in a management position, from each organisation, is randomly selected and a questionnaire is administered to them.

Simple random sampling is also used to select the sample for business owner/managers. To select this sample, a list of registered private businesses based in Lusaka is downloaded from PACRA's website. Using Microsoft Excel, 500 businesses are randomly selected. From each business, the owner or manager is selected and a questionnaire is administered to them. Simple random sampling is used because findings are generalisable (Alvi, 2016: 17). It is also easy to implement, allows descriptive analysis and is cost-effective (Fowler, 2014: 18). As stakeholders, randomly selected representatives of consumers and business owner/managers are directly

affected by ZESCO's performance. They are, therefore, best placed to provide quantitative data on the aforementioned assertions of the Agency Theory and the Theory of Cyclical Change. The breakdown of the sample is shown in Table 5.2 below.

Table 5.2: Sample Distribution and Sampling Methods for Quantitative Data

Organisation	Number	Type of Respondent	Sampling Method
Organisations Which Represent Domestic Consumers	300	Officials from Organisations that Represent Domestic Consumers	Simple Random Sampling
Private Businesses	500	Business Owner/Managers	Simple Random Sampling
Total	**800**		

Source: Developed by the researcher

5.6.7. Methods of Data Collection

The study collects several forms of data. To capture all this diverse data, the study employes published literature, interview guides and questionnaires as the main methods of collecting data.

5.6.7.1. Published Literature

Secondary data is collected from published literature by reading various publications on SOEs and privatisation. The contents of this literature is then analysed before writing down relevant information (Mogalakwe, 2006:222). The literature provides information on the effect of electricity privatisation on the performance of firms in Zambia, Africa and overseas. It also provides data on the successes and failures of the models used to privatise SOEs in Zambia and an overview of the electricity industry in Zambia. Annual reports and other financial publications provides data for quantitative analysis of ZESCO's performance and the impact of privatisation models on the performance of privatised enterprises. The use of published literature enables access to large and high-quality databases on privatisation and ZESCO (Mogalakwe, 2006:222). In addition, published literature has high degrees of validity and reliability, is inexpensive, detailed and a good source of background information (Saunders et al., 2016: 184).

5.6.7.2. Semi-Structured Interviews

Semi-structured interviews are used to collect qualitative primary data. In semi-structured

interviews, a number of questions are planned beforehand to guide the interview process and at each stage, follow up questions, not on the guide, are asked to prompt interesting and unexpected avenues that emerge (Alshenqeeti, 2014: 40). To collect primary data, semi-structured interviews are held with key informants (Saunders et al., 2016: 388) such as officials from ZESCO, ERB and other relevant government institutions. The interviews are conducted using semi-structured interview guides developed for each category of sampled key informants. The semi-structured interview guides contain a list of neutral, open-ended interview questions covering the objectives of the research (Alshenqeeti, 2014: 40). Section one consists of questions on the views of the stakeholders on the current performance of ZESCO as an SOE. Guided by the Agency Theory, the questions helps to highlight whether ZESCO's performance is poor due to being owned and controlled by an entity, the Zambian Government, weak at monitoring managers (Boycko et al.1996: 317 and Estrin et al., 2009: 7).

Questions in section two examine whether stakeholders are of the view that privatising ZESCO would improve its performance. The Agency Theory and Theory of Cyclical Change guide the questions. Through the Agency Theory, questions shed light on whether private owners would be more effective at monitoring ZESCO's management, thus, ensuring superior performance (Estrin et al., 2009: 7). Inspired by the Theory of Cyclical Change, questions help establish whether the company's poor performance would be improved if ownership and control became private (Bresser-Pereira, 1993 and Owen, 2016:1).

Questions in Section three are aimed at determining the best model to employ in privatising ZESCO. Inspired by the Contingency Theory, the questions help to establish the strengths and weaknesses of previous models used to privatise SOEs in Zambia and to look at the factors affecting ZESCO's current performance (Carter, 2013: 111, Estrin and Pelletier, 2018: 96-97).

Semi-structured interviews are used because, unlike structured interviews, semi-structured interviews hand the researcher an opportunity to ask participants additional questions to gain detail in their responses (Berg, 2007: 39). Semi-structured interviews also enable the researcher to allow the conversation to flow naturally (Alshenqeeti, 2014). Unlike unstructured interviews, semi-structured interviews permit the interviewer to keep the interview within the parameters of the study (Berg, 2007: 39). It takes one hour to answer questions in the interview guides.

5.6.7.3. Structured Questionnaires

Questionnaires are used to collect quantitative primary data. Saunders et al. (2016: 427) define a questionnaire as a method of *"data collection in which each person is asked to respond to the same set of questions in a predetermined order."* Specifically, the study uses structured questionnaires to collect quantitative data from representatives of electricity consumers and business owners/managers. According to Creswell (2014), a structured questionnaire only has closed ended questions. The use of closed-ended questions ensures standardised responses. The questionnaires are administered in person by the researcher. The questionnaires are used because they are an efficient way of collecting responses from a large sample for quantitative analysis in a survey. Questionnaires also allow the collection of standardised data from a sizeable population thus, allowing easy comparison (Saunders et al., 2016: 181). There are two questionnaires as follows:

5.6.7.3.1. Survey Questionnaire for Businesses

The questionnaire is developed by the researcher. The questionnaire is intended to survey the views of businesses on ZESCO's performance as an SOE. It also establishes whether they think privatising ZESCO would improve its performance. The questionnaire has four sections with a total of 48 questions as follows: Part One: General information, with 11 questions; Part Two: Stakeholders' view of ZESCO's current performance, with 22 questions; Part Three: Whether stakeholders think privatising ZESCO improved its performance, with 12 questions; and Part Four: Appropriate model for successful privatisation of ZESCO Limited, with three questions. The questionnaire is answered within 60 minutes.

5.6.7.3.2. Survey Questionnaire for Organisations that Represent Electricity Consumers

The questionnaire is developed by the researcher. It is intended to get the views of organisations that represent domestic consumers on ZESCO's current performance. It also establishes whether they think privatising ZESCO would improve its performance. The questionnaire has four sections with a total of 40 questions as follows: Part One: General information, with three questions; Part Two: Stakeholders' view of ZESCO's current performance, with 22 questions; Part Three: Whether stakeholders think privatising ZESCO would improve its performance, with

12 questions; and Part 4: Appropriate model for successful privatisation of ZESCO, with three questions. The questionnaire is answered within 60 minutes.

5.6.8. Validity and Reliability of Quantitative Instruments of Data Collection

It is essential that instruments of data collection, which unearth numerical measurements aimed at quantifying data, are valid and reliable in order to improve accuracy and objectivity of research finding (Alshenqeeti, 2014: 44). Validity and reliability also help minimise errors especially in research dealing with measurements of personal opinions about a phenomenon. Below is an explanation of how validity and reliability of quantitative research instruments is ensured.

5.6.8.1. Validity of Quantitative Instruments

Validity is *"the degree to which a study reflects the specific concepts it aims to investigate"* (Alshenqeeti, 2014: 44). That is, to be considered valid, the study should cover elements that accurately correspond to the matter under examination. Validity of data from the quantitative approach is ensured through random sampling, using a large sample (300 for representatives of consumers and 500 for businesses) and data triangulation (Bhattacherjee, 2012: 38, Johnston, 2014: 624 and Creswell, 2014: 243). The study also ensures validity of questionnaires. Validity of a questionnaire refers to the ability of the questionnaire to measure what the researcher intends it to measure as well as the questions adequately covering the investigation and leading to accurate predictions (Saunders et al., 2016: 450-451). Validity of questionnaires is ensured by comparing findings from the questionnaires with reviewed literature. The thesis supervisor is also relied on to assess the quality, essentialness and necessity of each question in the questionnaire (Saunders et al., 2016: 450-451). All this ensures that the instruments have construct, convergent and discriminant validity.

Construct validity is the extent to which a set of questions (scale items) actually measures the presence of the construct or concept they are intended to measure (Saunders et al., 2016: 450). The researcher attempts to establish whether meaningful and useful inferences can be drawn from scores on the instruments. Construct validity usually applies to constructs such as opinion of stakeholders on a firms' performance (Humbley and Zumbo, 1996). According to Hair, Black,

Babin, Anderson and Tatham (2006: 1-9), Construct Validity can be determined by examining the Validity Estimates. To show Construct Validity, Validity Estimates ought to be above 0.7. This study set >0.7 as the minimum cut-off criteria for Validity Estimates.

Convergent validity refers to the closeness with which a measure relates to (converges with) the construct or concepts that it is purported to measure (Bhattacherjee, 2012: 59). Alternatively, convergent validity can be viewed as the degree of correlation between the results of different scales used to measure the same construct or concept (Creswell, 2014:177 and Saunders et al., 2016: 451). For instance, if a researcher expects that a firm's performance is related to its ownership and control, how can he/she ensure that his/her measure of firm performance is indeed related to the firm's performance? Bhattacherjee (2012: 59) notes that convergent validity can be established by comparing the observed values of one indicator of one construct with that of other indicators of the same construct and demonstrating similarity (or high correlation) between the values of these indicators. Average Variance Extracted (AVE) values above 0.5 can be used as evidence of convergent validity (Hair et al., 2006: 1-9). This study set >0.5 as the minimum cut-off criteria for AVE.

Bhattacherjee (2012: 59) defines discriminant validity as *"the degree to which a measure does not measure other constructs that it is not supposed to measure".* For instance, if a researcher's expectation is that a firm's performance is related to its ownership and control, how can he/she ensure that his/her measure of firm performance is not measuring organisational knowledge? In situations where different scales are used to measure theoretically distinct concepts, discriminant validity is established by demonstrating that indicators of one concept have low or no correlation with other concepts (Saunders et al., 2016: 451). The Fornell-Larcker Criterion is a commonly used approach in assessing discriminant validity (Fornell and Larcker, 1981). To establish discriminant validity, the square root of the AVE of each latent variable should be larger than the Latent Variable Correlations (Fornell and Larcker, 1981). This study only analyses questions whose square roots of AVE are larger than their Latent Variable Correlations.

5.6.8.2. Reliability of Quantitative Instruments

Reliability is *"the extent to which a research instrument yields the same results on repeated trials"* (Alshenqeeti, 2014: 44). A reliable instrument is one which if used two or more times,

under the same conditions, should produce the same results (Eeva-Mari and Lili-Anne, 2011: 51). It is also achieved when other researchers also find the same results when they use the research instrument. To ensure reliability of quantitative data, the questionnaires are pre-tested by conducting a pilot survey before the main survey (Bhattacherjee, 2012: 23). Furthermore, individual questions are carefully designed. The purpose of the questionnaires is clearly explained to the respondents. Additionally, administration of questionnaires is carefully planned and executed (Saunders et al., 2016: 442).

5.6.9. Trustworthiness of Qualitative Instruments

Anney (2014) argues that researchers who use qualitative instruments of data collection make the error of using reliability and validity to ensure the trustworthiness of the findings. However, this is a grave error as these apply to quantitative instruments of data collection. By their nature, qualitative data, especially from interviews, are weak in terms of reliability, objectivity and validity. Therefore, the study ensures trustworthiness of qualitative instruments through credibility, transferability, dependability and confirmability (Anney, 2014).

5.6.9.1. Credibility

Anney (2014) defines credibility as the confidence that can be placed in the truth of the research findings. In other words, credibility establishes the extent to which the results of the research are based on the actual information collected from participants and correctly represents the participants' original opinion. Tashakkori and Teddlie (2003: 694) add that *"the key question to ask is ―did we indeed capture the phenomenon or attribute that we intended to?"* Credibility is assured by guaranteeing questions to and answers from the participants establish how ZESCO is performing as an SOE; whether privatisation would improve its performance; and if so, the best model for privatising it. This is done through peer debriefing**,** member checks and triangulation (Onwuegbuzie and Leech, 2007: 239). Under peer debriefing, the researcher seeks scholarly guidance from the theisis supervisor when developing the interview guides and writing the report. With regard to member checks, follow up interviews are held with key informants to elicit comments on the accuracy of findings (Creswell, 2014: 221). Under triangulation, the study reduces bias by using multiple investigators and theories to obtain corroborating evidence (Onwuegbuzie and Leech, 2007: 239).

5.6.9.2. Transferability

Transferability is the extent to which the findings of qualitative research can be transferred or generalised to other contexts with other respondents (Anney, 2014). For instance, the research ensures that the findings concerning privatisation and performance of ZESCO are transferable to other firms. This is achieved through thick description and purposive sampling (Bitsch, 2005: 85). Thick description involves the researcher providing detailed explanation of the entire research process, from background to analysis of research results (Anney, 2014: 278). Purposive sampling is employed in selecting all key informants.

5.6.9.3. Dependability

Dependability is the extent to which research findings remain the same over time (Bitsch, 2005). To be dependable, research instruments need to lead to results about ZESCO's performance, which would be the same if other researchers conducted similar research in future. Dependability is established using triangulation, peer examination, member checks and audit trails (Bitsch, 2005). Triangulation, peer examination and member checks are done in the same was as credibility. Under audit trials, raw data, interview notes, documents and records collected from the field are kept to show how the data was collected, recorded and analysed (Anney, 2014).

5.6.9.4. Confirmability

Confirmability is related to reliability in quantitative research. It is concerned with ensuring that the researcher reports actual findings of the research rather than their own imagination, preconceived notions or misinterpretation of what the informants are saying. Eeva-Mari and Lili-Anne (2011: 51) adds that in qualitative research, confirmability is achieved when the same researcher finds the same results when they use the instrument repeatedly. It is also achieved when other researchers using the same research instruments find the same results. For this study, confirmability is achieved through an audit trial, triangulation and reflexive journal. Audit trial and triangulation is done the same way as is done under dependability and credibility, respectively. The researcher maintains a reflexive journal of all events that happen during data collection, analysis, interpretation and presentation (Alshenqeeti, 2014: 44).

5.6.10. Methods of Data Analysis

Data analysis refers to the process of logically structuring, interpreting and assigning meaning to collected data (Braun and Clarke, 2006 and Creswell, 2014). Since the study employes a mixed-methods research design, data is analysed both quantitatively and qualitatively. A computer programme called Statistical Package for Social Sciences (SPSS) is used to analyse quantitative data from respondents, financial records and other statistics. Firstly, the data is checked for uniformity, consistency and accuracy, and then subjected to coding and entered into the SPSS computer software. Descriptive statistics in form of frequency distributions and regression analysis is then produced and used to formulate the interpretations. Chi-square analysis is also performed to test the hypotheses. Statistical Package for Social Sciences is used because it has expansive data analysis options thus making it a powerful tool for deciphering and analysing survey data (Field, 2013).

The study uses thematic analysis to analyse qualitative data from interviews. Braun and Clarke (2006: 79) define thematic analysis as qualitative *"method for identifying, analysing and reporting patterns (themes) within data".* Therefore, using thematic analysis, the researcher identifies common threads in the interviews or set of interviews in relation to the research questions (Braun and Clarke, 2006: 83). Once collected, the data is recoded, transcribed, coded, edited and sorted into themes (Vaismoradi, Turunen and Bondas, 2013: 402). The data is then reported narratively. Thematic Analysis is used as it is flexible, easy to use and the research results are easily understood by the public. It is also useful in summarising key features of a large body of data and can generate unanticipated insights (Braun and Clarke, 2006).

Qualitative data from published literature is analysed using document analysis. Bowen (2009:33) defines document analysis as a qualitative research analysis process of *"evaluating documents in such a way that empirical knowledge is produced and understanding is developed"*. In line with O'Leary (2014), document analysis proceeds as follows: firstly, the data to be searched for is determined. Secondly, a list of high quality documents to source data from is created. Thirdly, contents of the documents are grouped into related categories so as to understand the patterns in the data. Fourthly, weaknesses in the contents of these documents are taken note of and addressed. Fifthly, various strategies for ensuring validity and reliability are applied. Sixthly, contents of the documents are explored and written down. Document analysis is used because it

is an efficient, effective, critical and comprehensive way of analysing qualitative data from documents (Bowen, 2009: 31).

5.7. Limitations of the Research

A number of limitations were faced in the study. For instance, a major component of primary data is qualitative. This leads to problems of some data being subjective and difficult to generalise (Ilker et al., 2016: 4). The study overcame these limitations through peer debriefing, triangulation, member checks, thick description and audit trials, among others. Quantitative data also helped minimise the weaknesses of qualitative data. However, the use of the case study strategy made generalisation of results problematic. This was overcome by employing random sampling and using a large sample of 800 respondents (Creswell, 2014: 243). Being a key parastatal, ZESCO is politically sensitive. This might lead to some participants having political and administrative pressure leading to biased responses. To curtail this limitation, the researcher triangulates data from different respondents and sources.

5.8. Delimitation of the Research

The study is confined to establishing the best model for privatising ZESCO in order to improve its performance. The study does not compare the performance of privatised enterprises with those of SOEs. It only looks at the effect of ownership and control on the performance of ZESCO. Other factors determining performance of the company are not looked at. The energy sector, electricity in particular, is chosen because it is the driving force of any economy without which modern industries and everyday life would not be possible.

5.9. Significance of the Study

This study is significant as it contributes to the understanding of Zambia's experience with regard to privatisation, and the limitations in existing literature to find a specific way forward. Reflecting possible theoretical models, and merging their strengths into one model contributes in establishing the best way of privatising ZESCO in order to improve its performance. Information from this research is also informative on how stakeholders view ZESCO's current performance as an SOE. Additionally, the study contributes to the understanding of the models that were used

in the past to privatise SOEs. It also examines how these models impacted both the privatisation process and the performance of the enterprises once privatised. This enables the development of an appropriate model that can be used to successfully privatise ZESCO. The development of this model ensures that once privatised, ZESCO successfully supplies electricity accessible to all Zambians.

5.10. Ethical Considerations

The study is conducted in line with the rules of the North West University (NWU) Institutional Research Ethics Regulatory Committee. The study also follows all applicable policies, ethical principles and responsibilities of the 2016 NWU Policy and Rules for Research Ethics. Before conducting the study, authorisation letters for permission to conduct interviews is sought from all sampled organisations. The research proposal, signed ethics statement and other relevant documents aree submitted to the Basic and Social Sciences Research Ethics Committee (BaSSREC) of the NWU. The proposal is then registered and cleared of ethics by BaSSREC.

The researcher seeks written informed consent from all participants at least, 24 hours before carrying out any interviews. Participants are given adequate information with regard to the objectives of the study and are permitted to ask any pertinent questions. The nature of the research is explained to the participants to enable them make informed decisions about whether to participate in the study or not. The participants are informed that their participation in the research was voluntary and that they had the option not to participate or withdraw from participating at any given time without offering any explanation. Confidentiality was maintained by not sharing collected data with any other party. Anonymity of all research participants is preserved by not asking them for their names.

The research is conducted in a favourable environment, allowing free communication and transparency while avoiding any fears and possible risks from interaction with participants. The study is structured to have minimal risk, discomfort or inconvenience. Integrity in data collection, analysis and presentation is guaranteed by safeguarding honesty, accountability, professional courtesy and fairness. All study data is encrypted in digital form and stored on a cloud platform, Dropbox. The platform is protected and only accessible, with a secure login account and password, by the researcher and supervisor. The data sets will be protected for a

period of 5 years as stipulated by NWU's regulations.

5.11. Conceptual Framework

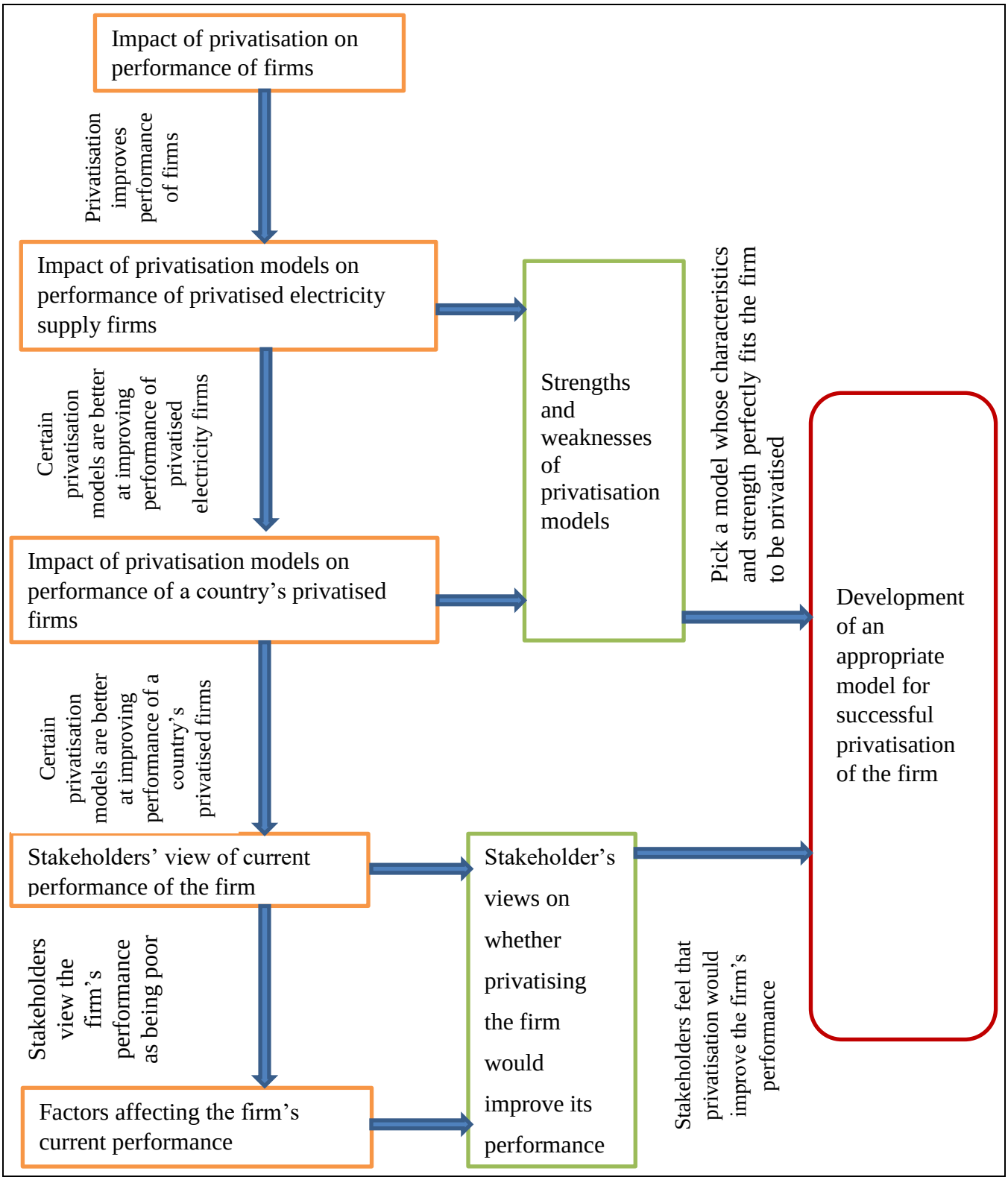
Becker (1998: 108-145) defines a concept as *"a set of abstract ideas that are based on phenomena, but which in reality constitute our data that is used for empirical generalisation"*. A research study develops objectives and these objectives have underlying concepts. A researcher can only achieve the research objectives by understanding the said concepts and how they interlink with concepts in other objectives. This requires the development of a framework, which shows the relationship between the identified concepts. In line with this, Jabareen (2009: 51) defines a conceptual framework as *"a network, or 'a plane,' of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena."* To ensure a good conceptual framework is developed, the concepts that constitute it should support one another and clearly articulate their respective phenomena. The developed conceptual framework should reflect the research approach adopted in the study. Conceptual frameworks enable adequate measurement of the constructs; help position ideas as they unfold in the study; and help the researcher to better communicate the research (Nye and Berardo, 1966 as cited in Bartolic et al., 2016: 57-66).

The conceptual framework for this study is as follows: firstly, literature is reviewed to determine whether privatisation improves the performance of firms. Once it is determined that privatisation does indeed improve firm performance, literature is reviewed to determine the impact of specific privatisation models on the performance of privatised electricity firms. When it is discovered that certain privatisation models are better at improving performance of privatised electricity firms, literature is reviewed to determine the impact of privatisation models on the performance of a country's privatised firms. Once it is established that privatisation models have an impact on the performance of a country's privatised firms, an analysis is made on the strengths and weaknesses of each privatisation model. This process helps to develop an ideal model for privatising a firm by picking a model whose characteristics and strength perfectly fit the firm to be privatised.

Concurrently with the above procedure, the study also examines the views of stakeholders regarding the performance of the firm. Once it is found that stakeholders felt that the firm's performance is poor, an examination of factors making the firm perform poorly is done. The

study then examines whether stakeholders think privatising the firm would improve its performance. If this is the case, an appropriate model, which would ensure successful privatisation of the firm, is then developed. The model should take into account the characteristics of the firm and the factors affecting its current performance. Figure 5.2 below illustrates the conceptual framework adopted for the study.

Figure 5.2: Conceptual Framework Adopted for the Study



Source: Developed by the researcher

5.12. Chapter Summary

The chapter explained the study's research design and methodology. The chapter highlighted the research assumptions, paradigms and philosophical perspective. It then explained the study's approach and research design. Additionally, the chapter highlighted the limitations to the research and how they were overcome. It also focused on the delimitations, significance, ethical considerations and the conceptual framework that guided the research. The next chapter examines stakeholders' view of ZESCO's current performance.

CHAPTER SIX

STAKEHOLDERS' VIEW OF ZESCO LIMITED'S PERFORMANCE

6.1. Introduction

The previous chapter explained the research design and methodology. This chapter will examine stakeholders' view of ZESCO performance as an SOE. The chapter is guided by the Agency Theory. The theory argues that SOEs are expected to perform poorly on account of the state's weak control over managers (Jensen and Meckling, 1976: 368). With minimal monitoring, managers gain discretion and follow their own objectives which ultimately result in poor performance (Estrin et al., 2009: 7). Cavaliere and Scabrosetti (2008: 706) expected SOEs to perform better because government acts as a better principle since they are ultimately responsible to the citizens. Governments pass policies aimed at shielding SOEs from competition. Without competition, the firms' performance suffers since managers are no longer under pressure to beat competitors.

To determine which assertion is correct, the objective of the chapter is *to analyse stakeholders' view of ZESCO's performance as an SOE.* Both primary and secondary data were used. Primary data came from officials from various government institutions as well as owners/managers of businesses and organisations which represent domestic electricity consumers in Lusaka District. Secondary data came from review of relevant documents. The objective was achieved by running frequency distributions, regression analysis and chi-square analysis to test the hypothesis that:

- **H_0:** Stakeholders have a neutral view of ZESCO Limited's current performance.

The chapter is divided into seven sections. Section one is the introduction. Section two presents background characteristics of the respondents. Section three assesses stakeholders' view of ZESCO's current performance as an SOE. Performance was assessed by looking at quality, quantity, financial performance, productivity and competitiveness. Section four is regression analysis of stakeholders' perception of ZESCO's performance. Section five tests the hypothesis that stakeholders have a neutral view of ZESCO current performance. Section six is a summary.

6.2. Background Characteristics of the Respondents

Background characteristics of the respondents helped to determine whether the respondents were able to offer quality responses to questions in the study. There are no generic background characteristics. Therefore, the researcher has to identify characteristics that are relevant to that particular study (Saunders et al., 2016). The background characteristics assessed for this study were: gender of respondents; positions held by respondents; level of education attained by respondents; whether respondent had worked in the public sector before; the sector of the economy that the sampled businesses or organisations operated in; and whether business or organisations' clients were connected to ZESCO's electricity grid.

Figure 6.1: Gender of Respondents

Source: Researcher's field survey (2019)

Figure 6.1 above shows the gender distribution of respondents. The figure shows that 60.2% of business respondents were males compared to 39.8% females. In addition, 59% of organisation respondents were males compared to 41% females. As such, both sets of respondents were predominantly male. Nevertheless, the percentage of females in both samples was significant enough to offer a relatively gender balanced view.

Table 6.1 below is a breakdown of the level of education attained by respondents. The table shows that among business respondents, 14.6% attained secondary level education, 37% had college certificates, 32.4% had undergraduate degrees while 16% held post-graduate degrees. In

addition, among organisation respondents, 3.3% attained secondary level education, 35.7% had college certificates, 48.7% had undergraduate degrees while 16% held post-graduate degrees.

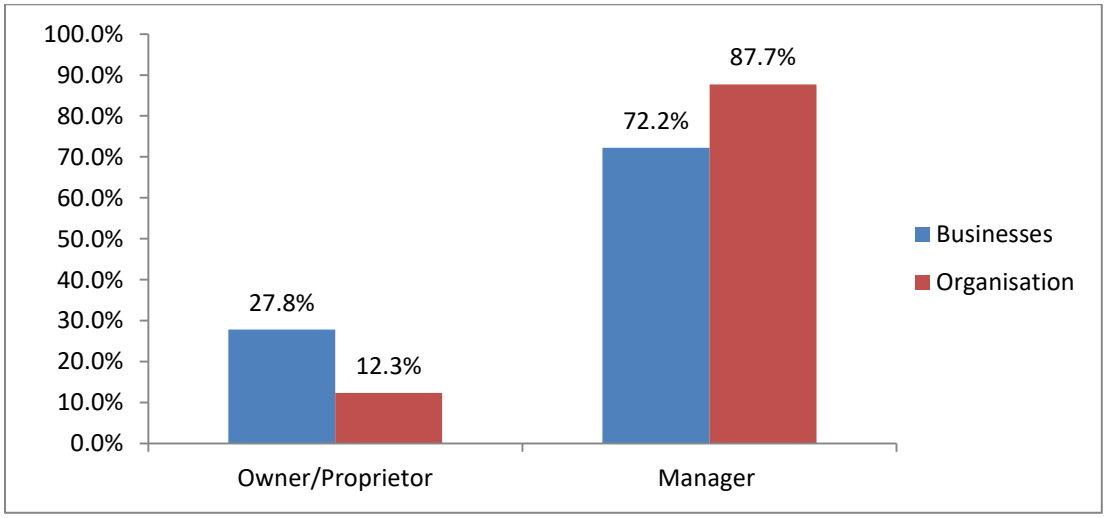
Table 6.1: Level of Education Attained by Respondents

	Level of Education	**Businesses**	**Organisations**
Valid	Secondary	73 (14.6%)	10 (3.3%)
	College	185 (37%)	107 (35.7%)
	Undergraduate	162 (32.4%)	146 (48.7%)
	Post-graduate	80 (16%)	37 (12.3%)
	Total	**500 (100%)**	**300 (100%)**

Source: Researcher's field survey (2019)

It meant that cumulatively, the majority of the respondents held college certificates or university degrees. This implies that most respondents had adequate educational background and were thus, in a position to give informed views about the study.

Figure 6.2: Position Held by Respondents



Source: Researcher's field survey (2019)

Figure 6.2 above is a breakdown of the positions held by respondents. The table indicates that 27.8% of the business respondents were owners/proprietors while 72.2% were managers. In addition, 12.3% of organisation respondents were owners/proprietors while 87.7% were managers. This implied that the responses given by the respondents were of high quality. This is because all the respondents occupied positions that enabled them to offer informed responses to

questions in the study.

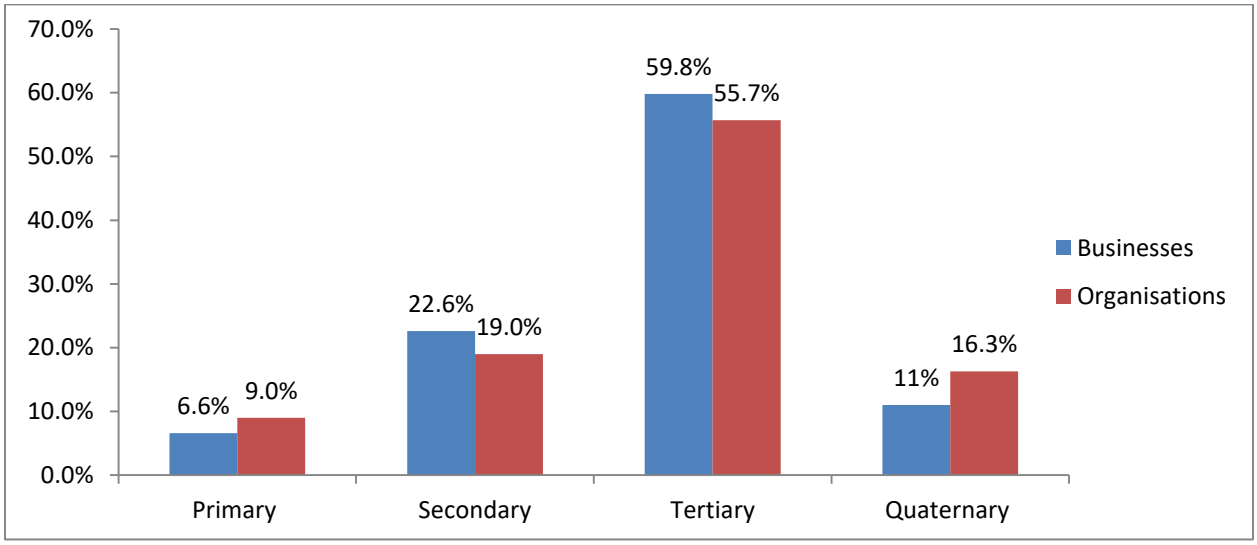
Table 6.2: Whether Respondents Had Previously Worked in the Public Sector

	Electricity Connection Status	Businesses	Organisations
Valid	Yes	273 (54.6%)	167 (55.7%)
	No	227 (45.4%)	133 (44.3%)
	Total	**500 (100%)**	**300 (100%)**

Source: Researcher's field survey (2019)

Table 6.2 above is a breakdown of whether respondents had previously worked in the public sector. The table indicates that 54.6% of the business respondents had worked in the public sector while 45.4% had not. In addition, 55.7% of organisation respondents had worked in the public sector while 44.3% had not. This implied that the majority of the respondents could compare the performance of public and private enterprises. As such, they are best placed to give an informed opinion on whether ZESCO's performance would improve if privatised.

Figure 6.3: Sector of the Economy that the Business or Organisation Operates In



Source: Researcher's field survey (2019)

Figure 6.3 above is a breakdown of the sector of the economy that sampled businesses and organisations operated in. The table shows that 6.6% of the businesses were in the primary sector, 22.6% in the secondary sector, 59.8% in the tertiary sector and 11% in the quaternary

sector. In addition, 9% of the organisations were in the primary sector, 19% in the secondary sector, 55.7% in the tertiary sector and 16.3% in the quaternary sector. This implied that all sectors of the economy were represented in both samples. Therefore, the responses represent the views of stakeholders from all sectors of the Zambian economy.

Table 6.3: Whether Business and Domestic Consumers Were Connected to ZESCO's Grid

	Electricity Connection Status	**Businesses**	**Organisations**
Valid	Yes	500 (100%)	300 (100%)
	No	0	0
	Total	**500 (100%)**	**300 (100%)**

Source: Researcher's field survey (2019)

Table 6.3 above is a breakdown of whether sampled businesses and domestic consumers were connected to ZESCO's electricity grid. The table indicates that 100% of the sampled businesses were connected to ZESCO's electricity grid. In addition, 100% of the sampled organisations were representing domestic consumers who were connected to ZESCO's electricity grid. This implied that all sampled respondents were able to offer informed opinions on services provided by the company. This, thus, qualified them as ZESCO's stakeholders.

Based on the background characteristics discussed above, the respondents were best placed to offer informed responses to the questions in the study. Therefore, the results from the study were likely to be an accurate representation of reality. This was especially important as the study had adopted the ontology assumption, which is based on the opinions of respondents.

6.3. Stakeholders' View of the Current Performance of ZESCO as an SOE

According to Estrin et al., (2009: 7) the Agency Theory contends that SOEs were expected to perform poorly on account of weak monitoring of managers by the state. This section attempts to verify this by assessing the views held by stakeholders with regard to ZESCO's performance in its current sate as an SOE. The company's performance was assessed by analysing the stakeholders' opinion of the quality and quantity of services as well as financial performance, productivity and competitiveness.

6.3.1. Stakeholders' View of the Effect of ZESCO's SOE Status on its Performance

In order to examine the Agency Theory's assertion that SOEs performed poorly (Estrin et al., 2009: 7), a frequency distribution was produced on whether ZESCO's SOE Status negatively affected its performance. Table 6.4 below shows that 33.4% of the businesses strongly agreed that ZESCO's SOE status negatively affected its performance, 35.4% agreed, 14.6% were undecided, 10.0% disagreed and 6.6% strongly disagreed. In addition, 13.7% of the domestic consumers strongly agreed that ZESCO's SOE status negatively affected its performance, 44.7% agreed, 16.7% were undecided, 19.0% disagreed and 6.0% strongly disagreed. The majority of the businesses (68.8%) either strongly agreed or agreed with the statement. Similarly, the majority of the domestic consumers (58.4%) either strongly agreed or agreed with the statement. This implied that in both samples, the majority of the respondents were of the opinion that ZESCO's SOE status negatively affected its performance. A similar view was held by the majority of the key informants.

Table 6.4: Whether ZESCO's SOE Status Negatively Affected its Performance

	ZESCO's SOE Status Negatively Affects Performance	**Businesses**	**Organisations**
Valid	Strongly agree	167 (33.4%)	41 (13.7%)
	Agree	177 (35.4%)	134 (44.7%)
	Undecided	73 (14.6%)	50 (16.7%)
	Disagree	50 (10.0%)	57 (19.0%)
	Strongly Disagree	33 (6.6%)	18 (6.0%)
	Total	**500 (100%)**	**300 (100%)**

Source: Researcher's field survey (2019)

6.3.2. Stakeholders' View of the Quality of Electricity Services Provided by ZESCO

The quality of services provided by a utility is an important measure of its performance. In line with Hermann and Flecker (2009: 34), quality of electricity supplied by ZESCO was assessed by looking at reliability of supply, fault restoration time and customer service.

6.3.2.1. Reliability of Supply

Electricity supply is considered to be reliable if it is consistent, with little or no interruptions. Whenever interruptions occur for one reason or another, they have to be few and promptly

restored (ERB, 2020b). The study determined reliability of supply by looking at annual outage hours as determined by frequency of interruptions in power supply and duration of power outage.

With regard to frequency of interruptions, ERB had set a System Average Interruption Frequency Index (SAIFI) of 5 times or less (ERB. 2020b: 81). This meant that ERB required ZESCO to ensure that customers only experienced interruptions about 5 times in a year (ERB. 2019: 67). However, ZESCO subjected most of its customers to daily load shedding (ERB, 2020). Consequently, ZESCO recorded an annual average SAIFI of 13.7 times, far higher than that required by ERB (ERB, 2020: 81).

Similarly, ERB required ZESCO to maintain a Customer Average Interruption Duration Index (CAIDI) at 6 hours or less (ERB, 2020: 81). ZESCO recorded an annual average CAIDI of 7.3 hours. This meant that ZESCO had failed to meet the CAIDI required by ERB. The ERB also required ZESCO to maintain an annual System Average Interruption Duration Index (SAIDI) of 27 hours or less (ERB (2020b: 81). ZESCO recorded an annual average SAIDI of 70.4 hours, exceptionally higher than ERB's requirements (ERB (2020b: 81). This implied that ZESCO's power supply was very unreliable.

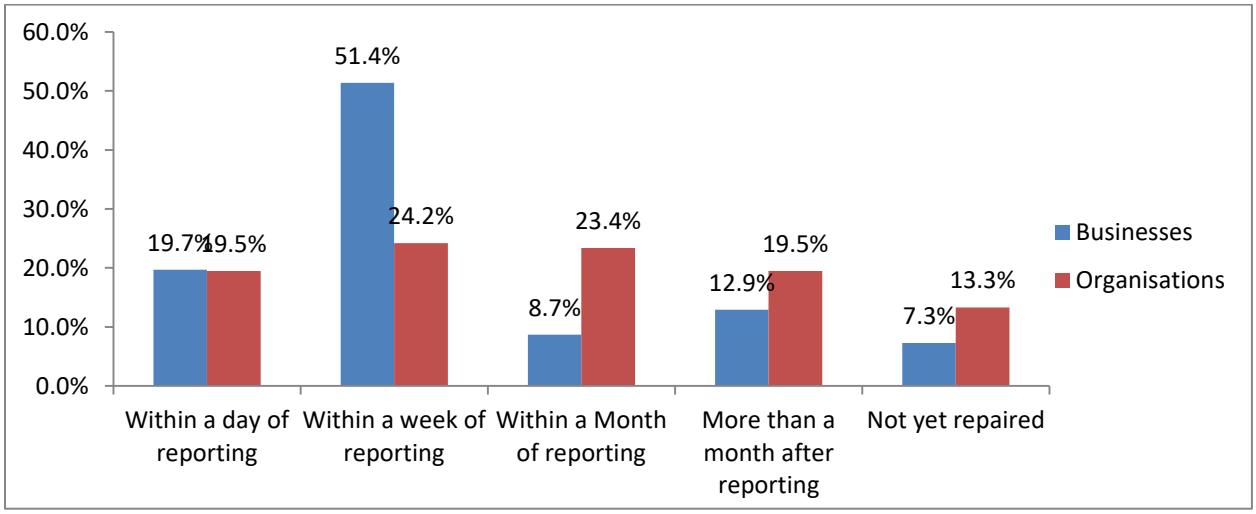
6.3.2.2. Fault Restoration Time

According to Hermann and Flecker (2009: 34), the less time it takes to restore faults, the higher the quality of supply. That is, if faults are repaired quickly, supply is restored quickly, thus minimising duration of interruptions in supply. Ideally, faults should be repaired within hours (within a day) of being reported (Hermann and Flecker, 2009).

Figure 6.4 below shows how long ZESCO took to restore electricity faults from the time of being reported. The figure shows that 19.7% of businesses had electricity faults fixed within a day of reporting, 51.4% within a week of reporting, 8.7% within a month of reporting, 12.9% more than a month after reporting and 7.3% were still waiting for faults to be fixed. In addition, 19.5% of domestic consumers had electricity faults fixed within a day of reporting, 24.2% within a week of reporting, 23.4% within a month of reporting, 19.5% more than a month after reporting and 13.3% were still waiting for faults to be fixed. This meant that ZESCO's fault restoration time was poor as less than 20% of faults were fixed within a day of reporting. In comparison, *Umeme*

(Uganda) restored faults within 16 hours of reporting (Umeme Limited, 2019).

Figure 6.4: Time Taken to Fix Electricity Faults



Source: Researcher's field survey (2019)

6.3.2.3. Customer Service

Quality of customer service was assessed through the ability of the utility to ensure safety for its customers as well as easiness in making inquiries or complaints about services (Hermann and Flecker, 2009: 34). Table 6.7 below shows stakeholder's opinions regarding ZESCO's effectiveness in ensuring safety for its customers.

Table 6.7: Ensuring Customer Safety

	Ensuring Customer Safety	Businesses	Organisations
Valid	Very Effective	47 (9.4%)	27 (9.0%)
	Effective	93 (18.6%)	45 (15.0%)
	Moderate	103 (20.6%)	64 (21.3%)
	Ineffective	130 (26.0%)	116 (38.7%)
	Very Ineffective	127 (25.4%)	48 (16.0%)
	Total	**500 (100%)**	**300 (100%)**

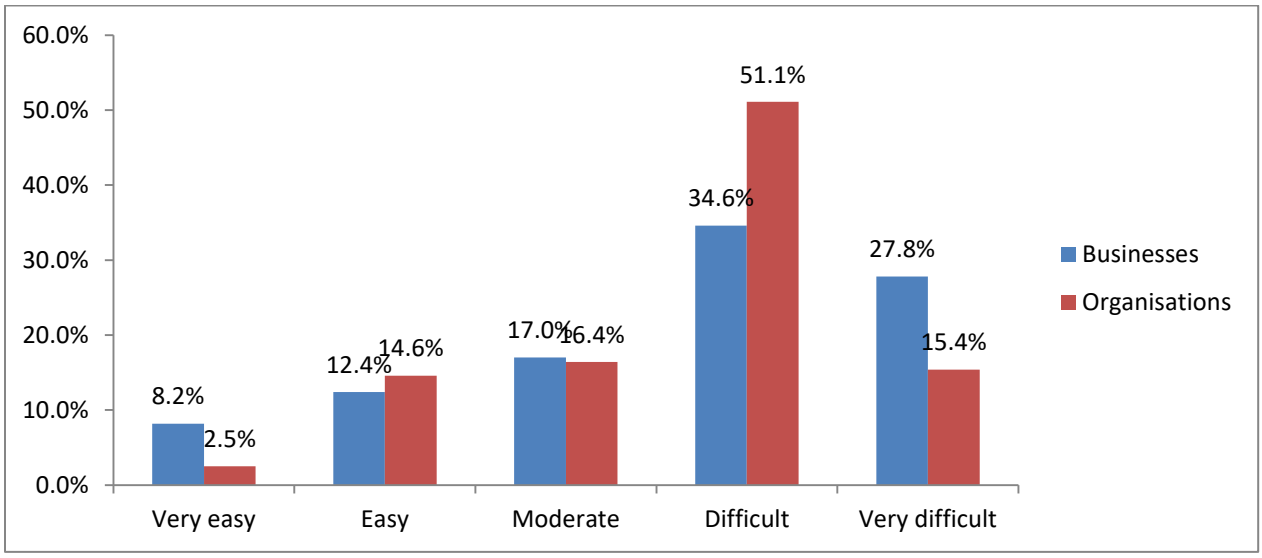
Source: Researcher's field survey (2019)

The table shows that 9.4% of the businesses felt that ZESCO was very effective in ensuring customer safety, 18.6% felt it was effective, 20.6% felt it was moderate, 26.0% felt it was

ineffective and 25.4% felt it was very ineffective. The table also shows that 9.0% of domestic consumers felt that ZESCO was very effective in ensuring customer safety, 15.0% felt it was effective, 21.3% felt it was moderate, 38.7% felt it was ineffective and 16.0%. felt it was very ineffective. This implied that the majority of the customers felt that ZESCO was unable to ensure customer safety.

Similarly, official records indicated that ZESCO had nearly 30 electricity related fatalities annually (ZESCO Limited, 2019). This was despite the company being required to ensure no fatalities occurred (ERB, 2020b: 81). In comparison, CEC had no fatalities in ten years while *Umeme* only had 1 fatality in 2019 (CEC, 2019: 34 and Umeme Limited, 2019: 21).

Figure 6.5: Easiness in Making Inquiries or Complaints about ZESCO's Services



Source: Researcher's field survey (2019)

Figure 6.5 above shows responses on easiness in making service inquiries. The table indicates that 8.2% of the businesses found it very easy to make inquiries about services provided by ZESCO, 12.4% found it easy, 17.0% found it moderate, 34.6% found it difficult while 27.8% found it very difficult. In addition, 2.5% of the domestic consumers found it very easy to make inquiries about services provided by ZESCO, 15.4% found it easy, 16.4% found it moderate, 51.1% found it difficult and 15.4% found it very difficult. This meant that the majority of the customers faced difficulties in inquiring about services provided by ZESCO.

Similarly, key informants stated that ZESCO's customer care centres were characterised by long lines of people who waited long hours before being served. Customers also faced difficulties when accessing the customer call centre. ZESCO admitted that on average, less than 20% of the total calls to ZESCO's customer care centres were served (ZESCO Limited, 2019). One informant stated that:

> *"Their phone lines are ever busy. Most times, customers can call the whole day without going through. Those who manage to go through are kept on hold for an agent to talk to them. Many of them eventually just give up and cut the call."*

6.3.3. Stakeholders' View of the Quantity of ZESCO's Electricity Services

In line with Estrin and Pelletier (2018: 90) and Hermann and Flecker (2009: 34), the quantity of electricity supplied by ZESCO was assessed by analysing installed generation capacity compared to actual demand; variation in installed generation capacity over a period of time; network length; and the national electrification rate.

6.3.3.1. Installed Generation Capacity Compared to Actual Demand

The country's total installed generation capacity was 2,981.31 MW (ERB, 2020a: 2). It was above Zambia's national peak demand of 2,500 MW (CEC, 2019: 16). However, actual generation was below peak demand leading to widespread power interruptions (ERB, 2020a). In comparison, Uganda's installed capacity was 984 MW with peak demand of 600 MW (Umeme Limited, 2019: 3, 17). Ivory Coast's installed capacity was 2,275 MW with peak demand of 1930 (Eranove, 2019). Unlike in Zambia, ability to generate at near full capacity meant that Uganda and Ivory Coast were able to meet local demand and export surplus power (Eranove, 2019 and Umeme Limited, 2019: 3).

To compound the situation, projections indicated that Zambia's growth in demand would increase between 150 MW and 200 MW per annum (Republic of Zambia, 2018: 18). As a result, peak demand for electricity in the country is likely to be 3,000 MW by 2021 and was expected to increase to 3,525 MW in 2030 and 4,000 MW in 2040 (CEC, 2019: 16 and Republic of Zambia, 2018: 18). Therefore, generation capacity needed to grow by a minimum of 3% annually to match the increase in future demand. However, between 2018 and 2019, ZESCO's installed

capacity reduced by 0.2% after some off-grid diesel plants were decommissioned (ERB, 2020a: xi).

Looking at the scenario above, it is clear that ZESCO's dominance as well as inadequate incentives continued to discourage IPPs from investing in generation. Unless ZESCO increased investments in generation, demand would outstrip installed capacity as early as 2021.

6.3.3.2. Ten Year Variation in Installed Generation Capacity (2009 to 2019)

As the sole purchaser of all grid connected power, ZESCO forced IPPs into signing lopsided PPAs (Chimbaka, 2017). For instance, ZESCO insisted on 15 year PPAs without committing to renewals upon expiry. This discouraged private investors from making significant investments in power generation (Phiri and Ziba, 2018: 10). This scenario meant that ZESCO needed to take the lead in increasing generation capacity if future demand was to be met.

Nevertheless, between 2009 and 2019, ZESCO's installed generation capacity only increased by 29% (526.6 MW) from 1,818.8 MW to 2,345.40 MW (ZESCO Limited, 2010, ERB, 2020a: 2). This increase was the result of the commissioning of the 360 MW *Kariba North Bank Extension* in 2013 and 120 MW *Itezhi-Tezhi* power plants in 2015 (ERB, 2020b: 55). No large scale plants had been built in the last five years. At the same time, ZESCO decommissioned most of its off-grid diesel plants (Woods et al., 2019). In comparison, *LHPC* achieved a much higher variation in installed generation capacity over the same period. The *LHPC* increased its installed generation capacity by 47.4% (ERB, 2020a: 2 and Lunsemfwa Hydro Power Company, 2010).

The scenario above meant that ZESCO's dominance as well as inadequate incentives continued to discourage IPPs from investing in generation. Unless ZESCO increased investments in generation, demand would outstrip installed capacity as early as 2021. Additionally, if ZESCO continued to hold monopoly, the country would continue to face acute electricity shortages in years to come.

6.3.3.3. Variation in Network Length

ZESCO bought all grid connected generated electricity in addition to being the sole controller of the transmission network (Chimbaka, 2017). Through its power to grant third-party access to the

transmission network, the company blocked potential private transmitters and distributors (Phiri and Ziba, 2018: 10). It also disadvantaged current ones by forcing them into lopsided trade agreements for them to access the transmission network. This scenario discouraged private investment in transmission and distribution. Consequently, only ZESCO and *CEC* owned transmission lines. *CEC* was only permitted to transmit power to the *Copperbelt*, and only ZESCO, *CEC* and *NWEC* owned and operated distribution lines (ERB, 2020). *CEC* was only mandated to distribute power to Mines in the *Copperbelt* while *NWEC* only distributed to residential townships of *Lumwana, Kalumbila* and *Kansanshi* copper mines in *North-Western Province* (ERB, 2020b: 54). The situation above entails that the lengths of ZESCO's transmission and distribution networks were key if supply was to reach the entire country.

Between 2009 and 2019, ZESCO expanded the length of its transmission network by 41.1% (3,073 km) from 7468 km to 10,541 km (ZESCO Limited, 2010 and ZESCO Limited, 2019). During the same period, the length of the distribution network increased by 51% (14,948 km) from 29,311 km to 44,259 km (ZESCO Limited, 2010; ZESCO Limited, 2018: 4 and ZESCO Limited, 2019). The increase in network length over a short period of time was highly commendable. It enabled the company to transmit and distribute power to domestic, residential, commercial, agricultural and social customers countrywide.

Nevertheless, as earlier observed in Figure 4.3 under Chapter Four (on page 105), ZESCO's transmission and distribution lines were not long enough to cover the whole country, especially rural areas. The company had to rely on *CEC*'s transmission network to domestically wheel electricity to the northern parts of the country (ERB, 2020b: 51). ZESCO's failure to develop transmission and distribution lines in rural areas resulted in the creation of *REA* to oversee rural electrification (Republic of Zambia, 2018: 21 and Phiri and Ziba, 2018: 3). However, ZESCO's inadequate transmission networks compromised *REA's* ability to expand the distribution network in rural areas. This forced REA to build expensive solar powered micro grids that could only power lighting and entertainment (Woods et al., 2019: 62).

ZESCO failed to adequately expand the length of its transmission and distribution network. Its continued monopoly meant that private transmission and distributors would continue being discouraged. Given ZESCO's poor performance, the country would continue struggling to improve electrification, especially in rural areas.

6.3.3.4. National Electrification Rate

ZESCO was the main distributor with 1,017,341 million customers (ERB, 2020a: 9). These comprised residential 916,669 (90.1%), commercial 80,144 (7.9%), maximum demand 8,460 (0.8%), agriculture 815 (0.1%) and social 11,253.00 (1.1%) customers (ERB, 2020a:9). *CEC* distributed and supplied power to 10 mines in the *Copperbelt* (CEC, 2019: 43). *NWEC* supplied power to 3,326 customers in mining townships in *North-Western Province* (ERB, 2020a: 9). In addition, mini and micro distributors added about 1,500 connections (ERB, 2020a: 9).

However, Woods et al., (2019: 28) stated that even with these connections, the country had a low national electricity access rate of 33% (67% in urban areas and 4% in rural areas). In comparison, World Bank (2020) noted that the electrification rate in sub-Saharan Africa stood at 47.7% (78.1% in urban areas and 31.5% in rural areas). In 2004, the Zambian Government set a target of achieving universal access in urban areas and 51% in rural areas by 2030 (Republic of Zambia, 2018: 17). Nevertheless, one informant stated that:

> *"We will not manage to reach the 2030 electrification target. For instance, we are currently stuck at 4% rural electrification instead of 25%. ZESCO hasn't built transmission lines in rural areas. And without them, REA can't build distribution lines…I don't see ZESCO moving from 67% to 100% urban electrification in 10 years."*

As long as transmission and distribution remains uncompetitive, private investors will continue being discouraged. In addition, given ZESCO's poor performance with regard to electrification, Zambia's electrification rate will continue to lag behind.

6.3.4. Stakeholders' View of ZESCO's Financial Performance

In line with Megginson et al., (1994) and Ghulam (2012), ZESCO's financial performance was assessed by analysing the levels of investment in infrastructure and profitability. The study focused on the levels of investment in generation, transmission and distribution infrastructure. Profitability was assessed through revenue collection and levels of profit.

6.3.4.1. Investment in Infrastructure

There were no greenfield investments to expand Zambia's power supply between 1980 and the

early 2000s (Phiri and Ziba, 2018). Meanwhile, demand continued to escalate due to the expansion of copper mining activities and the expansion of the customer base. Consequently, in early 2000, the country stopped enjoying the surplus capacity it had previously enjoyed. This resulted in power outages and a slowdown in new connections (Owens, 2016). In response, between 2009 and 2019, ZESCO invested over US$2,760 million in an attempt to increase installed capacity (ZESCO Limited, 2010 and ERB, 2020b). The main investments in generation infrastructure are shown in Table 6.8 below.

Table 6.8: Investment in Generation between 2009 and 2019

Station	**Electricity Source**		**Capacity added (MW)**	**Year of completion**	**Amount (US$ million)**
Shiwang'andu	Hydro	New	1	2012	4.1
Kariba North Bank Extension	Hydro	New	360	2013	420
Itezhi-Tezhi	Hydro	New	120	2015	245
Lunzua	Hydro	Upgrade	14 (0.75 to 14.8)	2016	52
Musonda Falls	Hydro	Upgrade	5 (5 to 10)	2018	45
Kafue Gorge Lower	Hydro	New	750	2020	2,000
Total			**1,250**		**2,766.1**

Source: Researcher's own interpretation of reviewed literature

ZESCO also invested over US$1.5 billion in expanding and rehabilitating the transmission and distribution network (ZESCO Limited, 2018: 62). This involved constructing new transmission and distribution lines as well as rehabilitating and upgrading old ones. The company also rehabilitated, upgraded and constructed accompanying substations, transformers and other infrastructure. This allowed the decommissioning of expensive and unreliable diesel generators (ZESCO Limited, 2018: 62).

Nevertheless, ZESCO's investments were not adequate. As can be seen in Table 6.8, no power plant had been commissioned in the last five years. In addition, with 3600 MW of unexploited hydro potential alone, ZESCO could have invested in more power plants. Not only that, the company continued to invest in hydro power rather than diversifying to climate resistant energy sources like solar. In addition, ZESCO's transmission and distribution infrastructure remained inadequate to cover the entire country. Therefore, more investments needed to be made. The main investments in transmission and distribution are shown in Table 6.9 below.

Table 6.9: Main Investments in Transmission and Distribution

Project	Description	Cost (US$ million)	Year
Lusaka South MFEZ 330kv Transmission	Transmission lines to Mphande Limestone	36	2018
Kafue Town – Muzuma – Victoria Falls 220kv Transmission Line Upgrade	Upgrading of 348km of 220kV transmission line from Kafue Town to Livingstone to 330 kV	100	2019
Pensulo – Msoro – Chipata 330 kV Transmission	Construction of 280 km of 330 kV transmission line, a new substation and upgrading Msoro 66 kV substation to 330 kV	150	2019
Grid Connection of North Western Province	Construction of 800 km of 132 kV transmission lines and eight 132 kV substations.	163	2017
Kasama-Nakonde, Kasama-Mporokoso and Kasama-Kayambi Transmission	Construction of transmission lines and substations	288	-
Kabwe – Pensulo	Construction of 330kV line	132	-
Mumbwa - Lusaka West Transmission Line Project	Construction of transmission lines linking Lusaka West, Mumbwa substation and ITPC	133	2018
Grid Connection of Luangwa	Construction of transmission lines to connect Luangwa district to the national grid	63.4	-
Grid Connection of Lundazi and Chama	Construction of transmission lines to connect Lundazi and Chama Districts to the national grid	64	2019
Urban Distribution Project	Rehabilitation and expansion of distribution infrastructure in major towns	84.7	-
Total		**1,214.1**	

Source: Researcher's own interpretation of reviewed literature

6.3.4.2. Profitability

Prepaid metering improves a utility's revenue collection by enabling it to receive payments in advance. Accordingly, ZESCO began installing prepaid meters in 2012 with the aim of metering all its customers (ZESCO Limited, 2016). By 2019, over 98% of its residential, commercial and social customers were on prepaid meters (ZESCO Limited, 2019). This improved its revenue collection as customers on prepaid meters settled their bills on time. However, the company continued facing challenges collecting revenue from state institutions. The average payment rate by central government, water utilities and SOEs was 61%. In addition, bulk buyers like mines, constituting over 50% of supplied power, were not on prepaid meters (ZESCO Limited, 2019).

ZESCO had consistently made loses since 2016 and they significantly increased annually. For instance, its net loss in 2016 was US$7.6 million before increasing by nearly 100% to US$15

million in 2017 and jumping by over 1000% to US$156 million in 2018 (ZESCO, 2019). The trend was expected to continue in future. Table 6.10 below shows ZESCO's financial ratios.

Table 6.10: ZESCO's Financial Ratios, 2011 to 2017

Ratios	2011	2012	2013	2014	2015	2016	2017
Net Profit Margin	16%	12%	(11%)	7%	13.5%	(15.9%)	(5%)
Return on Capital Employed	9%	8%	6%	5%	0%	1%	0%
Current Ratio	1.32	1.5	2.0	1.5	1.1	0.8	0.6
Interest Cover	29.5	52.7	34.9	12.5	1.4	0.6	0.3
Debt/equity Ratio	69%	102%	130%	190%	178%	172%	78%
Gearing Ratio	30%	41%	45%	58%	64%	62%	34%
Debtor Days	97	123	148	122	103	78	119
Asset Turnover	0.5	0.4	0.3	0.3	0.3	0.4	0.2

Source: ZESCO Limited, 2016: 84 and ZESCO Limited 2018: 111

Most of ZESCO's financial ratios indicated poor financial performance. For instance, Table 6.10 above shows that Net Profit Margin was perpetually below the 20% threshold. Return on Capital Employed was below 10% (0% in 2015 and 2017) and indicated inadequate profit to reinvest in growing the company (ZESCO Limited, 2016: 84 and ZESCO Limited, 2018: 111). Once its Current Ratio deteriorated to less than 1, in 2016, ZESCO lacked liquidity to cover its current liabilities. The company was at risk of failing to make its loan obligations after its Interest Cover Ratio dropped below 2.5 in 2015. ZESCO had Debt/Equity Ratio of more than 100% in most financial years. This implied that the company used debt, rather than equity, to finance its operations (ZESCO Limited, 2016: 84 and ZESCO Limited, 2018: 111).

Gearing ratios above the recommended 25%, in addition to losses and high interest rates, put the company at risk of bankruptcy as well as defaulting on loans. Debtor Days ratio showed that ZESCO does not quickly get paid for its sales. It took the company more than 100 days to collect cash from debtors against a target of not more than 60 days (ERB, 2020b: 80 and ZESCO Limited, 2018: 111). The company was not using its assets efficiently as can be seen from its very low Asset Turnover ratio. For instance, its 0.2 Asset Turnover ratio in 2017 meant that it was only generating US$0.20 in sales for every dollar of its assets (Henry and Robinson, 2011; ZESCO Limited, 2016: 84 and ZESCO Limited, 2018: 111).

The information above shows that ZESCO was unprofitable as its losses rose annually while its

financial ratios continued to deteriorate. This placed the company in dire financial straits. Unless there was a turnaround, the company risked becoming financially unviable.

6.3.5. Stakeholders' View of ZESCO's Productivity

In line with Hermann and Flecker (2009:58), Wong and Almeida (2014) and Varley (2009) ZESCO's productivity was examined by looking at increase or decrease in operational costs; increase or decrease in utilisation of labour and increase or decrease in utilisation of infrastructure over a five-year period.

6.3.5.1. Cost of Operation

High costs of operations were one of the factors behind ZESCO perpetual loss making. The company spend highly on local purchases, power imports, labour, maintenance, generation water usage as well as local and export wheeling charges. Some of these costs were avoidable. For instance, towards the end of 2019, the company spent US$42 million importing 300 MW from Eskom South Africa to cover supply for only two months (ERB, 2020a). That expense could have been avoided had the company been able to generate adequate power.

ZESCO continued to be heavily subsidised. Much of the subsidies went to cover tariffs which were not cost reflective. However, the government also spent millions of dollars subsidising the cost of emergency power imports. It spent US$35 million in 2015, $100 million in 2016, US$36 million in 2017, US$30 million in 2018 and US$42 million in 2019 (ZESCO Limited, 2016: 39; ZESCO Limited, 2019: 71 and Nkhuwa, 2020: 2). These were subsidies, which could not have been made had ZESCO been able to generate adequate power.

6.3.5.2. Utilisation of Labour

Following criticism of having a bloated workforce, ZESCO set its establishment at 7,000 from 2014 to 2019 (ZESCO Limited, 2019). The company managed to keep its employee numbers below the establishment. At the same time, annual increase in customer base meant that the number of customers per employee increased from 98 in 2014 to 126 in 2019 (ZESCO Limited, 2016 and ERB, 2020b: 80). However, this was still lower compared to other utilities in sub-Saharan Africa. For instance, customers per employee were 340 for *ENEO*, 388 for *CIE* and 859

for *Umeme* (ENEO, 2019: 3, Eranove, 2019 and Umeme Limited, 2019: 22). When casual and seasonal employees were added, ZESCO's employee productivity drastically reduced.

6.3.5.3. Utilisation of Infrastructure

Utilisation of infrastructure was determined by assessing system loses and comparing actual generation with installed capacity. Actual generation was compared to installed capacity by assessing Unit Capability Factor, Availability of Generation Plant and Plant Capacity Factor. Unit Capability Factor refers to the ratio of actual to installed output of a plant. Any Unit Capability Factor above 80% is considered adequate (ERB, 2018: 66). ZESCO maintained a Unit Capability Factor close to or above 90% for the last five years. For instance, in 2019, ZESCO's generation plants had average Unit Capability Factor of 93% (ERB, 2020b: 81). This implied that ZESCO's plants were capable of generating 2,110.9 MW out of the 2,345.4 MW total installed (ERB, 2020b).

Availability of Generation Plant refers to the amount of time that a company's generation plants were running (producing electricity) in a year, divided by the total amount of time in a year (Wong and Almeida, 2014). Companies can improve Availability of Generation Plant by minimising down time through the use of appropriate technology, ensuring availability of fuel and undertaking regular maintenance. ZESCO's average Availability of Generation Plant of 72 meant that its generation plants were running 72% of the year and idle for close to 30% of the year (ZESCO Limited, 2019).

Capacity Factor refers to the ratio of a generation plant's actual output over a period of time, to its potential output if it were possible for it to operate at full nameplate capacity indefinitely (World Bank, 2020a). It is calculated by taking the total amount of energy the plant produced during a period of time and divide by the amount of energy the plant would have produced at full capacity. Provided fuel is adequately available, a power plant should have a capacity factor of 50% or better (Wong and Almeida, 2014). Despite sufficient water supply, ZESCO's capacity factor dipped below acceptable levels from 2016 onwards (ZESCO Limited, 2018: 28). Table 6.11 below shows ZESCO's utilisation of generation infrastructure.

Table 6.11: ZESCO's Utilisation of Generation Infrastructure

Productivity Indicator	2015	2016	2017	2018	2019
Unit Capability Factor	89%	88.4%	85.5%	90.5%	90%
Availability of Generating Plant	72	71%	72%	75%	72%
Capacity Factor	50%	45%	42%	43%	42%

Source: Researcher's own interpretation of reviewed literature

Another way of determining utilisation of infrastructure is by analysing system loses. Energy Regulation Board (2020b: 81) stated that for the past five years, it had set ZESCO's system loses benchmark at 18% (6% for transmission loses and 12% for distribution loses). However, that benchmark was faulty since the international target for system loses was 12% (World Bank, 2020a). As a result, although ZESCO consistently met ERB's benchmark, it failed to meet the international target. As can be seen in Table 6.12 below, ZESCO's system loses were above 15% (more than 3% above the international target). In comparison, CEC managed to reduce its transmission loses to only 2.1% (ERB, 2020b, 51). Therefore, ZESCO needed to reduce its system loses below the international target. Table 6.12 below shows ZESCO's system loses between 2014 and 2019.

Table 6.12: ZESCO's System Loses 2014 to 2019

	2015	2016	2017	2018	2019
Transmission Loses	5%	5.7%	5.5%	5.3%	5%
Distribution Loses	10%	10%	11.3%	10.5%	11%
Total System Loses	**15%**	**15.7%**	**16.8%**	**15.8%**	**16%**

Source: Researcher's own interpretation of reviewed literature

6.3.6. Stakeholders' View of ZESCO's Competitiveness

In line with Hermann and Flecker (2009: 7) and Ketels (2016: 13), ZESCO's competitiveness was determined by assessing variation in tariffs and variation in market share in generation, transmission and distribution over the last decade.

6.3.6.1. Variation in Average Electricity Tariffs

Between 2009 and 2020, ZESCO had applied for a total of 353% cumulative increase in

electricity tariffs. During the same period, ERB approved a total of 261.7% cumulative increase in tariffs (ERB, 2020b). Even with this increment, ZESCO still maintained that the tariffs were not cost reflective and thus, a financial strain on its operations (ZESCO Limited, 2019). For instance, the company mulled ideas of requesting upwards of 500% tariff hike in 2019. Only public outcry forced it to apply for a 150% hike instead. The ERB approved a 113% hike on the basis of ZESCO's Key Performance Indicators that year (ERB, 2020b). The major reason for tariffs not being cost reflective could be the company's failure to manage its costs. It was thus expected that the company would continue to make huge annual tariff applications. Table 6.13 below shows ZESCO's average tariffs adjustments between 2000 and 2020.

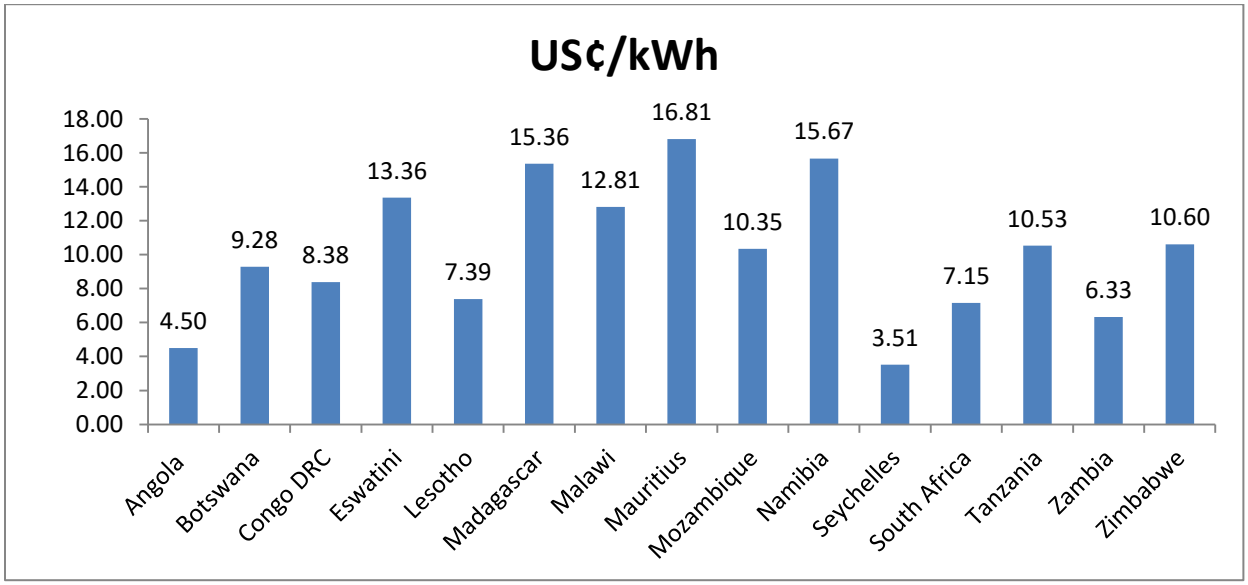
Table 6.13: ZESCO's Average Tariffs Adjustments between 2000 and 2020

	2009	**2010**	**2014**	**2017**	**2020**	**Cumulative Increase**
Average % Applied for	66%	36%	26%	75%	150%	**353%**
Average % Approved	35 %	23.2%	16%	75%	112.5%	**261.7%**

Source: ERB (2017: 59); ERB (2018: 2) and ERB (2020b)

However, ERB (2020a) noted that Zambia's electricity tariffs were among the lowest in sub-Saharan Africa. For instance, the 2019 tariffs stood at US¢6.33/kWh compared to the US¢13/kWh average obtaining in sub-Saharan Africa (ERB, 2020a: 12). This implied that Zambia's electricity tariffs were less than half of the average in sub-Saharan Africa. In addition, the country's electricity tariffs were lower than tariffs in most countries in the SADC region. Only Angola and the Seychelles had tariffs lower than those of Zambia. Figure 6.6 below shows Zambia's tariffs compared to other countries in the SADC region.

Figure 6.6: Comparison of Electricity Tariffs in the SADC Region



Source: Researcher's own interpretation of reviewed literature

It is clear that ZESCO's tariffs were low and not cost reflective. It was, thus, appropriate for the company to request annual adjustments. Additionally, it would be wrong to assume that these adjustment requests were an indication of the company being uncompetitive. Rather, the company's ability to operate with low tariff could itself be cited as indicative of high competitiveness.

6.3.6.2. Ten Year Variation in ZESCO's Market Share, 2009-2019

In 2009, Zambia's installed generation capacity was 1858 MW (ZESCO Limited, 2010). With competition from only three IPPs (LHPC, CEC and Zengamina), ZESCO was able to command a 97.9% share of the generation market (ZESCO Limited, 2010). In the last decade, more IPPs entered the market. As such, while Zambia's installed generation capacity increased to 2,981.3 MW, ZESCO's market share shrunk to 78.7% (ERB, 2020a: 2). This implied that ZESCO lost 19.2% of its market share in generation (ERB, 2020a: 2 and ZESCO Limited, 2010). The company's share would have shrunk further had private investors not been discouraged by policies that made it the sole purchaser of all on-grid power.

In 2009, Zambia's transmission network was 8,352 km long. ZESCO owned 7,468 km (89.4%) while 884 km (10.6%) was owned by CEC (CEC, 2010: 3 and ZESCO Limited, 2010). By 2019,

the country's transmission network increased to 11,541 km. ZESCO owned 10,541 km (91.3%) while 1,000 km (8.7%) was owned by CEC (ERB, 2020a and CEC, 2019: 10). This meant that ZESCO increased its share of the transmission market by 1.9%. However, the increase was the result of policies that prevented entry of new competitors while stifling existing ones. For instance, CEC remained the sole private transmitter and was limited to constructing transmission lines supplying power to mines on the *Copperbelt*.

Zambia's electricity customer base in 2009 was 376,825, composed of ZESCO with 376,292 (99.9%) customers, NWEC 368 (0.1%) customers and Zengamina with 165 (0.04%) customers (ERB, 2011: 5, 9, 11). By 2019, Zambia's total electricity customer base grew to 1,022,167, composed of ZESCO with 1,017,341 (99.5%) customers, *NWEC* with 3,326 (0.3%) and micro distributors with 1500 (0.2%) customers (ERB, 2020a: 9). Therefore, in the last decade, ZESCO only lost 0.4% of its market share in distribution. Table 6.14 below shows variation in ZESCO's market share between 2009 and 2019.

Table 6.14: Variation in ZESCO's Market Share, 2009-2019

	2009	**2019**	**Change in Market Share**
Installed Generation	97.9%	78.7%	Reduction of 19.2%
Transmission Infrastructure	89.4%	91.3%	Increase of 1.9%
Distribution (Customer Base)	99.9%	99.5%	Reduction of 0.4%

Source: Researcher's own interpretation of reviewed literature

Once again, ZESCO's performance was the result of policies that prevented entry of new private distributors while stifling existing ones. For instance, NWEC operation was limited to mining townships of North-Western Province. As the sole purchaser of all grid connected generated power, ZESCO was able to stifle competition.

6.4. Regression Analysis of ZESCO's Performance as an SOE

The study performed simple linear regression analysis to determine whether ZESCO's SOE status contributed to its performance. This was done by looking at the impact of ZESCO's SOE status (independent variable) on performance indicators (dependent variables). Unlike correlation, regression describes how an independent variable is numerically related to the dependent variable. It enables the researcher to determine the degree to which the change in the

dependent variable is related to the change in the independent variable (Saunders et al., 2016: 548). As such, regression can be used to predict the impact of a unit change in the independent variable on the dependent variable (Hair, Black, Babin, Anderson and Tatham, 2013). The coefficients, ranging between -1 and +1, determine the strength of the relationship. If the coeficient is +1 or -1 then the independent variable causes 100% of the changes in the dependent variable. If the coeficient is +0.5 or -0.5 then the independent variable causes 50% of the changes in the dependent variable. If the coeficient is 0 then the two variables are independent of each other (Saunders et al., 2016: 548). Figure 6.7 below shows values of the regression coefficient.

Figure 6.7: Values of the Regression Coefficient

Source: Saunders et al., (2016: 545)

In addition, p-values indicate the probability whether the relationship between the variables is statistically significant or occurred by chance (Gelman, 2013). Conventionally, a very low p-value, usually less than 0.05 ($p<0.05$), entails a statistically significant relationship between the two variables (Saunders et al., 2016: 548). It means that the probability of the results occurring by chance alone is less than 5% (Hair et al., 2013).

Table 6.15 below shows regression analysis of stakeholders' perception of ZESCO's performance. The table shows that based on the views of businesses, there was a statistically significant moderate negative relationship between ZESCO being an SOE and the quality of electricity supply (Coefficient = -0.582, Std. Error = 0.041, Sig. = 0.000). Meaning that since $p<0.05$, ZESCO's SOE status explained about 58.2% of the variance in quality of electricity supply. The coefficient being negative meant that ZESCO's SOE status reduced the quality of electricity supply. In addition, based on the views of domestic consumers, there was also a statistically significant strong negative relationship between ZESCO being an SOE and the quality of electricity supply (Coefficient = -0.676, Std. Error = 0.047, Sig. = 0.000). Meaning that since $p<0.05$, ZESCO's SOE status explained about 67.6% of the variance in quality of electricity supply. The coefficient being negative meant that ZESCO's SOE status reduced the

quality of electricity supply. *This implied that ZESCO being an SOE significantly compromised quality of electricity supply.*

Table 6.15: Regression Analysis of Stakeholders' Perception of ZESCO's Performance

Statistical Model	Test Type		Business	Organisation
Regression: Specific – Quality of Services (Ensuring Customer Safety)				
Regression	Relationship between ZESCO being an SOE and quality of services	Coefficient	-.582	-.676
		Std. Error	.041	.047
		Sig.	.000	.000
Regression: Specific – Quantity of Supplied Electricity (Adequacy of supply)				
Regression	Relationship between ZESCO being an SOE and quantity of supplied electricity	Coefficient	-.312	-.233
		Std. Error	.038	.050
		Sig.	.000	.000
Regression: Specific – Financial Performance				
Regression	Relationship between ZESCO being an SOE and its financial performance	Coefficient	-.813	-.640
		Std. Error	.031	.039
		Sig.	.000	.000
Regression: Specific – Productivity				
Regression	Relationship between ZESCO being an SOE and its productivity	Coefficient	-.685	-.735
		Std. Error	.040	.036
		Sig.	.000	.000
Regression: Specific – Competitiveness				
Regression	Relationship between ZESCO being an SOE and its competitiveness	Coefficient	-.547	-.161
		Std. Error	.047	.053
		Sig.	.000	.003

Source: Researcher's field survey (2019)

Additionally, Table 6.15 also shows that based on the views of businesses, there was a statistically significant weak negative relationship between ZESCO being an SOE and quantity of electricity supply (Coefficient = -0.312, Std. Error = 0.038, Sig. = 0.000). Meaning that since $p<0.05$, ZESCO's SOE status explained about 31.2% of the variance in quantity of electricity supply. The coefficient being negative meant that ZESCO's SOE status reduced the quantity of electricity supply. In addition, based on the views of domestic consumers, there was a statistically significant weak negative relationship between ZESCO being an SOE and quantity of electricity supply (Coefficient = -0.233, Std. Error = 0.050, Sig. = 0.000). This means that since $p<0.05$, ZESCO's SOE status explained about 23.3% of the variance in quantity of electricity supply. The coefficient being negative meant that ZESCO's SOE status reduced the quantity of electricity supply. *This implied that ZESCO being an SOE compromised quantity of electricity supply.*

Table 6.15 also shows that based on the views of businesses, there was a statistically significant very strong negative relationship between ZESCO being an SOE and its financial performance (Coefficient = -0.81.3, Std. Error = 0.031, Sig. = 0.000). Meaning that since p<0.05, ZESCO's SOE status explained about 81.3% of the variance in its financial performance. The coefficient being negative meant that ZESCO's SOE status reduced its financial performance. In addition, based on the views of domestic consumers, there was a statistically significant strong negative relationship between ZESCO being an SOE and its financial performance (Coefficient = -0.640, Std. Error = 0.039, Sig. = 0.000). Meaning that since p<0.05, ZESCO's SOE status explained about 64% of the variance in financial performance. The coefficient being negative meant that ZESCO's SOE status reduced its financial performance. *This implied that ZESCO being an SOE significantly compromised its financial performance.*

Table 6.15 also shows that based on the views of businesses, there was a statistically significant strong negative relationship between ZESCO being an SOE and its productivity (Coefficient = -0.685, Std. Error = 0.040, Sig. = 0.000). Meaning that since p<0.05, ZESCO's SOE status explained about 68.5% of the variance in its productivity. The coefficient being negative meant that ZESCO's SOE status reduced its productivity. In addition, based on the views of domestic consumers, there was a statistically significant strong negative relationship between ZESCO being an SOE and its productivity (Coefficient = -0.735, Std. Error = 0.036, Sig. = 0.000). Meaning that since p<0.05, ZESCO's SOE status explained about 73.5% of the variance in productivity. The coefficient being negative meant that ZESCO's SOE status reduced its productivity. *This implied that ZESCO being an SOE compromised its productivity.*

Table 6.15 also shows that based on the views of businesses, there was a statistically significant moderate negative relationship between ZESCO being an SOE and its competitiveness (Coefficient = -0.547, Std. Error = 0.047, Sig. = 0.000). Meaning that since p<0.05, ZESCO's SOE status explained about 54.7% of the variance in its productivity. The coefficient being negative meant that ZESCO's SOE status reduced its competitiveness. In addition, based on the views of domestic consumers, there was a statistically significant none negative relationship between ZESCO being an SOE and its competitiveness (Coefficient = -0.161, Std. Error = 0.053, Sig. = 0.003). Meaning that since p<0.05, ZESCO's SOE status explained about 16.1% of the variance in competitiveness. The coefficient being negative meant that ZESCO's SOE status

reduced its competitiveness. *This implied that ZESCO being an SOE compromised its competitiveness.*

The results from regression analyses support the Agency Theory's position that SOEs perform poorly. They indicate that ZESCO being an SOE compromised all performance indicators. It led to reduction in quality and quantity of electricity supply as well as financial performance, productivity and competitiveness.

6.5. Hypothesis Testing (Chi-Square Analysis of ZESCO's Performance as an SOE)

The questionnaire used in the study contained a series of categorical statements made in line with the researchers' ontological belief (based on personal experience and the literature on the subject). As such, the Pearson chi-square model was chosen to test the hypotheses. Walker (2012: 1) cited in Abioye (2016: 73) opined that chi-square is used to test the likelihood of two variables being independent (or associated). Saunders et al., (2016: 539) add that the chi-square (χ^2) test calculates the probability that the data in the table could occur by chance alone. A probability of less than 0.05 ($p<0.05$) means that there is less than a 5% likelihood of the data in the table occurring by chance alone, and is thus, termed statistically significant. Therefore, a probability smaller than 0.05 ($p<0.05$) means the researcher can be at least, 95% certain that the dependence between the two variables represented by the data in the table could not have occurred by chance alone (Saunders et al., 2016: 539). Since the null hypothesis (H_0) always assumes that *'there is no relationship (dependence) between two variables',* any p-values (Asymp. Sig. 2-sided) lower than 0.05 ($p<0.05$) indicate that the null hypothesis can be rejected (Thisted, 1998). The Pearson chi-square model was used to test the null hypothesis as stated below:

- **H_0:** Stakeholders have a neutral view of ZESCO Limited's current performance.

The hypothesis was comprehensively tested by examining whether there was no relationship between ZESCO's SOE status (independent variable) and performance indicators (dependent variables). Table 6.16 below is a breakdown of the chi-Square results of respondents' perception of ZESCO's performance.

Table 6.16 shows that ZESCO being an SOE and quality of electricity supply are extremely unlikely to be independent (χ^2=373.765, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and

χ^2=328.343, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between ZESCO being an SOE and quality of electricity occurring by chance alone was less than 5%. Therefore, there is very strong evidence to suggest that a relationship existed between ZESCO being an SOE and quality of electricity supply. Therefore, *H_0 was rejected.*

Table 6.16: Chi-Square Results of Stakeholders' Perception of ZESCO's Performance

Statistical Model	**Test Type**			**Business**	**Organisation**
Chi-Square Test: Specific – Quality of Electricity Supply (Ensuring Customer Safety)					
Chi-Square Test	H_0	There is no relationship between ZESCO being an SOE and quality of supply	Value (χ^2)	373.765	328.343
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Quantity of Electricity Supply (Adequacy of Supply)					
Chi-Square Test	H_0	There is a relationship between ZESCO being an SOE and quantity of supply	Value (χ^2)	135.175	362.790
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Financial Performance					
Chi-Square Test	H_0	There is no relationship between ZESCO being an SOE and its financial Performance	Value (χ^2)	974.595	496.966
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Productivity					
Chi-Square Test	H_0	There is a relationship between ZESCO being an SOE and its productivity	Value (χ^2)	544.063	535.364
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Competitiveness					
Chi-Square Test	H_0	There is a relationship between ZESCO being an SOE and its competitiveness	Value (χ^2)	241.546	41.011
			df	16	16
			Asymp. Sig. (2-sided)	.000	.001
			Decision	Reject H_0	Reject H_0

Source: Researcher's field survey (2019)

Table 6.16 also shows that ZESCO being an SOE and quantity of electricity supply are

extremely unlikely to be independent (χ^2=135.175, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=362.790, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between ZESCO being an SOE and quantity of electricity supply occurring by chance alone was less than 5%. Therefore, there was very strong evidence to suggest that a relationship existed between ZESCO being an SOE and quantity of electricity supply. Therefore, *H_0 was rejected*.

Table 6.16 also shows that ZESCO's being an SOE and its financial performance are extremely unlikely to be independent (χ^2=974.595, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=496.966, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between ZESCO being an SOE and its financial performance occurring by chance alone was less than 5%. Therefore, there was very strong evidence to suggest that a relationship existed between ZESCO's SOE status and its financial performance. *H_0 was rejected*.

Table 6.16 also shows that ZESCO being an SOE and its productivity are extremely unlikely to be independent (χ^2=544.063, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=535.364, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between ZESCO being an SOE and its productivity occurring by chance alone was less than 5%. Therefore, there was very strong evidence to suggest that a relationship existed between ZESCO being an SOE and its productivity. Therefore, *H_0 was rejected*.

Table 6.16 also shows that ZESCO being an SOE and its competitiveness are extremely unlikely to be independent (χ^2=241.546, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=41.011, df=16, Asymp. Sig. (2-sided)=0.001 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between ZESCO being an SOE and its competitiveness occurring by chance alone was less than 5%. Therefore, there was very strong evidence to suggest that a relationship existed between ZESCO being an SOE and its productivity. Therefore, *H_0 was rejected*.

The chi-square results all showed that contrary to the null hypothesis (H_0), stakeholders did not have a neutral view of ZESCO's performance. Rather, they had the view that ZESCO's SOE

status had an effect on its performance. As indicated by the results of regression analysis, stakeholders' views were that ZESCO's SOE status compromised its performance.

6.6. Chapter Summary

The chapter examined stakeholders' view of ZESCO's current performance as an SOE. The chapter was guided by the Agency Theory's position that SOEs performed poorly. The chapter used data collected from various stakeholders as well as literature reviewed from relevant documents. The study found that in line with the Agency Theory, the majority of the stakeholders had the view that ZESCO being an SOE compromised all performance indicators. In addition, based on the results from chi-square analysis, the null hypothesis "*H_0: Stakeholders have a neutral view of ZESCO Limited's current performance"* was rejected. The next chapter examines how ZESCO would perform once privatised.

CHAPTER SEVEN

PRIVATISATION OF ZESCO LIMITED AND ITS LIKELY PERFORMANCE

7.1. Introduction

The previous chapter examined stakeholders' view of ZESCO's current performance as an SOE. This chapter establishes whether privatising ZESCO would improve its performance. The chapter was guided by the Theory of Cyclical Change which posits that when one type of ownership and/or control does not yield desired results, there is need to change to a different type of ownership and/or control (Schlesinger, 1949 and Schlesinger, 1986). For instance, if a firm performs poorly as an SOE, then it should be privatised (Bresser-Pereira, 1993). This position was supported by the Agency Theory's assertion that private ownership and/control led to superior firm performance (Jensen and Meckling, 1976: 368). The assertion was based on the belief that the private owners' high desire to see return on their investment motivated them to closely monitor and control managers thus, ensuring high firm performance (Boycko et al.,1996: 317 and Estrin et al., 2009: 7). Since the study conclusively showed (in Chapter Six) that ZESCO performed poorly as an SOE, then the solution would be to privatise it.

Therefore, the objective of this chapter is *to establish whether privatising ZESCO Limited will improve its performance.* Both primary and secondary data were used. Primary data came from officials from various government institutions as well as owners/managers of businesses and organisations which represent domestic electricity consumers in Lusaka. Secondary data came from review of relevant documents. The objective was achieved by running frequency distributions, regression analysis and chi-square analysis to test the hypothesis that:

- **H_0:** Once privatised, ZESCO Limited's performance will remain the same.

The chapter is divided into five sections. Section one is the introduction. Section two analyses whether or not ZESCO's performance would improve if it were privatised. Performance was assessed by looking at quality, quantity, financial performance, productivity and competitiveness. Section three is regression analysis of stakeholders' perception of ZESCO's post-privatisation performance. Section four tests the hypothesis that *"once privatised, ZESCO Limited's performance will remain the same".* Section five is a summary.

7.2. ZESCO's Possible Performance if it Were Privatised

Just as the Agency Theory had posited, Chapter Six showed that ZESCO performed poorly as an SOE. It stands to reason that one would agree with the Agency Theory's other position that private ownership and/control leads to superior firm performance (Boycko et al.,1996: 317 and Estrin et al., 2009: 7), as well as the Theory of Cyclical Change assertion that ZESCO needed to be privatised if its performance were to improve (Bresser-Pereira, 1993). Therefore, this section attempts to determine whether stakeholders felt that ZESCO should be privatised. It also assesses whether its performance would improve if it were privatised. This was done by analysing the expected post-privatisation performance of ZESCO. Performance was assessed through quality and quantity of services as well as through financial performance, productivity and competitiveness.

7.2.1. Stakeholders' View of the Privatisation Strategy

As earlier mentioned, the Theory of Cyclical Change argues that if an enterprise performs poorly under one form of ownership/control, then the solution was to change to another form of ownership/control (Bresser-Pereira, 1993 and Schlesinger, 1949). In order to examine this assertion, a frequency distribution was produced to show stakeholders' opinion on whether privatisation was a good strategy for ZESCO. This is shown in Table 7.1 below.

Table 7.1: Government Policy of Privatisation is a Good Strategy for ZESCO limited

	Privatisation is a Good Strategy for ZESCO	**Businesses**	**Organisations**
Valid	Strongly agree	169 (35.6%)	123 (42.7%)
	Agree	141 29.7%)	72 (25.0%)
	Undecided	52 (10.9%	20 (6.9%)
	Disagree	50 (10.5%)	53 (18.4%)
	Strongly Disagree	63 (13.3%	20 (6.9%)
	Total	**475 (100%)**	**288 (100%)**

Source: Researcher's field survey (2019)

Table 7.1 above shows that 35.6% of the sampled businesses strongly agreed that privatisation was a good strategy for ZESCO, 29.7% agreed, 10.9% were undecided, 10.5% disagreed while 13.3% strongly disagreed. In addition, 42.7% of the domestic consumers strongly agreed that

privatisation was a good strategy for ZESCO, 25.0% agreed, 6.9% were undecided, 18.4% disagreed while 6.9% strongly disagreed. Therefore, the majority of the businesses (65.3%) and the majority of the domestic consumers (67.7%) either strongly agreed or agreed with the statement. This implied that the majority of the respondents were of the opinion that privatisation was a good strategy for ZESCO. The majority of the key informants equally shared this opinion. Having shown that stakeholders agreed with the privatisation strategy, the study then determined whether privatisation would improve ZESCO's performance.

7.2.2: Privatisation of ZESCO and Quality of Electricity Supply

A utility's post-privatisation performance can be assessed by examining whether there would be an improvement in the quality of services provided. In line with Hermann and Flecker (2009: 34), possible improvement in quality of electricity supplied by ZESCO after privatisation was assessed by looking at reliability of supply, fault restoration time and customer service.

7.2.2.1. Reliability of Supply after Privatisation

The study determined ZESCO's post-privatisation reliability of supply by looking at the frequency of interruptions in power supply. Table 7.2 below illustrates whether stakeholders felt that privatising ZESCO would reduce the frequency of interruptions in power supply.

Table 7.2: Privatising ZESCO Will Reduce Frequency of Interruptions in Power Supply

	Privatising ZESCO Will Reduce the Frequency of Interruptions in Power Supply	**Businesses**	**Organisations**
Valid	Strongly agree	164 (35.0%)	123 (42.6%)
	Agree	146 (31.2%)	71 (24.6%)
	Undecided	58 (12.4%)	22 (7.6%)
	Disagree	45 (9.6%)	54 (18.7%)
	Strongly Disagree	55 (11.8%)	19 (6.6%)
	Total	468 (100%)	289 (100%)

Source: Researcher's field survey (2019)

Table 7.2 above shows that 35.0% of the businesses strongly agreed that privatising ZESCO would reduce the frequency of interruptions in power supply, 31.2% agreed, 12.4% were undecided, 9.6% disagreed while 11.8% strongly disagreed. In addition, 42.6% of the domestic

consumers agreed that privatising ZESCO would reduce the frequency of interruptions in power supply, 24.6% agreed, 7.6% were undecided, 18.7% disagreed while 6.6% strongly disagreed. This meant that the majority of the businesses (66.2%) and the majority of the domestic consumers (67.2%) either strongly agreed or agreed with the statement. This opinion was equally shared by the majority of other interviewed informants. This implied that the majority of the stakeholders were of the opinion that privatising ZESCO would reduce the frequency of interruptions in power supply.

Similarly, literature revealed that most privatised utilities managed to significantly reduce interruptions in power supply. For instance, *CEC* managed to limit incidences of power blackouts with most interruptions mainly caused by ZESCO's unreliability (CEC, 2019: 40). Similarly, *Umeme* improved reliability of electricity supply in Uganda. Between 2005 and 2017, average power outage frequency and outage hours reduced by nearly 65% and 50%, respectively (Umeme Limited, 2019). *CIE* also substantially improved reliability of Ivory Coast's power supply with power interruptions only occurring 3.5 times per month and each lasting only a few hours (Eranove, 2019). This raised Ivory Coast's reliability of supply index to 4, well above sub-Saharan Africa's average of 1.6 (World Bank, 2020d: 17). *Veolia* improved *SEEG's* reliability of supply by reducing the frequency and duration of power interruptions. Consequently, Gabon's reliability of supply index rose to 3, above the average in sub-Saharan Africa (World Bank, 2020e: 15). Improvements in frequency of interruptions were also observed in privatised electricity utilities in Europe and Latin America (Van Gyes et al., 2009; Andres et al., 2006 and Balza et al., 2013).

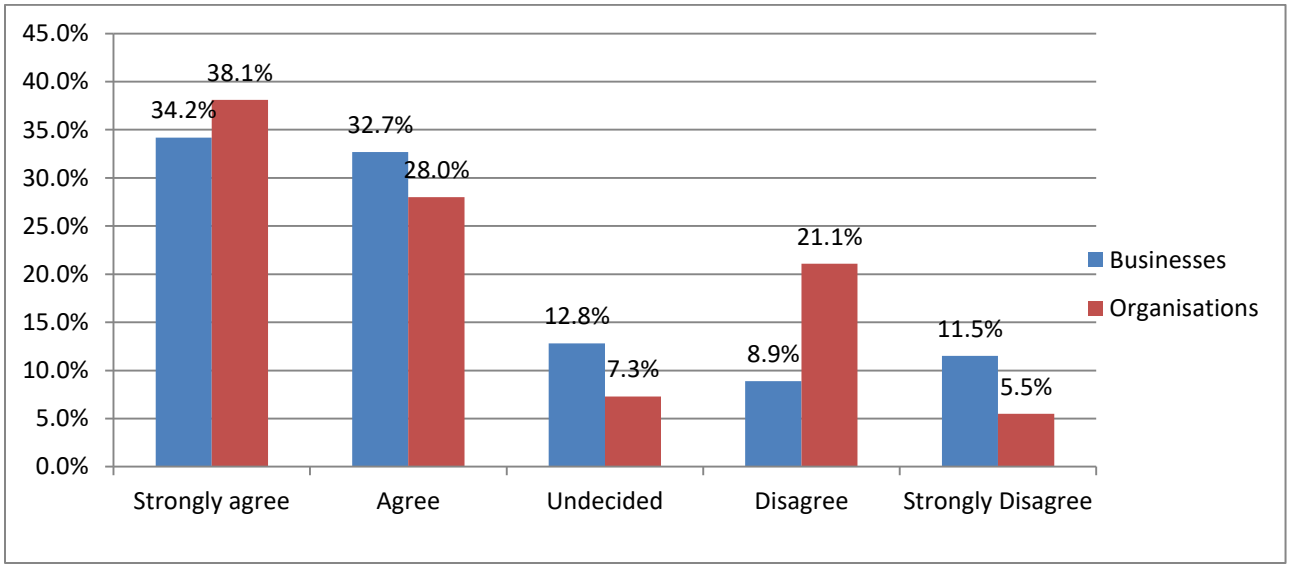
However, some utilities failed to improve reliability. For instance, Quiggin (2014) found that private owners failed to improve the quality of electricity supply in Australia. In addition, *ENEO's* average interruption duration increased by 10% (2018: 4 and ENEO, 2019: 3). Nigeria's privatised distribution systems experienced an average of 239 hours of power outages per month (World Bank, 2017b: 5). Nevertheless, Dubagari (2018) and the World Bank (2017b: 5) blame the failure on the privatisation process being ill-conceived as fundamental issues and challenges were not addressed beforehand. Instead, governments emphasised on making electricity accessible to the poor at the expense of quality. Power firms were unconcerned as they made money regardless of how reliable power supply was. Had the privatisation been carried out

correctly, these utilities would have equally seen improvement in reliability.

7.2.2.2. Fault Restoration Time

Privatisation was expected to improve fault restoration time by reducing the time it took ZESCO to restore electricity faults. Ideally, a utility should be able to repair faults within hours (within a day) of being reported (Hermann and Flecker, 2009). Figure 7.1 below shows responses on whether privatising ZESCO would improve fault restoration time.

Figure 7.1: Privatising ZESCO Will Improve Fault Restoration Time



Source: Researcher's field survey (2019)

Figure 7.1 shows that 34.2% of the businesses strongly agreed that privatising ZESCO would improve fault restoration time, 32.7% agreed, 12.8% were undecided, 8.9% disagreed while 11.5% strongly disagreed. In addition, 38.1% of the domestic consumers strongly agreed that privatising ZESCO would improve fault restoration time, 28.0% agreed, 7.3% were undecided, 21.1% disagreed while 5.5% strongly disagreed. This meant that the majority of the businesses (66.9%) and domestic consumers (66.1%) either strongly agreed or agreed with the statement. The majority of the key informants were equally of the same view. This implied that most stakeholders were of the opinion that privatising ZESCO would improve fault restoration time.

Similarly, literature showed that most of the privatised utilities managed to improve fault

restoration time. For instance, *CEC* improved response to system disturbances by repairing most faults within hours (CEC, 2019: 40). *Umeme* restored electricity faults within 16 hours of being reported (Umeme Limited, 2019). Similarly, *ENEO* (and *AES-Sonel*) reduced fault repair time from weeks to within 48 hours (ENEO, 2018: 15). *CIE* also drastically cut fault repair time to within a few days rather than weeks (Eranove, 2019). Under *Veolia*, *SEEG* improved efficiency in handling of electricity faults (World Bank, 2020e: 16). A similar trend was also observed in privatised electricity utilities in Asia, Europe and Latin America (Van Gyes et al., 2009; Andres et al., 2006 and Balza et al., 2013). For instance, wait time for repair reduced from 5 to 2 hours after privatising Chilean power companies (Kessides, 2012: 11).

Only Nigeria's privatised distributors failed to improve fault restoration time. Average fault restoration time increased as DisCos became inefficient at responding to customer complaints (Audu et al., 2017: 1226 and Dubagari, 2018). However, this failure was the result of a poorly executed privatisation process that failed to address fundamental issues and challenges. The government's emphasis on making electricity widely accessible to the poor resulted in DisCos being overwhelmed. One would be justified in assuming that had the privatisation been carried out correctly, Nigeria's DisCos would have also managed to improve fault restoration time.

7.2.2.3. Customer Service

ZESCO's post-privatisation performance in terms of customer service was assessed through customer safety as well as easiness in making service inquiries or complaints. Table 7.3 below shows responses on whether privatising ZESCO would improve customer safety.

Table 7.3: Privatising ZESCO Will Improve Customer Safety

	Privatising ZESCO Will Improve Customer Safety	**Businesses**	**Organisations**
Valid	Strongly agree	152 (31.8%)	131 (46.0%)
	Agree	148 (31.0%)	74 (26.0%)
	Undecided	93 (19.5%)	26 (9.1%)
	Disagree	43 (9.0%)	42 (14.7%)
	Strongly Disagree	42 (8.8%)	12 (4.2%)
	Total	478 (100%)	285 (100%)

Source: Researcher's field survey (2019)

The table shows that 31.8% of the businesses strongly agreed that privatising ZESCO would improve customer safety, 31.0% agreed, 19.5% were undecided, 9.0% disagreed while 8.8% strongly disagreed. In addition, 46.0% of the domestic consumers strongly agreed that privatising ZESCO would improve customer safety, 26.0% agreed, 9.1% were undecided, 14.7% disagreed while 4.2% strongly disagreed. This meant that the majority of the businesses (62.8%) and domestic consumers (72.0%) either strongly agreed or agreed with the statement. Similarly, the majority of the key informants opined that customer safety would improve if ZESCO was privatised. This implied that most stakeholders opined that privatising ZESCO would improve customer safety.

Similarly, reviewed literature showed that most privatised utilities improved customer safety. For instance, *CEC* had not had any electricity fatalities in ten years (CEC, 2019: 34). *Umeme* reduced annual fatalities from 15 to only 1 (Umeme Limited, 2018: 32 and Umeme Limited, 2019: 21). Additionally, *CIE* improved customer safety through the use of concrete rather than wooden electricity pylons. A similar trend was also observed in privatised electricity utilities in Asia, Europe and Latin America (Van Gyes et al., 2009; Andres et al., 2006 and Balza et al., 2013).

Only Nigeria's distribution networks had abnormal frequencies and voltage recordings which posed a constant danger to the public (World Bank, 2017b: 5). However, once again, Nigeria's failure was the result of the privatisation process being poorly executed. The government's emphasis on making electricity widely accessible to the poor overwhelmed DisCos. One would be justified in assuming that had the privatisation been carried out correctly, Nigeria's DisCos would have managed to improve customer safety. Table 7.4 below shows responses on whether privatising ZESCO would make it easy to make service inquiries or complaints.

Table 7.4: Privatising ZESCO Will Make It Easy to Make Service Inquiries or Complaints

	Privatising ZESCO Will Make it Easy to Make Inquiries	**Businesses**	**Organisations**
Valid	Strongly agree	154 (32.7%)	110 (38.5%)
	Agree	159 (33.8%)	82 (28.7%)
	Undecided	64 (13.6%)	29 (10.1%)
	Disagree	44 (9.3%)	50 (17.5%)
	Strongly Disagree	50 (10.6%)	15 (5.2%)
	Total	**471 (100%)**	**286 (100%)**

Source: Researcher's field survey (2019)

The table shows that 32.7% of the businesses strongly agreed that privatising ZESCO would make it easy to make service inquiries or complaints, 33.8% agreed, 13.6% were undecided, 9.3% disagreed while 10.6% strongly disagreed. In addition, 38.5% of the domestic consumers strongly agreed that privatising ZESCO would make it easy to make service inquiries or complaints, 28.7% agreed, 10.1% were undecided, 17.5% disagreed while 5.2% strongly disagreed. This meant that the majority of the businesses (66.5%) and the majority of the domestic consumers (67.2%) either strongly agreed or agreed with the statement. The majority of the key informants held the same view. This implied that most of the stakeholders were of the view that privatising ZESCO would make it easy to make service inquiries or complaints.

Similarly, reviewed literature also showed that most of the privatised utilities in Africa, Asia, Europe and Latin America managed to improve customer satisfaction by improving response to service inquiries or complaints. This was the result of establishing full time call centre and online presence which improved handling of customer queries and complaints. *ENEO, Umeme, CIE and Veolia* all managed to improve customer satisfaction. For instance, both *ENEO* and *Umeme* managed to increase customer satisfaction from around 40% to 67% (ENEO, 2019: 13 and Umeme Limited, 2019: 21). About 88% of the customers in privatised European countries were satisfied with the quality of electricity (Van Gyes et al., 2009: 77). Chisari et al., (1999) found a 10% improvement in customer satisfaction with the quality of electricity distribution following the privatisation of utilities in Argentina. Andres et al. (2006: 16) also found that changes in ownership generated 10.6% annual improvements in the quality of electricity in Latin America.

However, in Nigeria and Australia, privatisation compromised customer satisfaction by increasing challenges encountered in making service inquiries (Dubagari, 2018: 27 and Quiggin, 2014). Australia's electricity privatisation led to a sharp rise in customer dissatisfaction with annual customer complaints growing by nearly 10,000% (Quiggin, 2014: 5). However, most of the complaints were related to outages. The outages were not as a result of the changes in ownership structure but rather shortage of raw materials needed to increase generation. Rather than blaming privatisation, the Australian Government needed to come up with a policy that ensured that enough gas was available to generate electricity and thus, reduce outages.

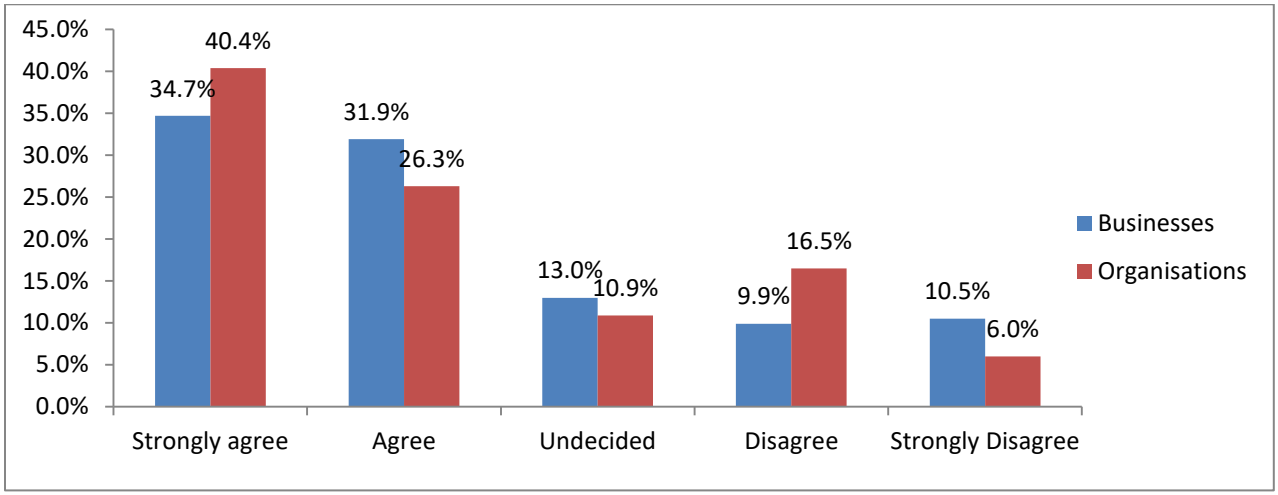
7.2.3. Privatisation of ZESCO and Quantity of Electricity

The study assessed whether quantity of electricity supplied by ZESCO would improve if it were privatised. Quantity was assessed by analysing installed generation capacity compared to actual demand; variation in installed generation capacity over a period of time; network length; and the national electrification rate (Estrin and Pelletier, 2018: 90 and Hermann and Flecker, 2009: 34).

7.2.3.1. Installed Generation Capacity Compared to Actual Demand

The majority of the stakeholders agreed that privatising ZESCO would boost the country's installed capacity significantly above peak demand. Most informants were of the view that ZESCO would be able to construct more power plants. Informants also noted that the accompanying market liberalisation would remove ZESCO's dominance thus, encouraging IPPs to construct more power plants. The majority of the respondents also held a similar view as shown in Figure 7.2 below.

Figure 7.2: Privatising ZESCO Will Improve Quantity of Electricity Supply



Source: Researcher's field survey (2019)

Figure 7.2 above shows that 34.7% of the businesses strongly agreed that privatising ZESCO would improve quantity of electricity supply, 31.9% agreed, 13.0% were undecided, 9.9% disagreed while 10.5% strongly disagreed. In addition, 40.4% of the domestic consumers strongly agreed that privatising ZESCO would improve quantity of electricity supply, 26.3% agreed, 10.9% were undecided, 16.5% disagreed while 6.0% strongly disagreed. This meant that

the majority of the businesses (66.6%) and the majority of the domestic consumers (66.7%) either strongly agreed or agreed with the statement. This implied that the majority of the respondents were of the opinion that privatising ZESCO would improve quantity of electricity supply.

Similarly, literature revealed that most utilities in Africa, Europe and Latin America constructed more power plants after being privatised. They managed to increase installed generation capacity well above peak demand. For instance, installed electricity generation capacity in Ivory Coast and Uganda was 64% and 15% more than the peak demand, respectively (Eranove, 2019 and Umeme Limited, 2019: 17). Likewise, Kessides (2012: 4) found Colombia's electricity privatisation to have created an incentive for quantitative surges in production. This enabled the countries to meet local demand and export excess power.

However, Nigeria and Australia had the opposite experience. Nigeria's GenCos compromised electricity delivery as available generated power steeply declined by over 30% (World Bank, 2017b: 4). Although private electricity generators had managed to increase capacity in Australia, it failed to meet demand (Quiggin, 2014). However, as Verrender (2017) pointed out, the failure was the result of shortage of raw materials. Suppliers preferred exporting gas rather than selling it to local electricity generators. Had the Australian Government put in incentives to discourage gas exports, private generators would have managed to increase generation.

7.2.3.2. Variation in Installed Generation Capacity

The majority of the stakeholders agreed that privatising ZESCO would help it to increase its installed capacity. Firstly, it would be able to construct more power plants. They noted that ZESCO's installed generation capacity in the next decade would rise significantly, more than the 29% that the company managed between 2009 and 2019. Secondly, market liberalisation would encourage more IPPs to construct more power plants. As such, rather than demand outstripping supply by as early as 2021, ZESCO and IPPs would be able to meet the increase in the country's future demand. This would also enable the country to become a regional power hub.

Similarly, literature revealed that private generators in Africa, Australia, Europe and Latin America managed to significantly increase installed capacity by constructing more power plants.

For instance, in the last decade, *LHPC* increased its installed generation capacity by nearly 50% (ERB, 2020a: 2 and Lunsemfwa Hydro Power Company, 2010). *Eskom* increased its installed generation capacity by 58% (Umeme Limited, 2019: 17). Spurred by private sector investments, Uganda's installed capacity more than tripled (Umeme Limited, 2019: 17). Following privatisation, *AES-SONEL* (and later *ENEO)* constructed more power plants thus, increasing installed capacity by 21.9% (AES, 2013: 1 and ENEO, 2019: 3). The entry of IPPs further increased Cameroon's total installed capacity by 66.1% (AES, 2013: 1 and ENEO, 2019: 3). *CIE* increased generation capacity of *EECI*'s power plants by 91.7% and together with IPPs more than tripled Ivory Coast's installed generation capacity (World Bank, 2017a and Eranove, 2019). *Veolia's* investments in new plants improved *SEEG's* installed capacity by 11.3%. With the addition of IPPs, Gabon's total installed electricity capacity grew by 82% (Oxford Business Group, 2018). Similar improvements were observed among privatised generators in Australia, Europe and Latin America (Van Gyes et al., 2009; Quiggin, 2014 and Balza et al., 2013). For instance, between 1992 and 2002, Argentina's installed capacity rose by 77% (Pollitt, 2008).

However, large investment amounts and long construction time caused most privatised utilities in Asia to reduce investment in generation facilities (Lee et al., 2018). Nevertheless, the increase in installed capacity still managed to meet demand. It is, therefore, clear that privatising generation does result in significant increase in installed capacity enabling the country to meet future demand.

7.2.3.3. Variation in Network Length

The majority of the stakeholders agreed that privatisation would increase ZESCO's network length. Firstly, the company would be able to construct more transmission and distribution lines as it attempted to connect more customers. They anticipated ZESCO to add more network length than it achieved between 2009 and 2019. Secondly, stakeholders felt that with market liberalisation, more transmitters and distributors would enter the market while existing ones would expand their areas of operation. For instance, *CEC* might be permitted to construct transmission lines outside the *Copperbelt*, and *NWEC* might be allowed to construct distribution lines beyond residential mining townships in *North-Western Province*. However, one informant expressed concern that in private hands, ZESCO might not expand the network in rural areas.

This was because private utilities were motivated by profit and would thus, find rural areas to be financially unattractive on account of being sparsely populated with limited demand. This would force rural dwellers to continue depending on expensive but ineffective solar powered micro grids.

Similarly, literature revealed that privatised utilities managed to significantly, increase the lengths of their transmission and distribution networks. For instance, although *CEC* was restricted to the *Copperbelt*, it still managed to increase the length of its transmission line by 22.1% (ZESCO Limited, 2010 and CEC, 2019: 10). *Umeme*, *CIE* and *Veolia* all doubled the lengths of their transmission and distribution networks (Eranove, 2019; Umeme Limited, 2019: 16 and Veolia 2018). A similar trend was observed in Australia, Asia, Europe and Latin America (Kessides, 2012: 11; Quiggin, 2014 and Van Gyes et al., 2009). Although rural areas were sparsely populated and with limited demand, private utilities still expanded networks in rural areas. This allowed more customers in both rural and urban areas to be added to the grid.

7.2.3.4. Variation in National Electrification Rate

As noted earlier, Zambia's national electrification rate of 33% (67% urban and 4% rural) was vastly below the 47.7% (78.1% urban and 31.5% rural) obtaining in sub-Saharan (Woods et al., 2019: 28 and World Bank, 2020a). The majority of the stakeholders noted that privatising ZESCO would accelerate electrification in the country. Once again, this would be achieved through improvement in ZESCO's electrification drive as well as entry of new generators, transmitters and distributors. Most stakeholders agreed this would enable achievement of the government's target of achieving universal access in urban areas and 51% in rural areas by 2030. One informant stated that *"we have tried and failed with ZESCO so far. I believe privatisation and resulting liberalisation gives us the best chance to achieve the target by 2030".* The many privately owned rural micro grids meant that rural areas were attractive to private utilities.

Similarly, literature showed that most privatised utilities managed to raise the electrification rates above regional averages. For instance, Nigeria's DisCos increased national electrification rate to 58% (World Bank, 2017b: 7). *AES-SONEL (*and later *ENEO)* more than doubled connections thus, raising national electrification from 15% to 63% (World Bank, 2016: 2, AES, 2013: 1 and ENEO, 2019: 3). Eranove (2019) and the World Bank (2018) noted that *CIE* increased the

proportion of Ivorians accessing electricity from only 36.7% (69% urban and 13.6% rural) to 64% (92% urban and 38% rural). *Veolia* more than doubled Gabon's national electrification rate from about 40% to 92% (IFC, 2010: 2, Power Africa, 2017 and Veolia 2018). Consequently, Gabon's urban electrification rose from 72% to 97% while rural electrification rose from 10% to 55% (IFC, 2010: 2; Power Africa, 2017; Veolia 2018 and World Bank, 2020e).

Similarly, privatised utilities raised electrification rate to 100% in Europe, 100% in Australia and 95% in Latin America, well above the 88.8% world average (World Bank, 2020a). Although *Umeme* failed to increase Uganda's national electrification rate above average the average, in sub-Saharan Africa, it still managed to more than quadruple customer connections. This increased Uganda's national electrification rate from a paltry 4% to 26% (Umeme Limited, 2018: 24 and Umeme Limited, 2019: 16, 22). It also raised urban access from 36% to 57.5% and rural access from 1% to 19% (Mawejje, et al., 2012: 22-23; Power Africa, 2018 and World Bank, 2020a). Neither limited effective demand nor sparse population discouraged private distributors from increasing connections in rural areas. This is because in an attempt to increase financial performance, private utilities connected more customers. The more customers were connected to the grid, the higher the electrification rate.

7.2.4. Privatisation of ZESCO and Financial Performance

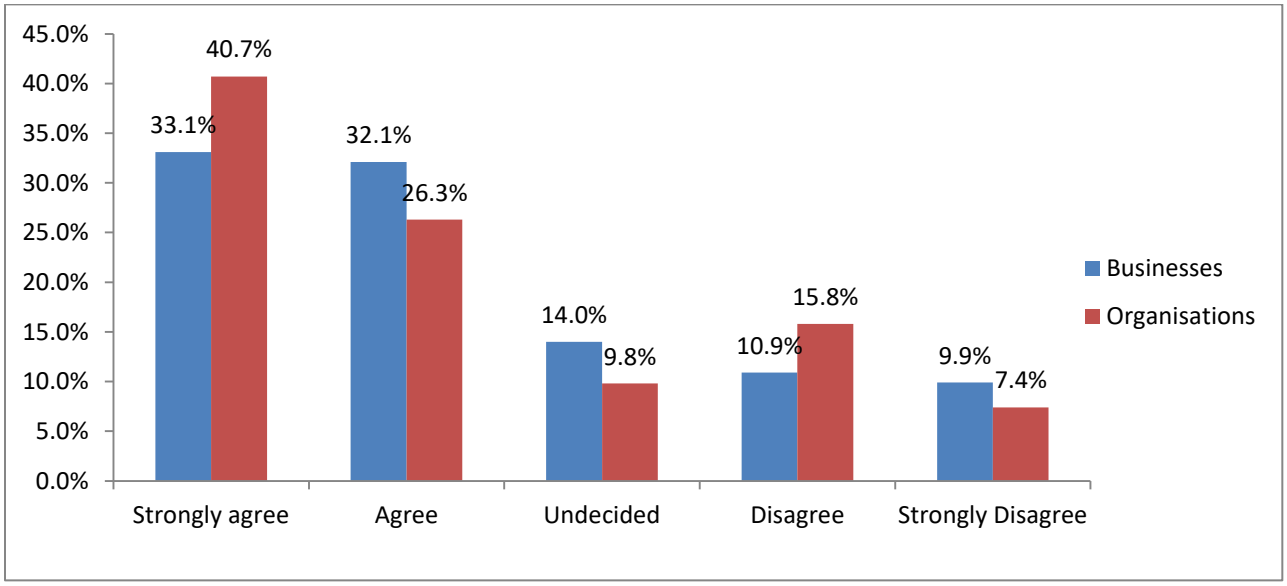
The study assessed whether ZESCO's financial performance would improve if it were privatised. Financial performance was assessed by analysing the levels of investment in electricity infrastructure and profitability (Megginson, et al., 1994 and Ghulam, 2012).

7.2.4.1. Investment in Infrastructure

Proponents of privatisation argue that unlike the government, private investors have the financial muscle to make needed investments in generation, transmission and distribution infrastructure (Kirby, 2013). Figure 7.3 below depicts respondents' views on whether privatising ZESCO would improve investment in infrastructure. The figure shows that 33.1% of the businesses strongly agreed that privatising ZESCO would improve investment in infrastructure, 32.1% agreed, 14.0% were undecided, 10.9% disagreed while 9.9% strongly disagreed. In addition, 40.7% of the domestic consumers strongly agreed that privatising ZESCO would improve

investment in infrastructure, 26.3% agreed, 9.8% were undecided, 15.8% disagreed while 7.4% strongly disagreed. This meant that the majority of the businesses (65.2%) and the majority of the domestic consumers (67.0%) either strongly agreed or agreed with the statement. This implied that the majority of the respondents were of the opinion that privatising ZESCO would improve investment in electricity infrastructure.

Figure 7.3: Privatising ZESCO Will Improve Investment in Infrastructure



Source: Researcher's field survey (2019)

Key informants equally agreed that if privately run, ZESCO would be able to raise investment capital. It could be able to raise funds from equity markets, private finances, reinvestment of profits, as well as tapping into internal and capital markets by floating new shares. This would especially be the case if the company was sold to investors with the right business acumen.

Literature equally, showed that privatised utilities managed to invest in improving infrastructure. For instance, *LHPC* invested in major upgrades and rehabilitation of machines at both of its power plants. It also raised US$700 million for the anticipated construction of a 300 MW power station (Phiri and Ziba, 2018). Through prudent investments, *CEC* grew its power infrastructure assets by 784% (CEC, 2019: 10 and ZDA, 2010: 34). *Umeme* invested over US$627 million to improve Uganda's distribution system, significantly, above the concession agreement (Umeme Limited, 2019: 11). *AES-SONEL* equally, spent over US$510 million in rehabilitating and

expanding electricity infrastructure (World Bank, 2017a: 2). *Veolia* invested over US$600 million in improving *SEEG's* electricity infrastructure (Veolia, 2018). This was despite the concession agreement requiring the company to only spend US$130 million (IFC, 2010: 2). Under the concession agreement, major investments were the responsibility of the Ivorian Government. Nevertheless, *CIE* still managed to invest in new distribution equipment as well as switch from wood to the safer and durable concrete pylons (Eranove, 2019).

Privatised utilities in Europe massively invested in modernising electricity supply. British utilities invested in shifting production technology from coal to gas and nuclear sources (Jefferys et al., 2009: 59). Investment also surged in most countries in Latin American. For instance, in Colombia the private electricity market significantly increased power generation and distribution with US$6 billion in foreign investment (Kessides, 2012: 4). In Argentina, high investments increased generation capacity by 75% in addition to renovation and expansion of distribution networks (Kessides, 2012: 4).

However, some privatised utilities failed to make adequate investments. *Eskom* only managed to invest 29% of the required investments in the concession agreement (Businge, 2019). This compromised the power plants' aged dams thus, reducing their life spans. Nigeria's electricity utilities failed to access financing to make necessary investments (Dubagari, 2018: 28). Australian firms diverted finances to management and marketing rather investing in improving infrastructure (Quiggin, 2014). Uncertainty and long construction time made privatised Asian enterprises reduce investment in electricity facilities (Lee et al., 2018). Nevertheless, it is important to note that although private enterprises reduced subsequent investments, their pace of investments were above what state owned utilities would have managed.

7.2.4.2. Profitability

Proponents of privatisation argue that unlike the government, private owners are better equipped at focusing on maximising profit as this increased their share of dividend (Abioye, 2016 and Muogbo, 2013: 81). This view was equally shared by most of ZESCO's stakeholders who agreed that ZESCO would be profitable under private ownership. For instance, one informant stated that "*private investors are good at making profit because that is literally their goal*". Another added that *"ZESCO would improve revenue collection especially from government institutions"*.

Another noted that "*private investors would make economic rather than costly political decisions*". This was also the position of most respondents as depicted in Table 7.5 below.

The table shows that 32.9% of the businesses strongly agreed that privatising ZESCO would improve its profitability, 33.6% agreed, 12.6% were undecided, 9.7% disagreed while 11.3% strongly disagreed. In addition, 41.1% of the domestic consumers strongly agreed that privatising ZESCO would improve its profitability, 27.0% agreed, 8.1% were undecided, 18.2% disagreed while 5.6% strongly disagreed. This meant that the majority of the businesses (66.5%) and domestic consumers (68.1%) either strongly agreed or agreed with the statement. This implied that most respondents were of the opinion that privatising ZESCO would improve its profitability.

Table 7.5: Privatising ZESCO Will Improve Its Profitability

	Privatising ZESCO Will Improve Its Profitability	**Businesses**	**Organisations**
Valid	Strongly agree	146 (32.9%)	117 (41.1%)
	Agree	149 (33.6%)	77 (27.0)
	Undecided	56 (12.6%)	23 (8.1%)
	Disagree	43 (9.7%)	52 (18.2%)
	Strongly Disagree	50 (11.3%)	16 (5.6%)
	Total	**444 (100%)**	**185 (100%)**

Source: Researcher's field survey (2019)

Similarly, literature revealed that most privatised utilities became profitable as owners were able to maximise revenue while cutting costs. For instance, *LHPC* remained profitable despite selling its power at low tariffs (Owen, 2016). *CEC* saw over 50% annual improvements in revenue. This enabled C*EC* to move from loses of US$134 million in 1997 to annual profits of about US$26 million by 2018 (ZDA, 2010: 34 and CEC, 2019: 15). *Umeme* increased revenue collection by 49% (from 50%, at the start of the concession, to 99% in 2018) thus, making it profitable (Umeme Limited, 2018: 10 and Umeme Limited, 2019: 16). According to Dubagari (2018), Nigeria's DisCos increased revenue collection by 22% (from 32% in 2013 to 54% in 2016). In Cameroon, *AES-SONEL* (and latter *ENEO*) grew revenue collection from 50% in 2002 to 101% in 2018, enabling the company to become profitable (ENEO, 2019 and World Bank, 2017a).

Although tariffs were not cost reflective, *CIE* remained profitable due in part to an over 90% bill

collection rate (Eranove, 2019). Prior to privatisation, *SEEG's* losses accumulated in excess of US$100 million (IFC, 2010: 2). Under *Veolia*, *SEEG* became profitable enabling it to pay dividends of 20%, well above the contractually agreed 6.5% (IFC, 2010: 2 and Veolia, 2018). In Australia, private investors in electricity supply had the best profits, making around 10% returns on their investments (Quiggin, 2014). Equally, privatised utilities in Europe and Latin America also became highly profitable (Jefferys et al., 2009: 59 and Kessides, 2012: 4).

However, despite improved revenue collection, Nigeria's electricity sector experienced massive loses. For instance, losses rose by 121% between 2015 and 2016 and over 233% between 2016 and 2017 (Adedeji, 2017: 200). However, it was important to note that the poor financial performance was the result of cost unreflective tariffs. Had the Nigerian government approved appropriate tariffs, utilities could have been transformed into admirable financial performers.

7.2.5. Privatisation of ZESCO and Productivity

The study assessed whether ZESCO's productivity would improve if it were privatised. Productivity was assessed by analysing whether operational costs, utilisation of labour and utilisation of infrastructure would improve after privatisation (Hermann and Flecker, 2009:58; Wong and Almeida, 2014 and Varley, 2009).

7.2.5.1. Variation in Cost of Operation

Ghulam (2012) noted that private enterprises always looked for ways of trimming operational costs without compromising other productivity aspects. The majority of the stakeholders agreed that some of the costs facing ZESCO were the result of poor management, government bailouts and political interference. These costs would be eliminated under private management. Management would be motivated to cut operational costs owing to their profit motive. Not only that, once private managers realised that government would not bail them out of financial problems, they would be pressured to cut costs. The company would also be insulated from being used by political leaders as a cash-cow to fund political campaigns and reward supporters.

Similarly, literature revealed that most privatised utilities managed to lower operational costs. For instance, *Eskom* managed to keep the costs of power generation at US¢1.5, tremendously lower than the average of US¢8.0 incurred by IPPs (Businge, 2019). *Umeme* also managed to

achieve a 53% reduction in costs per customer (Umeme Limited, 2019: 11). Innovation helped privatised utilities in Australia, Asia, Europe and Latin America to minimise costs of supplying electricity. For instance, shift from coal to hydro, gas and nuclear improved efficiency in Sweden, Germany and the UK (Council of European Energy Regulators, 2017 and Flecker and Hermann, 2009: 35).

However, some African utilities failed to significantly reduce costs. Nigeria's GenCos and DisCos failed to keep costs low, leading to escalation in loses. This forced the Nigerian Government to heavily subsidise the power companies (Harper, 2015 and World Bank, 2017b). Similarly, the Ugandan Government paid *Umeme* US$4.5 million for every percentage lost in its distribution system (Businge, 2019). This led to suspicions that *Umeme* was deliberately failing to reduce some of its distribution costs. It is important to note that the presence of subsidies discouraged some African utilities from fully committing to reducing operational cost. The solution was for the government to phase out subsidies. Because once utilities were informed that they would not be bailed out with subsidies, they would be motivated to keep costs in check.

7.2.5.2. Variation in Utilization of Labour

Privatisation allows utilities to improve labour utilisation through reducing employ numbers, hiring quality personnel as well as application of technology and innovation (Chisari et al., 1999 and Hermann and Flecker, 2009:58). Stakeholders observed that ZESCO had a bloated workforce full of unqualified employees appointed on either patronage or political grounds. They, therefore, expected that private owners would be able to streamline the workforce and fill it with qualified personnel. The company would also be able to invest in technological innovations that are not labour intensive. One informant noted that *"once electricity infrastructure is made with durable technology, ZESCO would no longer need to employee a host of employees to maintain and repair them"*. This would lead to an increase in the number of customers as well as installed capacity per employee.

Literature revealed that privatised utilities improved labour utilisation through technological innovations and trimming of employee numbers. For instance, after digitising operations, *LHPC* was able to run both of its power plants with only 58 employees (LHPC, 2010 and Phiri and Ziba, 2018). Through skills development and modernisation of machinery, *CEC* reduced its

workforce by 49% (CEC, 2019: 15). Similarly, *Eskom* managed to cut employee numbers by half (Businge, 2019). *Umeme* connected more customers while keeping employee numbers in check. This enabled *Umeme* to increase labour productivity by over 450% over a 13-year period (Umeme Limited, 2019: 22). *CIE* and *Veolia* improved labour productivity by reducing the labour force and investing in human resource training and development (Eranove, 2019 and Veolia, 2018). Thinning employee numbers and technological innovations helped private European suppliers to a 6% increase in labour productivity (Flecker and Hermann, 2009: 59 and Council of European Energy Regulators, 2017). Privatised power utilities in Latin America achieved a 38.1% reduction in their labour force (Andres et al., 2006: 15). This led to a 5.5% annual rise in both connections per employee and output per employee (Andres et al., 2006: 15).

However, *AES-SONEL* and Australian utilities failed to improve utilisation of labour. *AES-SONEL* remained overstaffed as it failed to make the 50% staffing cuts necessary to optimise labour utilisation (ENEO, 2019). In the case of Australia, utilisation of labour significantly, reduced on account of poor staff training as well as over employment of support staff (Quiggin (2014). Nevertheless, the *AES-SONEL* and Australian cases are outliers rather than the norm. The failures were the result of poor management decisions in these specific utilities. In addition, *AES-SONEL's* labour utilisation was actually better than when it was under government control.

7.2.5.3. Variation in Utilisation of Infrastructure

Privatisation would lead to improved infrastructure utilisation owing to private firms' efficiency (Wong and Almeida, 2014). ZESCO's stakeholders also agreed that privatisation would improve the company's infrastructure utilisation. They noted that under private ownership, ZESCO would generate at near maximum capacity. Unit Capability Factor would continue being above 90% thus, ensuring that generation plants were capable of generating near their total installed capacity. Both Availability of Generation Plant and Capacity Factor would rise as management would use appropriate technology and undertake regular maintenance. Stakeholders also noted that private management would reduce system loses. One informant noted that *"both LHPC and CEC improved infrastructure utilisation after going private. That is evidence that ZESCO could possibly fair the same under private management"*. This would especially be the case if competition improved and private owners were given the responsibility of making major

investments in maintaining and upgrading the infrastructure.

Similarly, literature revealed that some utilities improved utilisation of electricity infrastructure. For instance, *LHPC* rehabilitated and upgraded its two power plants enabling them to operate at over 90% capacity (ERB, 2020b, LHPC, 2010 and Phiri and Ziba, 2018). *CEC* managed to reduce its transmission loses to 2.1%, less than half of the 5% transmission losses experienced by ZESCO (ERB, 2020b: 51 and 81). Save for periods of low water levels, *Eskom* operated its two power plants at full capacity (Businge, 2019 and Mawejje et al., 2013: 129). According to Umeme Limited (2019: 16 and 21), *Umeme* managed to reduce distribution losses by over 21% (from 38% in 2005 to 16.6% in 2018). World Bank (2018) also noted that *AES-SONEL* managed to reduce Cameroon's transmission and distribution loses by nearly 15% (from 25.7% in 2001 to 11% in 2014). *ENEO's* advanced maintenance programmes improved utilisation of its generation plants by increasing its Availability of Generation Plant from around 70% to over 90% (ENEO, 2018: 17 and 30). Similarly, *CIE* and *Veolia* managed to keep their plants' performances at near perfect (Eranove, 2019 and Veolia, 2018). Privatised European utilities improved transmission and distribution thus, reducing loses below 10%, lower than the 12% international average (Council of European Energy Regulators, 2017). Australian utilities also saw gains in infrastructure capacity utilisation (Quiggin, 2014).

Nevertheless, some utilities failed to improve infrastructure utilisation. Rundown infrastructure led to Nigeria's DisCos experiencing a 1% rise in distribution loses (World Bank, 2020a). GenCos only managed to generate power at only 42% of their installed capacity (World Bank, 2017b: 4 and Dubagari, 2018). According to ENEO (2018: 17) and ENEO (2019: 13), in Cameroon, *ENEO* reversed *AES-SONEL's* progress leading to distribution losses increasing by 20.1% in just four years (from 11% in 2014 to 31.1% in 2018). *CIE* managed to lower transmission and distribution losses from 18.4% in 1990 to 11.8 % in 1997. However, aging infrastructure and pilferage raised loses to 22% by 2018 (World Bank, 2020a). Similarly, infrastructure dilapidation led to *Veolia* failing to improve the performance of *SEEG's* transmission and distribution system resulting in a 6% increase in system loses (World Bank, 2020a). Similar trends were observed in Asia and Latin America (Andres et al., 2006: 15 and Zhang et al., 2008: 182). As a case in point, system losses for utilities in Latin America increased by 1.3% after privatisation (Andres et al., 2006: 15).

It is important to note that poor performance in the utilisation of infrastructure was the result of poor concession agreements, which gave government the responsibility of making major investments. Governments' failure to make investments to upgrade infrastructure resulted in their dilapidation and thus, reduced utilisation. Had concession agreements given the responsibility of major investments to private concessioners, investments would have been made and infrastructure utilisation would have improved. Poor performance in Asia was the result of utilities exercising monopoly rather than improving efficiency. The solution was to ensure competition.

7.2.6. Privatisation of ZESCO and Competitiveness

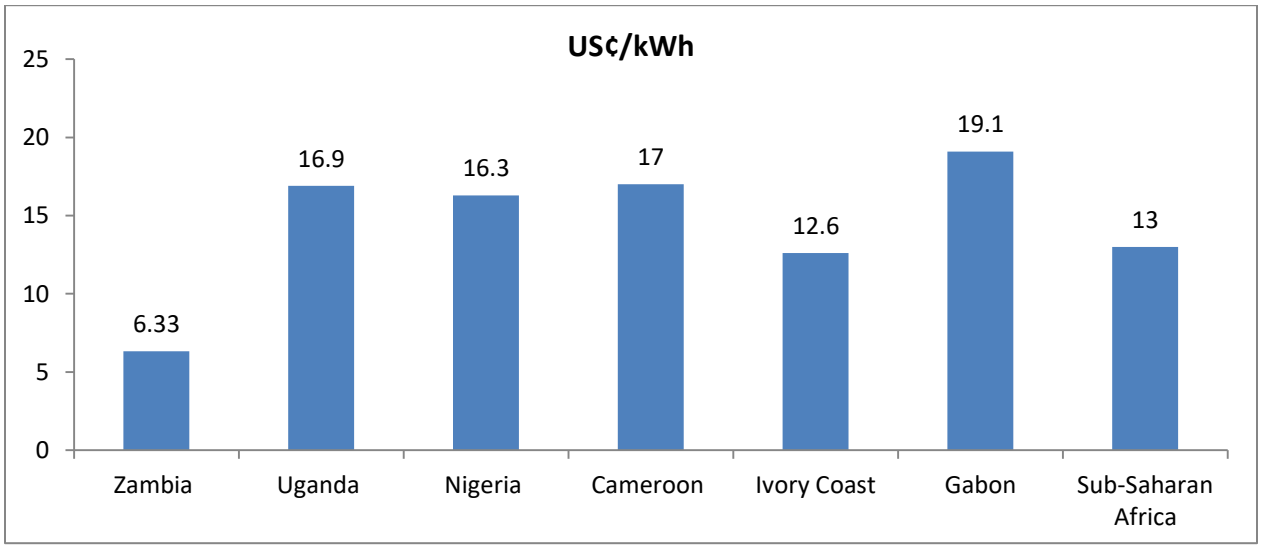
If privatisation is accompanied by liberalisation, then the entry of more enterprises would motivate privatised enterprises to make advancements so as to be competitive. This could be by lowering the price of their offering or increasing market share (Bullock, 2005 and Ketels, 2016: 13). The study assessed whether privatising ZESCO would improve its competitiveness by reducing tariffs while increasing its market share in generation, transmission and distribution.

7.2.6.1. Variation in Average Electricity Tariffs

According to Estrin and Pelletier (2018: 90), privatisation can lead to a fall in tariffs if it is accompanied by increased competition. If private management led to efficiency, some of the savings can be passed on to consumers. However, utility privatisation can lead to increase in tariffs if they were previously below cost-recovery level (Estrin and Pelletier, 2018: 90). The hikes would likely increase the burden on poor consumers (Birdsall and Nellis, 2003).

As earlier indicated in Chapter Six (pages 153 and 154), ZESCO's tariffs were below cost-recovery level. In addition, as can be seen in Figure 7.4 below, Zambia's tariffs were lower than in all African countries with privatised electricity utilities. This implied that if ZESCO was privatised, tariffs would likely increase significantly. This is because private owners would want to set tariffs that enabled them to maximise profit.

Figure 7.4: Electricity Tariffs (US¢/kWh) from Selected Countries in sub-Saharan Africa



Source: Researcher's own interpretation of reviewed literature

Literature indicated that in some countries, tariffs initially reduced immediately after privatisation, before rising overtime. Utilities began to make constant demands for tariff hikes. Some utilities even deliberately cut power to force the hikes (Hall, 2005: 15). For instance, immediately after privatisation, power utilities in Latin America reduced distribution tariffs by 9.5% (Chisari et al., 1999). However, prices rose overtime as private power utilities gradually forced up tariffs (Hall, 2005: 15). Similarly, upon signing the concession, *Veolia* cut electricity tariffs by 17.5% (IFC, 2010: 2). But by 2019, tariffs had skyrocketed to about 47% above the average in sub-Saharan Africa (World Bank, 2020e: 16). Other African countries saw tariffs rising immediately after privatisation. Consequently, most of them had tariffs higher than the average for sub-Saharan Africa. Tariffs in Cameroon, Uganda and Nigeria were 31%, 30 and 25% above the average in sub-Saharan Africa, respectively (World Bank, 2020b; World Bank, 2020c; World Bank, 2020f). In Australia, privatised power utilities transferred their corporate debt to customers' bills (Quiggin, 2014). This led to a 72% increase in real electricity prices for Australian households (Verrender, 2017).

CIE was the only African utility which kept its tariffs below the average for sub-Saharan Africa (World Bank, 2020d: 17. Nevertheless, these tariffs were kept artificially below production costs. The Ivorian government spent heavily on subsidising consumers. Asia's low tariffs were the result of most states controlling distribution which enabled them to absorb increases in power

generation charges rather than passing them on to consumers. This led to distributors incurring huge financial burdens (Lee et al., 2018). It was only in Europe were consumers in countries with privatised power utilities were more satisfied with the prices of electricity compared to those in countries with state owned utilities (Van Gyes et al., 2009: 77). Nevertheless, it was clear that tariffs could only reduce if they were high before privatisation. In reality, tariffs of most state owned utilities were kept artificially below cost recovery. Therefore, privatisation would lead to price hikes as private owners would want higher tariffs for profit maximisation.

7.2.6.2. Variation in Market Share

The study assessed whether ZESCO's market share (in generation, transmission and distribution) would improve if it were privatised. Carter (2013) cautions that privatisation shouldn't merely convert a public monopoly into a private monopoly. This is because any improvement in market share is likely to be a false notion of improved competitiveness. Instead, privatisation should be accompanied by market liberalisation. That way, entry of new enterprises could expose privatised enterprises to competitive market forces (Ghulam, 2012: 81). And that would encourage them to make advancements to either maintain their market share or even increase it (Bullock, 2005). The majority of the informants were optimistic that a privatised ZESCO would be able to maintain or even expand its market share even in the face of increased competition. Similar sentiments were held by the majority of respondents as shown in Table 7.6 below.

Table 7.6: Privatising ZESCO Will Improve its Market Share

	Privatising ZESCO Will Improve its Market Share	**Businesses**	**Organisations**
Valid	Strongly agree	176 (36.7%)	113 (38.8%)
	Agree	148 (30.9%)	79 (27.1%)
	Undecided	64 (13.4%)	30 (10.3%)
	Disagree	44 (9.2%)	53 (18.2%)
	Strongly Disagree	47 (9.8%)	16 (5.5%)
	Total	479 (100%)	291 (100%)

Source: Researcher's field survey (2019)

Table 7.6 above shows that 36.7% of the businesses strongly agreed that privatising ZESCO would improve its market share, 30.9% agreed, 13.4% were undecided, 9.2% disagreed while 9.8% strongly disagreed. In addition, 38.8% of the domestic consumers strongly agreed that

privatising ZESCO would improve its market share, 27.1% agreed, 10.3% were undecided, 18.2% disagreed while 5.5% strongly disagreed. This meant that the majority of the businesses (67.6%) and domestic consumers (65.9%) either strongly agreed or agreed with the statement. This implied that most respondents were of the opinion that privatising ZESCO would improve its market share.

Literature revealed that some privatised utilities had improved their market share. Even with the entry of IPPs, *ENEO* still remained dominant, growing its market share by 4.7%, from 73% in 2015 to 77.7% in 2018 (ENEO, 2018: 25,30 and ENEO, 2019: 3). *Vattenfall* (in Sweden) and Germany's four main electricity suppliers all managed to grow their market share despite increased competition (The Swedish Energy Markets Inspectorate, 2017 and Heddenhausen, 2007: 17). Privatised power utilities in Poland and the UK (which were previously monopolies) were rated as strongly competitive even with pressure from new entrants (Hermann and Verhoest, 2009: 8).

However, in some countries, privatisation merely converted public monopolies into private monopolies. This meant that utilities continued to dominate the market without actually being competitive. Lack of sector liberalisation meant that *Umeme, ENEO, CIE* and *Veolia* managed to retain monopoly in transmission and distribution even though they were not actually competitive (Umeme Limited, 2019, ENEO, 2019 and Eranove, 2019). A similar scenario played out among generators and distributors in Latin America and Asia (Andres et al., 2006: 15; Kessides, 2012: 3 and Lee et al., 2018). Privatised utilities maintained their market share as a result of government policies which barred entry of competitors. Nigeria's DisCos could not expand as they were legally barred from operating outside their allotted geographical areas (Adedeji, 2017: 195).

Some utilities which faced competition fared poorly. Following entry of IPPs, *Eskom* and *CIE* lost 62% and 69% of their market shares in generation, respectively (UEGCL, 2018, Eranove, 2019). Although *Veolia* increased *SEEG's* installed capacity, it still lost 40% of its market share in generation (Oxford Business Group, 2018). Nigeria's GenCos did not improve their market shares as none of them invested in new plants (Audu et al., 2017: 1226). However, this was not necessarily the result of utilities being uncompetitive, rather the blame lay with concession agreements which gave governments the responsibility of constructing new power plants. In some cases, the government failed to construct new plants. When new plants were constructed,

governments preferred handing them over to other firms. Privatised utilities are likely to succeed if they were allowed to freely compete in a liberalised market.

7.3. Regression Analysis of ZESCO's Performance as an SOE

The study performed simple linear regression analysis to determine whether privatising ZESCO would improve its performance. This was done by looking at the impact of privatising ZESCO (independent variable) on performance indicators (dependent variables). Table 7.7 below shows regression analysis of respondents' perception of ZESCO's likely performance once privatised.

Table 7.7: Regression Analysis of the Impact of Privatisation on ZESCO's Performance

Statistical Model	Test Type		Business	Organisation
Regression: Specific – Quality of Services (Ensuring Customer Safety)				
Regression	Relationship between privatising ZESCO and quality of electricity services	Coefficient)	.773	.792
		Std. Error	.021	.027
		Sig.	.000	.000
Regression: Specific – Quantity of Supplied Electricity (Adequacy of supply)				
Regression	Relationship between privatising ZESCO and quantity of supplied electricity	Coefficient)	.851	.902
		Std. Error	.019	.019
		Sig.	.000	.000
Regression: Specific – Financial Performance (Profitability)				
Regression	Relationship between privatising ZESCO and its financial performance	Coefficient	.819	.814
		Std. Error	.021	.033
		Sig.	.000	.000
Regression: Specific – Productivity				
Regression	Relationship between privatising ZESCO and its productivity	Coefficient	.777	.717
		Std. Error	.022	.034
		Sig.	.000	.000
Regression: Specific – Competitiveness (Market Share)				
Regression	Relationship between privatising ZESCO and its competitiveness	Coefficient	.848	.839
		Std. Error	.018	.028
		Sig.	.000	.000

Source: Researcher's field survey (2019)

Table 7.7 shows that based on the views of businesses, there was a statistically significant strong positive relationship between privatising ZESCO and the quality of electricity supply (Coefficient=0.773, Std. Error=0.021, Sig.=0.000). Meaning that since $p<0.05$, privatising ZESCO explained about 77.3% of the variance in the quality of electricity supply. The coefficient being positive meant that privatising ZESCO would improve the quality of electricity

supply. In addition, based on the views of domestic consumers, there was a statistically significant strong positive relationship between privatising ZESCO and the quality of electricity supply (Coefficient=0.792, Std. Error=0.027, Sig.=0.000). Meaning that since $p<0.05$, privatising ZESCO explained about 79.2% of the variance in quality of electricity supply. The coefficient being positive meant that privatising ZESCO would improve the quality of electricity supply. *This implied that privatising ZESCO would significantly improve the quality of electricity supply.*

Table 7.7 also shows that based on the views of the businesses, there was a statistically significant very strong positive relationship between privatising ZESCO and the quantity of electricity supply (Coefficient=0.851, Std. Error=0.019, Sig.=0.000). Meaning that since $p<0.05$, privatising ZESCO explained about 85.1% of the variance in the quantity of electricity supply. The coefficient being positive meant that privatising ZESCO would improve the quantity of electricity supply. In addition, based on the views of domestic consumers, there was a statistically significant very strong positive relationship between privatising ZESCO and the quantity of electricity supply (Coefficient=0.902, Std. Error=0.019, Sig.=0.000). Meaning that since $p<0.05$, privatising ZESCO explained about 90.2% of the variance in quantity of electricity supply. The coefficient being positive meant that privatising ZESCO would improve the quality of electricity supply. *This implied that privatising ZESCO would significantly improve the quantity of electricity supply.*

Table 7.7 also shows that based on the views of businesses, there was a statistically significant very strong positive relationship between privatising ZESCO and its financial performance (Coefficient=0.819, Std. Error=0.021, Sig.=0.000). Meaning that since $p<0.05$, privatising ZESCO explained about 81.9% of the variance in financial performance. The coefficient being positive meant that privatising ZESCO would improve its financial performance. In addition, based on the views of domestic consumers, there was a statistically significant very strong positive relationship between privatising ZESCO and its financial performance (Coefficient=0.814, Std. Error=0.033, Sig.=0.000). Meaning that since $p<0.05$, privatising ZESCO explained about 81.4% of the variance in financial performance. The coefficient being positive meant that privatising ZESCO would improve its financial performance. *This implied that privatising ZESCO would significantly improve its financial performance.*

Table 7.7 also shows that based on the views of businesses, there was a statistically significant strong positive relationship between privatising ZESCO and its productivity (Coefficient=0.777, Std. Error=0.022, Sig.=0.000). Meaning that since $p<0.05$, privatising ZESCO explained about 77.7% of the variance in productivity. The coefficient being positive meant that privatising ZESCO would improve its productivity. In addition, based on the views of domestic consumers, there was a statistically significant strong positive relationship between privatising ZESCO and its productivity (Coefficient=0.717, Std. Error=0.033, Sig.=0.000). Meaning that since $p<0.05$, privatising ZESCO explained about 71.7% of the variance in productivity. The coefficient being positive meant that privatising ZESCO would improve its productivity. *This implied that privatising ZESCO would significantly improve its productivity.*

Table 7.7 also shows that based on the views of businesses, there was a statistically significant very strong positive relationship between privatising ZESCO and its competitiveness (Coefficient=0.848, Std. Error=0.018, Sig.=0.000). Meaning that since $p<0.05$, privatising ZESCO explained about 84.8% of the variance in competitiveness. The coefficient being positive meant that privatising ZESCO would improve its competitiveness. In addition, based on the views of domestic consumers, there was a statistically significant very strong positive relationship between privatising ZESCO and its competitiveness (Coefficient=0.839, Std. Error=0.028, Sig.=0.000). Meaning that since $p<0.05$, privatising ZESCO explained about 83.9% of the variance in competitiveness. The coefficient being positive meant that privatising ZESCO would improve its competitiveness. *This implied that privatising ZESCO would significantly improve its competitiveness.*

The results from regression analyses supported the Agency Theory's position that private firms have good performance. The results indicate that privatising ZESCO would improve all performance indicators. That is, it would lead to increase in the quality and quantity of electricity supply as well as the financial performance, productivity and competitiveness.

7.4. Hypothesis Testing (Chi-Square Analysis of ZESCO's Post-Privatisation Performance)

The questionnaire used in the study contained a series of categorical statements made in line with the researchers' ontological belief (based on personal experience and the literature on the subject). As such, the chi-square model was chosen to test the hypotheses. Since the null

hypothesis (H_0) always assumes that *'there is no relationship (dependence) between two variables',* any p-values (Asymp. Sig. 2-sided) lower than 0.05 ($p<0.05$) indicate that the null hypothesis can be rejected (Thisted, 1998). Chi-square was used to test the null hypothesis that: **H_0:** *Once privatised, ZESCO Limited's performance will remain the same.*

The hypothesis was comprehensively tested by examining whether there was no relationship between privatising ZESCO (independent variable) and performance indicators (dependent variables). Table 7.8 below breaks down chi-square results of respondent's views on the impact of privatisation on ZESCO's performance.

Table 7.8: Chi-Square Results of Impact of Privatisation on ZESCO's Performance

Statistical Model	**Test Type**			**Business**	**Organisation**
Chi-Square Test: Specific – Quality of Electricity Supply (Ensuring Customer Safety)					
Chi-Square Test	H_0	There is no relationship between privatising ZESCO and quality of supply	Value (χ^2)	836.029	531.998
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Quantity of Electricity Supply (Adequacy of Supply)					
Chi-Square Test	H_0	There is no relationship between privatising ZESCO and quantity of supply	Value (χ^2)	1142.250	870.842
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Financial Performance					
Chi-Square Test	H_0	There is no relationship between privatising ZESCO and its financial Performance	Value (χ^2)	964.944	622.776
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Productivity					
Chi-Square Test	H_0	There is no relationship between privatising ZESCO and its productivity	Value (χ^2)	872.776	542.243
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Competitiveness					
Chi-Square Test	H_0	There is no relationship between privatising ZESCO and its competitiveness	Value (χ^2)	1192.614	714.086
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0

Source: Researcher's field survey (2019)

Table 7.8 shows that privatising ZESCO and quality of electricity supply are extremely unlikely to be independent (χ^2=836.029, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=531.998, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between privatising ZESCO and the quality of electricity occurring by chance alone was less than 5%. Therefore, there was very strong evidence to suggest that a relationship existed between privatising ZESCO and the quality of electricity supply. Therefore, *H_0 was rejected*.

Table 7.8 also shows that privatising ZESCO and quantity of electricity supply are extremely unlikely to be independent (χ^2=1142.250, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=870.842, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between privatising ZESCO and the quantity of electricity occurring by chance alone was less than 5%. Therefore, there was very strong evidence to suggest that a relationship existed between privatising ZESCO and the quantity of electricity supply. Therefore, *H_0 was rejected*.

Table 7.8 further shows that privatising ZESCO and its financial performance are extremely unlikely to be independent (χ^2=964.944, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=622.776, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between privatising ZESCO and its financial performance occurring by chance alone was less than 5%. Therefore, there was very strong evidence to suggest that a relationship existed between privatising ZESCO and its financial performance. Therefore, *H_0 was rejected*.

Table 7.8 additionally, shows that privatising ZESCO and its productivity are extremely unlikely to be independent (χ^2=872.776, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=542.243, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between privatising ZESCO and its productivity occurring by chance alone was less than 5%. Therefore, there was very strong evidence to suggest that a relationship existed between privatising ZESCO and its productivity. Therefore, *H_0 was rejected*.

Table 7.8 also shows that privatising ZESCO and its competitiveness are extremely unlikely to

be independent (χ^2=1192.614, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=714.086, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between privatising ZESCO and its competitiveness occurring by chance alone was less than 5%. Therefore, there was very strong evidence to suggest that a relationship existed between privatising ZESCO and its competitiveness. Therefore, *H_0 was rejected.*

Chi-square results all revealed that contrary to the null hypothesis (H_0), respondents did not think that ZESCO's performance would remain the same after privatisation. Rather, they had the view that privatising ZESCO would have an effect on its performance. As indicated by regression analysis, respondents were of the view that privatising ZESCO would improve its performance.

7.5. Chapter Summary

The chapter established whether privatising ZESCO would improve its performance. The chapter was guided by the Theory of Cyclical Change's position that a poorly performing SOE should be privatised. This position was in line with the Agency Theory's assertion that private ownership led to superior firm performance. The chapter used data collected from various stakeholders as well as literature reviewed from relevant documents. The study found that in line with the Agency Theory, the majority of the stakeholders were of the view that privatisation would improve all of ZESCO's performance indicators. In addition, based on the results from chi-square analysis, the null hypothesis "*H_0: Once privatised, ZESCO Limited's performance will remain the same"* was rejected. The next chapter focuses on developing an appropriate model that can be used to ensure that ZESCO's performance improved once privatised.

CHAPTER EIGHT

APPROPRIATE MODEL FOR PRIVATISING ZESCO LIMITED

8.1. Introduction

The previous chapter established whether privatising ZESCO would improve its performance. This chapter focuses on developing an appropriate model for ensuring successful privatisation of ZESCO. One major reason for the Zambian government's resistance to privatising ZESCO has been the failure to agree on an acceptable divesture model (Kapika and Eberhard, 2013: 137). The study will thus, develop the needed model using the Contingency Theory. According to Abioye (2016:40), contingency theorists argue that there is no best model for privatising SOEs. Rather, each SOE is best privatised using a tailor made model. Carter (2013: 111) notes that the best privatisation model is one contingent (dependent) on the prevailing internal and external environment surrounding an SOE and the country at large.

The objective of this chapter is *to develop an appropriate model to be used to successfully privatise ZESCO Limited.* Both primary and secondary data were used. Primary data came from officials from various government institutions as well as owners/managers of businesses and organisations which represent domestic electricity consumers in Lusaka District. Secondary data came from review of relevant documents. The objective was achieved by running frequency distributions, regression analysis and chi-square analysis to test the hypothesis that:

- **H_0:** The model used to privatise ZESCO Limited will have no impact on its performance.

This chapter is divided into six sections. Section one is the introduction. Section two presents conceptualisation and building of models. Section three justifies developing a model for privatising ZESCO. Section four assesses factors determining the choice of appropriate privatisation model and Section five develops an appropriate model for privatising ZESCO. Section six is a summary.

8.2. Conceptualising and Building Models

According to Van der Waldt (2013: 42), researchers in social sciences use models to make specific predictions regarding phenomena. This makes models scientifically important and

essential to solving many practical problems (Little, 2012). Model development is thus, important as models provide an ideal means to convey the way in which the public sector (or specific public organisations) can be improved (Van der Waldt, 2013, 38). Therefore, the purpose of model building is to assist in explaining or solving particular problems (Davies and Lewis, 1971:29). Models tend to review existing structures and relationships with an attempt to innovate a structure which is different from the existing one (Van der Waldt, 2013:5). Development of an appropriate model is, therefore, necessary to guide the radical change in the ownership and/or control of an enterprise (Saunders et al., 2016: 132).

Developing a model involves focusing on why the model needs to be developed, what should be contained in the model, how the components or variables relate and in which context the model is best applicable (Graham *et al.*, 2014:14). This study adopts the Contingency Theory to develop the proposed model for privatising ZESCO. The contingency theory contends that the ideal model for privatising an enterprise is contingent on a variety of factors unique to that particular enterprise (Carter, 2013: 111). This explains why Estrin and Pelletier (2018) uncovered that different countries have applied different models of privatisation with varying degrees of success. Therefore, to develop a model to privatise ZESCO, answers to the why, what, how, and which are contingent on analysis of factors unique to ZESCO. The model is developed as a reflection of literature and views from the experience of stakeholders.

8.3. Justification for Developing a Model for Privatising ZESCO

Developing a model for privatising ZESCO is justified by analysing the main reason behind the Zambian Government's repeated resistance to privatising ZESCO. The legal requirement on tailoring privatisation models to enterprise specifications is also analysed. Stakeholders' views on whether privatisation models have an impact on the performance of ZESCO is also assessed through frequency distributions, regression and chi-square analysis. The justifications are presented below.

8.3.1. The Need to Overcome Government Resistance

The Zambian Government has repeatedly resisted calls to privatise ZESCO. The company was first put up for possible privatisation in 1992. However, the government u-turned and instead,

reformed it by signing a performance contract with emphasis on improving commercial operation and efficiency in supply (Kapika and Eberhard, 2013: 137). The reforms failed and the company continued to perform poorly. Consequently, in 1998, the World Bank and IMF made the privatisation of ZESCO one of the conditions for Zambia to obtain debt relief under the Highly Indebted Poor Country (HIPC) initiative (Kapika and Eberhard, 2013: 137). Once again, the Zambian Government resisted. In 2003, it successfully negotiated with the World Bank and IMF to qualify for HIPC without privatising ZESCO. It was decided instead, to pursue a plan to commercialise ZESCO in the hope that this would enable it to operate with characteristics of a private business. However, the company still failed to improve its performance (Republic of Zambia, 2016: 3). In response, the Zambian Government itself announced intentions to privatise the company in 2016 (Mutati, 2016: 15). Once again, these plans were scrapped. One borne of contention was the failure to identify a divesture model that was both effective and acceptable to the government (Republic of Zambia, 2016: 5).

8.3.2. Legal Requirements on Developing Privatisation Models

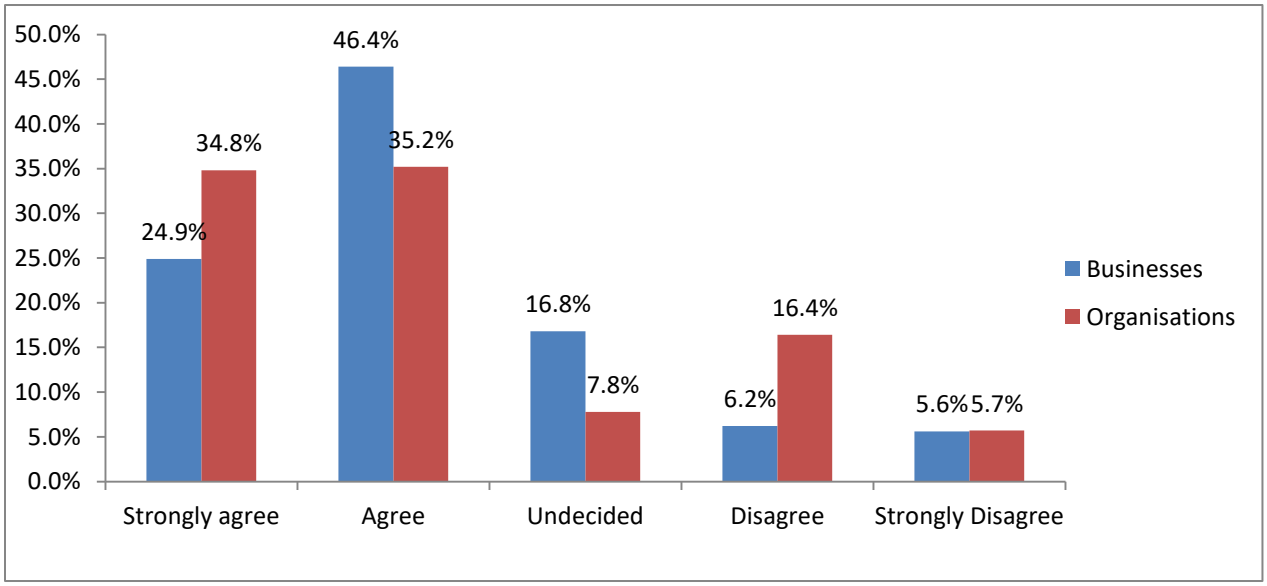
The Zambia Development Agency Act of 2006 is the main legal instrument guiding Zambia's privatisation process (Republic of Zambia, 2006: 22-27). In the Acts, the sixth stage in the privatisation sequence requires consultants to recommend the best model to adopt in privatising each enterprise. The Act also lists a myriad of models that can be employed in the divestiture process (Republic of Zambia, 2006). It is for this reason that any recommendations to privatise ZESCO should be accompanied with developing an appropriate model.

8.3.3. Stakeholders' Views on the Need to Develop a Specific Model for Privatising

Estrin and Pelletier (2018) give examples of different countries applying different models of privatisation with varying degrees of success and failure. This implies that there is no best model of privatising an SOE (Abioye, 2016:40). Rather than privatising all firms using one model, an analysis is performed on a particular firm before choosing the most appropriate model (Republic of Zambia, 2006). This means, each enterprise should be privatised using a model that offers best opportunity for improving its performance in light of the prevailing factors (Estrin and Pelletier, 2018: 87 and Republic of Zambia, 2006). Informants also agreed that there is need to develop an

appropriate model to privatise ZESCO. This was the view shared by respondents as can be seen in Figure 8.1 below.

Figure 8.1: There is Need to Develop a Model for Privatising ZESCO



Source: Researcher's field survey (2019)

Figure 8.1 above shows that 24.9% of the businesses strongly agreed that there is need to develop a model for privatising ZESCO, 46.4% agreed, 16.8% were undecided, 6.2% disagreed while 5.6% strongly disagreed. In addition, 34.8% of the domestic consumers strongly agreed that there is need to develop a model for privatising ZESCO, 35.2% agreed, 7.8% were undecided, 16.4% disagreed while 5.7% strongly disagreed. This means that the majority of the businesses (71.3%) and domestic consumers (70%) either strongly agreed or agreed with the statement. This implied that most respondents thought that there is need to develop a model for privatising ZESCO.

8.3.4. Stakeholders' Views on the Impact of Privatisation Model on ZESCO's Performance

The study assessed stakeholders' opinion on whether privatisation models would have an impact on ZESCO's post-privatisation performance with regard to quality and quantity of electricity supply, financial performance, productivity and competitiveness. The majority of the stakeholders are of the opinion that privatisation models would have an impact on ZESCO's post-privatisation performance as shown in the tables below.

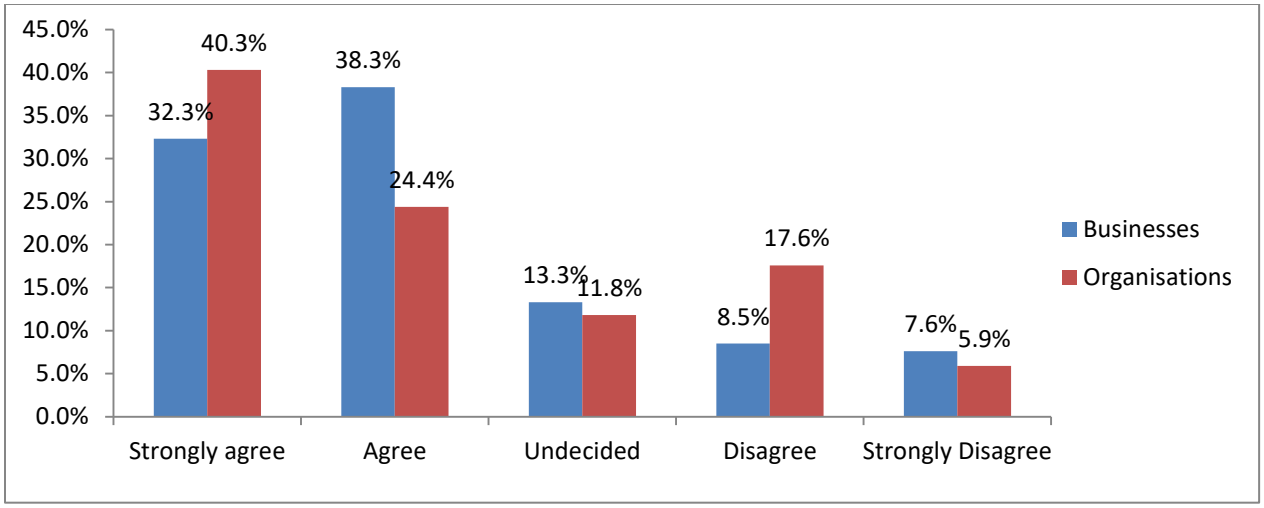
Table 8.1: Privatisation Model Has an Impact on Quality of ZESCO's Electricity Supply

	Privatisation Model has an Impact on Quality of ZESCO's Electricity Supply	Businesses	Organisations
Valid	Strongly agree	92 (29.1%)	107 (44.8%)
	Agree	113 (35.8%)	64 (26.8%)
	Undecided	69 (21.8%)	21 (8.8%)
	Disagree	25 (7.9%)	36 (15.1%)
	Strongly Disagree	17 (5.4%)	11 (4.6%)
	Total	**316 (100%)**	**239 (100%)**

Source: Researcher's field survey (2019)

Table 8.1 above shows respondents' views on whether a privatisation model has an impact on the quality of ZESCO's electricity supply. The table shows that 29.1% of the businesses strongly agreed that a privatisation model has an impact on the quality of ZESCO's electricity supply, 35.8% agreed, 21.8% were undecided, 7.9% disagreed while 5.4% strongly disagreed. In addition, 44.8% of the domestic consumers strongly agreed that a privatisation model has an impact on the quality of ZESCO's electricity supply, 26.8% agreed, 8,8% were undecided, 15.1% disagreed while 4.6% strongly disagreed. This means that the majority of the businesses (64.9%) and domestic consumers (71.6%) either strongly agreed or agreed with the statement. This implies that most respondents were of the opinion that a privatisation model has an impact on the quality of ZESCO's electricity supply. This opinion was equally shared by the majority of the informants.

Figure 8.2: Privatisation Model Has an Impact on Quantity of ZESCO's Electricity Supply



Source: Researcher's field survey (2019)

Figure 8.2 above shows respondents' views on whether a privatisation model has an impact on the quantity of ZESCO's electricity supply. The figure shows that 32.3% of the businesses strongly agreed that a privatisation model has an impact on the quantity of ZESCO's electricity supply, 38.3% agreed, 13.3% were undecided, 8.5% disagreed while 7.6% strongly disagreed. In addition, 40.3% of the domestic consumers strongly agreed that a privatisation model has an impact on the quantity of ZESCO's electricity supply, 24.4% agreed, 11.8% were undecided, 17.6% disagreed while 5.9% strongly disagreed. This means that the majority of the businesses (70.6%) and domestic consumers (64.7%) either strongly agreed or agreed with the statement. This implies that most respondents were of the opinion that a privatisation model has an impact on the quantity of ZESCO's electricity supply. The majority of the informants equally shared this opinion.

Table 8.2: Privatisation Model Has an Impact on ZESCO's Financial Performance

Privatisation Model Has Impact on ZESCO's Profitability		**Businesses**	**Organisations**
Valid	Strongly agree	89 (30.1%)	98 (41.2%)
	Agree	120 (40.5%)	61 (25.6%)
	Undecided	42 (14.2%)	19 (8.0%)
	Disagree	20 (6.8%)	46 (19.3%)
	Strongly Disagree	25 (8.4%)	14 (5.9%)
	Total	**296 (100%)**	**238 (100%)**

Source: Researcher's field survey (2019)

Table 8.2 above shows respondents' views on whether a privatisation model has an impact on ZESCO's profitability. The table shows that 30.1% of the businesses strongly agreed that a privatisation model has an impact on ZESCO's financial performance, 40.5% agreed, 14.2% were undecided, 6.8% disagreed while 8.4% strongly disagreed. In addition, 41.2% of the domestic consumers strongly agreed that a privatisation model has an impact on ZESCO's financial performance, 25.6% agreed, 8.0% were undecided, 19.3% disagreed while 5.9% strongly disagreed. This means that the majority of the businesses (70.6%) and domestic consumers (66.8%) either strongly agreed or agreed with the statement. This implies that most respondents were of the opinion that a privatisation model has an impact on ZESCO's financial performance. The majority of the informants equally shared this opinion.

Table 8.3: Privatisation Model Has an Impact on ZESCO's Productivity

	Privatisation Model has an Impact on ZESCO's Productivity	Businesses	Organisations
Valid	Strongly agree	82 (25.9%)	96 (39.3%)
	Agree	135 (42.7%)	74 (30.3%)
	Undecided	52 (16.5%)	20 (8.2%)
	Disagree	28 (8.9%)	43 (17.6%)
	Strongly Disagree	19 (6.0%)	11 (4.5%)
	Total	**316 (100%)**	**244 (100%)**

Source: Researcher's field survey (2019)

Table 8.3 above shows respondents' views on whether a privatisation model has an impact on ZESCO's productivity. It shows that 25.9% of the businesses strongly agreed that a privatisation model has an impact on ZESCO's productivity, 42.7% agreed, 16.5% were undecided, 8.9% disagreed while 6.0% strongly disagreed. In addition, 39.3% of the domestic consumers strongly agreed that a privatisation model has an impact on ZESCO's productivity, 30.3% agreed, 8.3% were undecided, 17.6% disagreed while 4.5% strongly disagreed. This means that the majority of the businesses (68.6%) and domestic consumers (69.6%) either strongly agreed or agreed with the statement. This implies that most respondents were of the opinion that a privatisation model has an impact on ZESCO's productivity. The majority of the informants equally shared this opinion.

Table 8.4: Privatisation Model has an Impact on ZESCO's Competitiveness

	Privatisation Model has an Impact on ZESCO's Competitiveness	Businesses	Organisations
Valid	Strongly agree	111 (35.0%)	93 (38.4%)
	Agree	114 (36.0%)	64 (26.4%)
	Undecided	38 (12.0%)	25 (10.3%)
	Disagree	29 (9.1%)	46 (19.0%)
	Strongly Disagree	25 (7.9%)	14 (5.8%)
	Total	**317 (100%)**	**242 (100%)**

Source: Researcher's field survey (2019)

Table 8.4 above shows respondents' views on whether a privatisation model has an impact on ZESCO's competitiveness. The table shows that 35.0% of the businesses strongly agreed that a privatisation model has an impact on ZESCO's competitiveness, 36.0% agreed, 12.0% were

undecided, 9.1% disagreed while 7.9% strongly disagreed. In addition, 38.4% of the domestic consumers strongly agreed that a privatisation model has an impact on ZESCO's competitiveness, 26.4% agreed, 10.3% were undecided, 19.0% disagreed while 5.8% strongly disagreed. This means that the majority of the businesses (71.0%) and domestic consumers (64.8%) either strongly agreed or agreed with the statement. This implies that most respondents are of the opinion that a privatisation model has an impact on ZESCO's competitiveness. This opinion is equally shared by the majority of the informants.

8.3.5. Regression Analysis of the Impact of Privatisation Model on ZESCO's Performance

The study performed simple linear regression analysis to determine whether privatisation models have an impact on ZESCO's post-privatisation performance. This was done by looking at the impact of privatisation model (independent variable) on ZESCO's performance indicators (dependent variables). The regression results are shown in table 8.5 below.

Table 8.5 shows that based on the views of the businesses, there is a statistically significant moderate positive relationship between a privatisation model and the quality of ZESCO's electricity supply (Coefficient=0.595, Std. Error=0.049, Sig.=0.000). Meaning that since $p<0.05$, privatisation model explains about 59.5% of the variance in the quality of ZESCO's electricity supply. The coefficient being positive means that the right privatisation model would improve the quality of ZESCO's electricity supply. In addition, based on the views of domestic consumers, there is a statistically significant strong positive relationship between a privatisation model and the quality of ZESCO's electricity supply (Coefficient=0.617, Std. Error=0.051, Sig.=0.000). Meaning that since $p<0.05$, privatisation model explains about 61.7% of the variance in the quality of ZESCO's electricity supply. The coefficient being positive means that the right privatisation model would improve the quality of ZESCO's electricity supply. *This implies that the right privatisation model would significantly improve the quality of ZESCO's electricity supply.*

Table 8.5 also shows that based on the views of businesses, there is a statistically significant strong positive relationship between the right privatisation model and the quantity of ZESCO's electricity supply (Coefficient=0.719, Std. Error=0.049, Sig.=0.000). Meaning that since $p<0.05$, the right privatisation model explains about 71.9% of the variance in the quantity of ZESCO's

electricity supply. The coefficient being positive means that the right privatisation model would improve the quantity of ZESCO's electricity supply. In addition, based on the views of domestic consumers, there is a statistically significant strong positive relationship between the right privatisation model and the quantity of ZESCO's electricity supply (Coefficient=0.775, Std. Error=0.046, Sig.=0.000). Meaning that since $p<0.05$, privatisation model explains about 77.5% of the variance in the quantity of ZESCO's electricity supply. The coefficient being positive means that the right privatisation model would improve the quantity of ZESCO's electricity supply. *This implies that the right privatisation model would significantly improve the quantity of ZESCO's electricity supply.*

Table 8.5: Regression Analysis of the Impact of Privatisation Models on ZESCO's Post-Privatisation Performance

Statistical Model	Test Type		Business	Organisation
Regression: Specific – Quality of Services				
Regression	Relationship between privatisation model and quality of ZESCO's electricity services	Coefficient	.595	.617
		Std. Error	.049	.051
		Sig.	.000	.000
Regression: Specific – Quantity of Supplied Electricity				
Regression	Relationship between privatisation model and quantity of ZESCO's electricity services	Coefficient	.719	.775
		Std. Error	.049	.046
		Sig.	.000	.000
Regression: Specific – Financial Performance				
Regression	Relationship between privatisation model and ZESCO's financial performance	Coefficient	.677	.676
		Std. Error	.051	.052
		Sig.	.000	.000
Regression: Specific – Productivity				
Regression	Relationship between privatisation model and ZESCO's productivity	Coefficient	.595	.623
		Std. Error	.049	.051
		Sig.	.000	.000
Regression: Specific – Competitiveness				
Regression	Relationship between privatisation model and ZESCO's competitiveness	Coefficient	.734	.704
		Std. Error	.050	.050
		Sig.	.000	.000

Source: Researcher's field survey (2019)

In addition, Table 8.5 also shows that based on the views of the businesses, there is a statistically significant strong positive relationship between a privatisation model and ZESCO's financial performance (Coefficient=0.677, Std. Error=0.051, Sig.=0.000). Meaning that since $p<0.05$,

privatisation model explains about 67.7% of the variance in ZESCO's financial performance. The coefficient being positive means that the right privatisation model would improve ZESCO's financial performance. In addition, based on the views of domestic consumers, there is a statistically significant strong positive relationship between a privatisation model and ZESCO's financial performance (Coefficient=0.676, Std. Error=0.052, Sig.=0.000). Meaning that since $p<0.05$, privatisation model explains about 67.6% of the variance in ZESCO's financial performance. The coefficient being positive means that the right privatisation model would improve ZESCO's financial performance. *This implies that the right privatisation model would significantly improve ZESCO's financial performance.*

Table 8.5 also shows that based on the views of the businesses, there is a statistically significant moderate positive relationship between a privatisation model and ZESCO's productivity (Coefficient=0.595, Std. Error=0.049, Sig.=0.000). Meaning that since $p<0.05$, privatisation model explains about 59.5% of the variance in ZESCO's productivity. The coefficient being positive means that the right privatisation model would improve ZESCO's productivity. In addition, based on the views of domestic consumers, there is a statistically significant strong positive relationship between a privatisation model and ZESCO's productivity (Coefficient=0.623, Std. Error=0.051, Sig.=0.000). Meaning that since $p<0.05$, privatisation model explains about 62.3% of the variance in ZESCO's productivity. The coefficient being positive means that the right privatisation model would improve ZESCO's productivity. *This implies that the right privatisation model would significantly improve ZESCO's productivity.*

Further, Table 8.5 shows that based on the views of businesses, there is a statistically significant strong positive relationship between a privatisation model and ZESCO's competitiveness (Coefficient=0.734, Std. Error=0.050, Sig.=0.000). Meaning that since $p<0.05$, privatisation model explains about 73.4% of the variance in ZESCO's competitiveness. The coefficient being positive means that the right privatisation model would improve ZESCO's competitiveness. In addition, based on the views of domestic consumers, there is a statistically significant strong positive relationship between a privatisation model and ZESCO's competitiveness (Coefficient=0.704, Std. Error=0.050, Sig.=0.000). Meaning that since $p<0.05$, privatisation model explains about 70.4% of the variance in ZESCO's competitiveness. The coefficient being positive means that the right privatisation model would improve ZESCO's competitiveness. *This*

implies that the right privatisation model would significantly improve ZESCO's competitiveness.

The results from regression analyses indicate that employing the right privatisation model would ensure that ZESCO's performance improved after privatisation. That is, it would lead to increase in quality and quantity of electricity supply as well as in financial performance, productivity and competitiveness.

8.3.6. Hypothesis Testing (Chi-Square Analysis of the Impact of Privatisation Models on ZESCO's Post-Privatisation Performance)

The chi-square model is chosen to determine whether there is no relationship between privatisation model and a firm's post-privatisation performance. Specifically, the chi-square model is used to test the hypothesis. Since the null hypothesis (H_0) always assumes that *'there is no relationship (dependence) between two variables',* any p-values (Asymp. Sig. 2-sided) lower than 0.05 ($p<0.05$) indicate that the null hypothesis can be rejected (Thisted, 1998). Chi-square was used to test the null hypothesis that: **H_0:** *The model used to privatise ZESCO Limited will have no impact on its performance.*

The hypothesis was comprehensively tested by examining whether there was no relationship between privatisation model (independent variable) and ZESCO's performance indicators (dependent variables). The results are shown in Table 8.6 below.

Table 8.6 shows that privatisation model and the quality of ZESCO's electricity supply are extremely unlikely to be independent (χ^2=238.118, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=229.658, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since $p<0.05$ for both samples, the probability of the relationship between privatisation model and the quality of ZESCO's electricity supply occurring by chance alone was less than 5%. Therefore, there is very strong evidence that a relationship exists between privatisation model and the quality of ZESCO's electricity supply. Therefore, *H_0 was rejected*.

Table 8.6 also shows that privatisation model and the quantity of ZESCO's electricity supply are extremely unlikely to be independent (χ^2=320.860, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=375.281, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since $p<0.05$ for both samples, the probability of the relationship between privatisation model and the

quantity of ZESCO's electricity supply occurring by chance alone was less than 5%. Therefore, there is very strong evidence to suggest that a relationship exists between privatisation model and the quantity of ZESCO's electricity supply. Therefore, *H_0 was rejected.*

Table 8.6: Chi-Square Results on Impact of Privatisation Model on ZESCO's Performance

Statistical Model		**Test Type**		**Business**	**Organisation**
Chi-Square Test: Specific – Quality of Electricity Supply					
Chi-Square Test	H_0	There is no relationship between privatisation model and quality of ZESCO's electricity services	Value (χ^2)	238.118	229.658
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Quantity of Electricity Supply					
Chi-Square Test	H_0	There is no relationship between privatisation model quantity of ZESCO's electricity services	Value (χ^2)	320.860	375.281
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Financial Performance					
Chi-Square Test	H_0	There is no relationship between privatisation model and ZESCO's financial performance	Value (χ^2)	241.486	211.285
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Productivity					
Chi-Square Test	H_0	There is no relationship between privatisation model and ZESCO's productivity	Value (χ^2)	231.139	240.937
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0
Chi-Square Test: Specific – Competitiveness					
Chi-Square Test	H_0	There is no relationship between privatisation model ZESCO's competitiveness	Value (χ^2)	327.724	246.460
			df	16	16
			Asymp. Sig. (2-sided)	.000	.000
			Decision	Reject H_0	Reject H_0

Source: Researcher's field survey (2019)

Table 8.6 also shows that privatisation model and ZESCO's financial performance are extremely unlikely to be independent (χ^2=241.486, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=211.285, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for

both samples, the probability of the relationship between privatisation model and ZESCO's financial performance occurring by chance alone was less than 5%. Therefore, there is very strong evidence that a relationship exists between privatisation model and ZESCO's financial performance. Therefore, *H_0 was rejected*.

Another indication of Table 8.6 is that privatisation model and ZESCO's productivity are extremely unlikely to be independent (χ^2=231.139, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=240.937, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between privatisation model and ZESCO's productivity occurring by chance alone was less than 5%. Therefore, there is very strong evidence that a relationship exists between privatisation model and ZESCO's productivity. Therefore, *H_0 was rejected*.

Table 8.6 also shows that privatisation model and ZESCO's competitiveness are extremely unlikely to be independent (χ^2=327.724, df=16, Asymp. Sig. (2-sided)=0.000 for businesses and χ^2=246.460, df=16, Asymp. Sig. (2-sided)=0.000 for domestic consumers). Since p<0.05 for both samples, the probability of the relationship between privatisation model and ZESCO's competitiveness occurring by chance alone was less than 5%. Therefore, there is very strong evidence suggesting that a relationship exists between privatisation model and ZESCO's competitiveness. Therefore, *H_0 was rejected*.

The chi-square results all show that contrary to the null hypothesis (H_0), stakeholders did not view the model used to privatise ZESCO as not having an impact on its performance. Rather, they were of the view that the model used to privatise ZESCO has an impact on its performance. This means that the legal framework, literature as well as results of frequency distribution, regression and chi-square analysis all provide justification for developing a model for privatising ZESCO.

8.4. Factors Determining Choice of Appropriate Privatisation Model

A myriad of factors may cause different models of privatisation to impact an enterprise's performance in varied ways (Estrin and Pelletier, 2018: 87). Accordingly, for privatisation to succeed, the model used should take into consideration an enterprise's internal and external environmental conditions (Carter, 2013: 111). The internal factors include the enterprise's size,

current state of operation and current performance. External factors include an enterprise's strategic/political importance, performance of privatised Zambian enterprises under each model, performance of privatised electricity enterprises under each model, and stakeholder's opinion on the best model for privatising ZESCO.

8.4.1. ZESCO's Size and Operational Status

The operational status of ZESCO is that it is currently active, and under the classifications devised by the Zambia Development Agency Act, the company is classified as a large scale enterprise (Craig, 1999; United Nations, 2011 and ZDA, 2010). The company is worth billions of dollars, employs thousands of employees, owns a myriad of power infrastructures and operates throughout the country. As earlier noted under Chapter three, nearly all large scale enterprises remained active after privatisation, and the majority of large scale enterprises improved their performance after privatisation.

Share issue, sale of assets and concession are the only models used to privatise large scale Zambian enterprises. These models were ideal for large scale enterprises as they enabled the attraction of the best investors, especially foreign multinationals, to purchase large and strategic SOEs (Estrin and Pelletier, 2018). These world class investors had the necessary managerial, fiscal and entrepreneurial skills. They also had access to adequate finances necessary to make needed investments. Management - Employee Buy-Out, Lease and Voucher privatisation were deemed only suitable for small and medium scale enterprises. They were seen to potentially lead to a situation where the new private owners lacked the necessary managerial, fiscal and entrepreneurial skills to run a complex large scale undertaking (Boutifour and Miraoui, 2016: 146). They might also fail to access finances (Protsiv, 2008: 29). Liquidation does not fit as it applies to the disposal of unviable or non-operational enterprises (OECD, 2004: 44).

8.4.2. ZESCO's Current Performance

As highlighted in Chapter six, ZESCO's performance is poor across all performance indicators. The company performs poorly with regard to quality and quantity of electricity supply as well as productivity, competitiveness and financial performance. This performance is similar to most Zambian enterprises before they were privatised. Chipwende (2001: 35) notes that the Zambian

Government had considered closing over half of the SOEs owing to their poor performance (United Nations, 2011). As shown in Table 3.3, through privatisation, nearly three-quarters of the enterprises remained active. This was especially so for poorly performing large scale enterprises as almost all of them, including those threatened with closure, remained operational.

Share issue, sale of assets and concession were the best models for turning around poorly performing SOEs. These models enabled sale to investors able to inject the much-needed finances to boost the firm's performance (Estrin and Pelletier, 2018). Additionally, the private owners may bring with them innovative management techniques. Management-Employee Buy-Out, Lease and Voucher privatisation were unsuitable on account of susceptibility to corruption and political pressure (Bennett et al., 2007 and World Bank, 2003). Due to their nature, these models may lead to new owners facing difficulties in accessing bank credits thus, failing to make investments to improve or expand the enterprises (Boutifour and Miraoui, 2016). Leases also have the weakness of having the government retaining responsibility for making major investments (Bullock, 2009: 46 and Kisitu, 2018: 28). Additionally, liquidation cannot improve enterprise performance as it usually involves disposing off unviable and/or non-operational enterprises (OECD, 2004: 44).

8.4.3. ZESCO's Strategic/Political Importance

According to the Republic of Zambia (2016:5), the main reason behind the Zambian Government's reluctance to divest ZESCO was its strategic as well as political importance. This is because electricity is an essential component whose availability determines success or failure of any development endeavours (Dubagari, 2018 and Kessides, 2012). It is a prerequisite for proper functioning of nearly all sectors of an economy. Industries such as manufacturing, mining, construction and service provision all use electricity powered machinery and equipment (Quiggin, 2014). There is a positive correlation between economic growth and electricity supply, and poor electricity supply has a negative impact on economic development, especially for countries striving to industrialise (Kessides, 2012 and World Bank, 2017b). As the main supplier of the much needed electricity, ZESCO is at the centre of Zambia's development. The company is a source of employment enabling thousands to earn an income necessary to meet their basic needs. It also helps in generating revenue for the government through the payment of taxes.

The government feared that if privatisation worsened ZESCO's performance, the consequences would be catastrophic (Kapika and Eberhard, 2013: 137). Failed privatisation would result in job losses, a spike in poverty levels, stalled economic growth, unaffordable tariffs and a roll back on the progress made towards rural electrification (Republic of Zambia, 2016 5). Based on the above concerns, the Zambian Government would most likely agree to privatise ZESCO if it involved employing a model that lets it retain ownership. This would enable easy reversal of control if ZESCO's performance was unsatisfactory. Only concession and lease meet these criteria. This is exemplified in the cases of *Zambia Railways Limited* and *Mulobezi Railway*, which were repossessed upon poor performance (ZDA, 2010 and Zambia Railways Limited, 2013).

8.4.4. Performance of Privatised Zambian Enterprises under Each Model

To be considered effective, a privatisation model should lead to post-privatisation performances of at least, 75% of the enterprises improving or being mixed. Only Concession (100%), Share Issue (95%) and Sale of Assets (76.5%) met the criteria. Management-Employee Buy-Out (34.8%), Lease (52.6%), Voucher (50%) and Liquidation (0%) all fell short of the threshold. Rather, these models resulted in the performance of a significant proportion of firms declining after privatisation. Further analysis reviewed that the only privatised utilities (the *Zambia Railways Limited* and *Mulobezi Railway*) were both privatised though concession (ZDA, 2010; Zambia Railways Limited, 2013 and ZIPAR, 2016). In essence then, concession is the only model with prior application in Zambia. Concession is also the only model whose enterprises all remained operational after privatisation.

8.4.5. Performance of Privatised Electricity Enterprises under Each Model

In Zambia, *ZCCM Lunsemfwa* and *Mulungushi* power stations were sold through sale of assets while *ZCCM Power Division* was divested through share issue (ZDA, 2010). Both companies posted improved performances afterwards (CEC, 2019 and Phiri and Ziba, 2018). The majority of Africa's privatised power utilities were divested through concession. They all managed to better their performances on a number of indicators. The performance could have even been better had firms been exposed to competition (Mawejje, et al., 2012: 4; IFC, 2012: 2; Eranove,

2019 and Power Africa, 2017). Nigeria's power companies, the only African electricity utilities divested through sale of assets, performed poorly. The nature of sale of assets meant that the Nigerian Government failed to retake control (Adedeji, 2017: 195).

Australian and European (Sweden, Germany and the UK) power utilities were privatised through sale of assets. The performance of European utilities improved while that of Australian firms was mixed (Burger, 2018; Van Gyes et al., 2009; Heddenhausen, 2007: 10; Nepala, and Foster, 2015 and Quiggin, 2014). Most power utilities in Latin America were privatised through concession with the rest divested through sale of assets. While both models led to similar performances, governments were able to cancel concessions of poorly performing firms (Balza et al., 2013 and Kessides, 2012: 11). Asian utilities which were mostly privatised through concession had mixed performance (Lee, Cho, Koo and Park, 2018 and Nikomborirak and Manachotphong, 2007).

Therefore, concession, sale of assets and share issue were the only models used to privatise electricity utilities worldwide. In addition, concession was the most popular, especially in Africa. African countries favoured concession as it allowed monitoring firms' operation and retaking of control in case of failed performance. Concession also proved to be more effective than sale of assets. Nevertheless, there is need to ensure that firms were exposed to competition.

8.4.6. Stakeholder's Opinion on the Best Model for Privatising ZESCO

The majority of the informants noted that the government would be reluctant to give up ownership of ZESCO. As such, they recommended a model that would allow ZESCO to improve its performance while ensuring that the government returned ownership. Only concession met both criteria. This left concession as the ideal model. This view is similar to that of respondents as can be seen in Table 8.7 below.

Table 8.7 shows that 3.1% of the businesses recommended Management-Employee Buy-Out as the best model for privatising ZESCO, 17.3% recommended Share Issue, 26.4% recommended Sale of Assets, 40.2% recommended Concession, 11.8% recommended Lease, 1.2% recommended Voucher Privatisation while none recommended Liquidation. In addition, 5.2% of the domestic consumers recommended Management-Employee-Buy-Out as the best model for privatising ZESCO, 15.6% recommended Share Issue, 30.2% recommended Sale of Assets, 40.6% recommended Concession, 5.2% recommended Lease, 3.3% recommended Voucher

Privatisation while none recommended Liquidation. This means that concession is the favoured model for privatising ZESCO.

Table 8.7: Recommended Model for Privatising ZESCO

	Recommended Model for Privatising ZESCO	Businesses	Organisations
Valid	Management-Employee Buy-Out	8 (3.1%)	11 (5.2%)
	Share Issue	44 (17.3%)	33 (15.6%)
	Sale of Assets	67 (26.4%)	80 (30.2%)
	Concession	102 (40.2%)	70 (40.6%)
	Lease	30 (11.8%)	11 (5.2%)
	Voucher Privatisation	3 (1.2%)	7 (3.3%)
	Liquidation	0 (0%)	0 (0%)
	Total	**254 (100%)**	**212 (100%)**

Source: Researcher's field survey (2019)

Table 8.8 below shows how privatisation models relate to factors determining ideal model for divesting ZESCO. The table shows that concession is the only model which meets all the factors determining the ideal model for privatising ZESCO. This implies that concession is the ideal model for privatising ZESCO.

Table 8.8: Ideal Model for Privatising ZESCO

Factors Determining Ideal Privatisation Model	Privatisation Models						
	MEBO	Share Issue	Sale of Assets	Concession	Lease	Voucher	Liquidation
ZESCO's Size (Large Scale Enterprise)		✓	✓	✓			
Operational Status of ZESCO (Active)	✓	✓	✓	✓	✓	✓	
ZESCO's Current Performance (Poor)		✓	✓	✓			
ZESCO's Strategic/Political Value (Very Important)				✓			
Performance of Privatised Zambian Enterprises		✓	✓	✓			
Performance of privatised electricity enterprises		✓	✓	✓			
Stakeholder's Favoured Model				✓			

Source: Researcher's field survey (2019)

8.5. Chosen Privatisation Model: Competitive Concession

Most of the unattractive performances faced by utilities privatised through concession are down to lack of competition among concessioners. This is because the concession process simply turned public monopolies into private monopolies. For instance, concessions in Ivory Coast, Cameroon and Gabon were awarded to unbundled utilities (Kojima and Trimble, 2016: 42). Although Uganda unbundled its state owned power utility prior to privatisation, the concessionaires, *Eskom* and *Umeme*, retained monopoly in generation and distribution, respectively (Mawejje, et al., 2012: 4 and Wesonga, 2018).

To counter the above shortcomings, *Competitive Concession* is chosen as the best privatisation model. The utility should be vertically and/or horizontally unbundled into separate generation, transmission and distribution units. The original enterprise is turned into a holding company to oversee the unbundled units. In line with the provisions of the Zambia Development Agency Act, an independent evaluator values each unit and issues certificates of valuation. Once valuations are approved, a comprehensive company profile is prepared for each unit. The profile should show pertinent information including the firm's history, financial and physical resources as well as the status of its goods and/or services. This information is necessary in guiding the bidding process. Private firms are then invited to competitively bid for concession contracts for each unit. Bidders are then assessed and ranked based on their business development plans. Negotiations are then carried out with the top three bidders before recommending the successful bidder.

The successful bidders are then awarded 30-year concession contracts which should be reviewed every five years. Each successful bidder can only be awarded a concession for one unit. In instances where the utility's unit is currently co-owned between the state and a private firm, control should be handed to the private co-owner rather than a new concessionaire. The holding company then develops a performance measuring framework for all concession contracts. The framework should include measures covering all five performance indicators. The framework is used to assess the performances of concessionaires every five years. Firms that fail to meet performance targets have their concession contracts terminated. Firms that satisfy performance targets are allowed to continue holding their concession contracts. Firms that perform exceptionally well are allowed to continue holding their concession contracts. In addition, they are rewarded by being given an opportunity to take over concessions previously held by poorly

performing concessionaires. If none of the current concession holders perform beyond expectation, cancelled concessions should be competitively bided for by new firms.

The concessionaires should have the exclusive right for operating, maintaining and carrying out investment for the units. There should be very minimal interference from both the holding company and the state. The holding company should have the responsibility of offering technical assistance as well as monitoring the performances of the units. There is need to improve the independence of the sector regulator whose main functions should include guarding against monopolistic tendencies in the sector.

Unbundling the utility before awarding concessions ensures that successful units do not subsidise poorly performing ones. It also ensures competition by avoiding the turning of the state utility into a private monopoly. This will guarantee competition among concessionaires as well as in the industry as a whole. This, in turn, would create an environment conducive for improved performance among electricity firms as well as the industry as a whole. As already alluded to, concession as a model allows the government to cancel non performing concessions, transfer to another concessioner or take over management.

8.5.1. The Operationalisation of the Competitive Concession Model

Before moving to divest ZESCO, the government needs to restructure Zambia's electricity supply industry with the aim of promoting competition. To achieve this, a number of policy and legal instruments in the energy sector should be amended. For instance, *the Energy Regulation Act* should be amended to make ERB more independent thus, allowing it to operate without government interference. *The Electricity Act* should be amended by liberalising all three segments of the electricity industry to promote open competition. ZESCO should then be vertically unbundled into separate generation, transmission and distribution segments. A holding company called *ZESCO Holdings Limited* should be created to oversee the unbundled units.

8.5.1.1. Competitive Concession of Generation Units

The generation segment is then to be horizontally unbundled by clustering power plants into three bundles. Bundle one (*GEN1*) to be made up of *Kariba North Bank* (720 MW) and *Lunzua*

(14.8 MW). The second bundle (*GEN2*) should be made up of *Kafue Gorge Upper* (990 MW) and *Lusiwasi* (12 MW). The third bundle (*GEN3*) to be made up *Kariba North Bank Extension* (360 MW), *Victoria Falls* (108 MW), *Musonda Falls* (10 MW), *Chishimba Falls* (6 MW) and *Shiwang'andu* (1 MW). This will ensure that no single cluster dominates market share. The clusters are also made up of power plants that are in geographic proximity for easy management. The *Itezhi-Tezhi* hydro power plant is co-owned by *Tata Africa Holdings (SA) Pty Limited* and ZESCO (ERB, 2020b: 55). Hence, it should remain under the control of the *Itezhi-Tezhi Power Corporation Limited (ITPC)* for the duration of its Build-Own-Operate-Transfer (BOOT) period.

Once the clustering is approved, *ZDA* then prepares a comprehensive company profile for each cluster. The profile should show pertinent information like the generation plants' history, financial and physical resources and the status of their equipment. This information is necessary in guiding the bidding process. Private firms are then invited to competitively bid for concession contracts for each bundle. Bidders are then assessed and ranked based on their business development plans. Negotiations are then carried out with the top bidders before recommending the successful bidder. The successful bidders are awarded 30-year concession contracts which should be reviewed every five years. Each successful bidder can only be awarded a concession for one bundle.

ZESCO Holdings Limited then develops a performance measuring framework for assessing the performances of generation concessionaires every five years. The framework should include measures covering all five performance indicators. Firms that fail to meet performance targets to have their concession contracts modified by repossessing some power plants or terminated outright. Firms that meet minimum performance requirements are allowed to continue holding their concession contracts. Firms that perform exceptionally well are also allowed to continue holding their concession contracts. They are also rewarded by being given an opportunity to take over repossessed power plants. If none of the current concession holders perform beyond expectation, repossessed power plants should be competitively bided for by new firms.

The concessionaires should have the exclusive right for operating, maintaining and carrying out investment for power plants under their concession bundle. There should be minimal interference from both *ZESCO Holding Limited* and the Zambian Government. *ZESCO Holding Limited* should have the responsibility of offering technical assistance as well as monitoring and

measuring the performances of power plants in each concession bundle. The *Energy Regulation Board* should guard against monopolistic tendencies among generators. In line with Burger (2018), electricity generators should be legally prohibited from owning the transmission grid so as to ensure open competition. Table 8.9 below shows the performance framework.

Table 8.9: Performance Framework for Assessing Generation Concessionaires

Performance Indicator	**KPI**		**Acceptable Performance**
Quality	System Average Interruption Duration Index (SAIDI)		Maintain annual SAIDI at 32 hours or less
	Customer Average Interruption Duration Index (CAIDI)		Maintain CAIDI at 6 hours or less
	Safety		Ensure there are no fatalities on account of negligence
Quantity	Installed generation capacity compared to actual demand		Help ensure that installed capacity is kept well above actual demand
	Variation in installed generation capacity		Take the lead in growing generation capacity to meet future demand
Profitability	Investments		Invest a minimum of US$50 million annually in maintaining and expanding power plants
	Profit		Maintain profits at 10% or more
Productivity	Operational costs		Minimise costs of operations
	Utilisation of labour		Maintain installed capacity-employee ratio of 20:1 or better.
	Utilisation of infrastructure	Unit Capability Factor	Maintain Unit Capability Factor at 90% or better
		Availability of Generation Plant	Maintain Availability of Generation Plant at 70% or better
		Capacity Factor	Maintain Capacity Factor at 50% or better
Competitiveness	Variation in tariffs		Maintain competitive tariffs
	Market share in generation		Maintain and/or increase market share in generation

Source: Developed by the researcher (2019)

8.5.1.2. Competitive Concession of Transmission

ZESCO's entire transmission network should be concessioned as one unit. The Zambia Development Agency prepares a comprehensive company profile for ZESCO's entire

transmission network. The profile should include relevant information like the transmission network's history, financial and physical resources as well as the status of its equipment. This information is necessary in guiding the bidding process. Private firms are then invited to competitively bid for a concession contract for the entire transmission unit. Bidders are assessed and ranked based on their business development plans and negotiations are then carried out with the top three bidders before recommending the successful bidder. The successful bidder is awarded a 30-year concession contract reviewable every five years. The contract should also include the license to operate the transmission network. *ZESCO Holdings Limited* then develops a performance measuring framework for assessing the performances of the transmission concessionaire every five years. The framework should include measures covering all five performance indicators as shown in Table 8.10 below.

Table 8.10: Framework for Assessing the Performance of Transmission Concessionaire

Performance Indicator	**KPI**	**Acceptable Performance**
Quality	Average System Availability Index (ASAI)	Maintain ASAI at 90% or better
	Safety	Ensure there are no fatalities on account of negligence
Quantity	System operation	Minimise network overlords and blowouts
	Transmission network capacity	Ensure network is able to transmit all generated electricity
	Network length	Maintain annual increase in network length of 5% or better (paying emphasis to rural areas)
Profitability	Investment	Invest a minimum of US$100 million annually in maintaining and expanding the transmission network
	Profit	Maintain profits at 10% or more
Productivity	Operational costs	Minimise costs of operations by cutting unnecessary expenses
	Utilisation of labour	Maintain network length-employee ratio of 40:1 or better
	Utilisation of infrastructure (System losses)	Maintain transmission losses at 5% or less
Competitiveness	Market share in transmission	Maintain and/or increase market share in transmission

Source: Developed by the researcher (2019)

The concessionaire is allowed to continue holding the concession if it meets minimum performance requirements. If it fails to meet performance targets, its concession is modified or terminated outright. If the concession is terminated, the transmission unit is opened for competitive bidding from new firms.

The concessionaires should have the exclusive right for operating, maintaining and investing in the transmission network. There should be very minimal interference from both *ZESCO Holding Limited* and the Zambian Government. *ZESCO Holding Limited* should have the responsibility of offering technical assistance as well as monitoring and measuring the performance of the transmission network and its infrastructure. Transmitters should be legally prohibited from owning generation plants and distribution networks so as to ensure open access to the transmission system.

8.5.1.3. Competitive Concession of Generation Units

According to ZESCO Limited (2018:12), ZESCO is currently divided into four distributions divisions (*Southern, Lusaka, Copperbelt and Northern Division*). The *Southern Division* covers *Eastern, Southern, Western* and most of *Central Provinces*. The *Lusaka Division* covers the all of *Lusaka Province, Kafue, Chongwe, Siavonga, Mumbwa* and *Chirundu.* The *Copperbelt Division* includes *North Western* and *Copperbelt Provinces* excluding *Ndola* and *Luanshya* towns. The *Northern Division* includes *Northern, Muchinga, Luapula Provinces* as well as *Ndola* and *Luanshya* towns. Therefore, ZESCO's distribution segment should be horizontally unbundled into the four distribution divisions.

Once the unbundling is approved, *ZDA* prepares a comprehensive company profile for each division (unit). The profile should show pertinent information like the distribution divisions' history, financial position and infrastructure. Private firms are then invited to competitively bid for concession contracts for each division. Bidders are then assessed and ranked based on their business development plans, and negotiations are carried out with the top bidders before recommending the successful bidders. The successful bidders are awarded 30-year concession contracts which should be reviewed every five years. Each successful bidder can only be awarded a concession for one division.

The holding company (*ZESCO Holdings Limited*) then develops a performance measuring framework for assessing the performances of distribution concessionaires every five years. The framework should include measures covering all five performance indicators as indicated in Table 8.11 below.

Table 8.11: Performance Framework for Assessing Distribution Concessionaires

Performance Indicator	**KPI**	**Acceptable Performance**
Quality	System Average Interruption Frequency Index (SAIFI)	Maintain a SAIFI of 5.25 or less
	Customer Average Interruption Duration Index (CAIDI)	Maintain annual CAIDI at 6 hours or less
	System Average Interruption Duration Index (SAIDI)	Maintain annual SAIDI at 32 hours or less
	Fault Restoration Time	Ensure faults are restored within 24 hours
	Safety	Maintain zero fatalities on account of negligence
	Customer complaints	Maintain customer complaint resolution rate of 90% or better for all reported complaints
	Prepaid metering	Maintain 100% metering for all customers
Quantity	Network length	Maintain annual increase in network length of 10% or better
	Electrification rate	Maintain annual increase in electrification of 5% or better
Profitability	Investments	Invest a minimum of US$100 million annually on maintaining and expanding distribution
	Profit	Maintain profits at 10% or more
Productivity	Operational costs	Minimise costs of operations by cutting unnecessary expenses
	Utilisation of labour	Maintain corporate customer-employee ratio of 100:1 or better
	Utilisation of infrastructure	Maintain availability of distribution grid at 90% or better
Competitiveness	Variation in tariffs	Maintain tariffs below the average obtaining in Sub-Saharan Africa
	Market share in distribution	Maintain and/or increase market share in distribution

Source: Developed by the researcher (2019)

Firms that fail to meet performance targets should have their concession contracts terminated.

Firms that meet minimum performance requirements should be allowed to continue holding their concession contracts. Firms that perform exceptionally well should also be allowed to continue holding their concession contracts. They are also rewarded by being given an opportunity to take over repossessed distribution divisions. If none of the current concession holders perform beyond expectation, repossessed distribution divisions should be competitively bided for by new firms.

The concessionaires should have the exclusive right for operating, maintaining and carrying out investment for the distribution network under their concession. There should be very minimal interference from both *ZESCO Holding Limited* and the Zambian government. *ZESCO Holding Limited* should have the responsibility of offering technical assistance, monitoring and measuring the performances of the distribution network under each concession. Electricity distributors should be legally prohibited from owning and/or controlling generation plants and the transmission grid. This would ensure open competition.

8.6. Chapter Summary

This chapter developed an appropriate model for privatising ZESCO. The model was developed based on the Contingency Theory which requires the examination of various pertinent factors. The main factors determining the appropriate model for privatising ZESCO included its size as well as current state of operation and performance. Other factors were ZESCO's strategic/political importance and the impact of privatisation models on the post-privatisation performances of privatised Zambian enterprises and privatised electricity enterprises worldwide. Based on these factors, *Competitive Concession* was developed as the ideal model. The model called for the vertical and horizontal unbundling of ZESCO before awarding concessions to various firms on a competitive basis. This would ensure open competition within as well as among electricity segments. The next chapter presents conclusions and recommendations.

CHAPTER NINE

CONCLUSIONS AND POLICY RECOMMENDATIONS

9.1. Introduction

The previous chapter focused on developing a model for privatising ZESCO in order to improve its performance. This chapter presents conclusions and policy recommendations. The chapter is comprised of five sections. Section one is the introduction. Section two presents the main conclusions drawn from the study. Section three offers policy recommendations. Section four identifies areas for further research. Section five is the summary. The study recognised the importance of improving the performance of the electricity sector if a country is to achieve economic development. The study found that this would only be possible if ZESCO's performance was decent. Further, the study found that ZESCO's performance would improve if it were privatised using the right model. For this reason, the study's main objective was *"to establish the best model of privatising ZESCO Limited in order to improve its performance"*.

9.2 Conclusions

The first chapter stressed that the main objective was developing the best model of privatising ZESCO Limited in order to improve its performance. The second chapter examined the theoretical framework and reviewed literature on privatisation. The third chapter examined models used to privatise SOEs in Zambia, while the fourth chapter gave an overview of Zambia's electricity industry. The fifth chapter explained the research design and methodology, and the sixth chapter examined stakeholders' view of ZESCO's current performance. The seventh chapter established whether privatising ZESCO would improve its performance, while the eighth chapter focused on developing an appropriate model for privatising ZESCO. The main research conclusions are presented below.

9.2.1. Theoretical Framework and Literature Review on Privatisation

Chapter two revealed that the study relied on three theories, the Agency Theory, the Theory of Cyclical Change and the Contingency Theory. Governments globally, explore strategies aimed at

improving the performance of electricity utilities. This is because well-performing power utilities contribute to the economic development and improvement of peoples' living conditions. This is because power utilities are at the centre of human and industrial development. There is lack of agreement on whether private ownership and/or control is better at effecting superior enterprise performance than private ownership and/or control. The agency theory endorses private ownership and/or control. However, the Theory of Cyclical Change argues that change in ownership should only be triggered if one form of ownership and/or control compromises the utility's performance, and should change be necessary, there is need to choose the best divesture model. In this instance, the Contingency Theory calls for a privatisation model which takes into account variables that affect the enterprise's performance.

Privatisation was rationalised on grounds that it made enterprises run more effectively and efficiently. This resulted in improved competitiveness as well as quality and quantity of the enterprise's offerings. Another rationale was the improvement in financial performance, as highlighted by investment in infrastructure and profitability. Other indicators to improve would be productivity as measured by the reduced operational costs as well as increased utilisation of labour and infrastructure. For instance, empirical literature revealed that privatisation had a positive effect on the performance of the two privatised electricity firms in Zambia, *LHPC* and *CEC*. Precisely, through improved management and investment in upgrades, rehabilitation and maintenance, both firms showed marked improvement across all performance indicators.

A review of five African countries uncovered that only two, Uganda and Nigeria, unbundled their vertically integrated power utilities prior to privatisation. Unbundling enabled Uganda and Nigeria to independently privatise generation and distribution, although transmission remained state owned and controlled. All five countries allowed competition in generation by allowing IPPS in the sector. Only Nigeria sold its electricity firms while the rest applied concession. Government interference compromised independence of sector regulators in all five countries. However, save for Nigeria, all countries had marked improvement in quality, quantity, profitability and productivity indicators. Performance with regard to competitiveness was mixed. Lack of unbundling meant that private buyers retained monopoly in transmission and distribution in Ivory Coast, Cameroon and Gabon. Only Ivory Coast had low tariffs with those of Uganda and Gabon nearly 50% more than the average in sub-Saharan Africa. Nevertheless, only

Cameroun's *ENEL* lost dominance in generation.

It was also revealed that outside Africa, privatisation of electricity utilities was most successful in highly liberalised European countries (Sweden, Germany and the UK) than in least privatised countries (Austria, Belgium, Poland). Privatised power utilities in Latin America had mixed performance while those in Australia and Asia performed poorly on a number of indicators. The conclusion was that the presence of competition and independent sector regulators was important for improved performance of power utilities.

9.2.2. Models Used to Privatise State Owned Enterprises in Zambia

The objective of Chapter three was *"to examine the models used to privatise state owned enterprises in Zambia"*. To achieve this objective, the study examined how Zambian firms performed under each model of privatisation. Precisely, the process followed in privatising Zambian enterprise was explained. Further, the models used to privatise SOEs in Zambia were revealed before examining their strengths and weaknesses. The study uncovered that Zambia's privatisation was the responsibility of the *ZPA*, latter *ZDA*. The institutions followed a robust thirteen-stage process as enshrined in the Privatisation Act (and latter Zambia Development Agency Act). During the fourth and fifth stages, each firm was evaluated by qualified and impartial valuators who determined and recommended, among others, the best model to adopt in privatising it.

The study found that Zambia's privatisation was generally, a success as the performance of 40.9% of enterprises improved while 73.3% remained active. This is significant because had they remained SOEs, their performances would have declined and led to closures. Enterprise size had an impact on likely success post-privatisation. This is because large scale enterprises had the highest proportion of improved performance (72%) followed by medium scale enterprises (57.6%) and small scale enterprises (34.1%). Similarly, 96% of large-scale enterprises remained active compared to 78.8% of medium scale enterprises and 69.2% of the small-scale enterprises.

The seven privatisation models involved were: Management-Employee Buy-Out, Share Issue, Sale of Assets, Concession, Lease, Voucher and Liquidation. Some models performed better than others. Under Management-Employee Buy-Out, 23 SOEs were sold to managerial and non-

managerial employees. They were thought to be best placed on account of their familiarity with the enterprises. However, lack of financial muscle constrained essential investments. Consequently, less than 5% of the firms improved performance and only 39% remained active.

Share Issue involved transferring control and majority shareholding in 20 SOEs. The state retained minority shares through *ZCCM-IH,* a holding company. It was expected that the firms would benefit from new management and injection of finances while continuing to enjoy state protection. The model proved successful as 70% of the enterprises improved their performance while 95% remained active. Under Sale of Assets, the government sold the entire shares of an SOE. The model was expected to attract the best investors. However, actual performance was mixed. Of the 145 enterprises, 50.3% improved their performance while 81.4% remained operational.

Under Concession, the state retained ownership of SOEs while handing operations to private entities and sharing earnings. This was expected to create incentives for improved performance while allowing government to take back control in case of failure. Both enterprises divested using concession (*Zambia Railways Limited* and *Mulobezi Railway*) had their contracts cancelled due to mixed performances. Under Leasing, the government retained ownership of SOEs while allowing private firms to utilise their fixed assets at a fee. The enterprises were expected to retain features of SOEs while being managed with skill, innovation and competence. Leasing applied to 38 small scale tourism based firms. The model was unsuccessful with just 18.4% of the firms improving performance and only 57.9% remaining active.

Voucher privatisation involved handing back, to previous owners, 12 firms nationalised without compensation. Success hinged on the previous owners retaining familiarity and experience in running the firms. The model was unsuccessful as only 33.3% of the firms improved their performance and just half remained operational. Lastly, liquidation was used to dissolve firms which were non-operational, highly indebted and/or holding companies which had become empty shells following sale of their unit after unbundling. The model was a total failure as closure of enterprises upon liquidation meant that they could not improve. Consequently, all 42 liquidated enterprises ceased operation.

9.2.3. Overview of Zambia's Electricity Industry

Chapter four gave an overview of Zambia's electricity industry. Precisely, the chapter highlighted the country's profile before describing the historical evolution of power sector reforms. Further, the chapter focused on the structure of electricity demand as well as scrutinised the legal and institutional framework for Zambia's electricity supply industry. The chapter also assessed the main players in generation, transmission and distribution. The study found that solutions to Zambia's economic challenges partially rested on effective and efficient supply of electricity. The chapter uncovered that adequate and affordable electricity gave the country the best opportunity to achieve economic diversification and industrialisation. To achieve this, Zambia's electricity industry evolved from a small thermal station in 1906 to a complex network of generation plants as well as transmission and distribution networks. In addition, a robust legal and institutional framework comprising ministries, departments, units, agencies and statutory bodies as well as policies, plans and legislations had been setup to regulate the industry.

Zambia has huge electricity generation potential as it is endowed with a wide range of domestic energy resources including hydro (6,000 MW), coal (100 million tonnes), solar (2,333,561.64 MW), biomass (500 MW), geothermal (80 hot springs). However, installed capacity only stood at 2,981.31 MW. This contributed to the country's low electricity access rates of only 33% at national level, 67% in urban areas and 4% in rural areas. In addition, Zambia's electricity industry continued to be plagued by lack of diversification and competition. For instance, hydro, a source vulnerable to climate change, continued to dominate generation with 80.60% of the total installed capacity. In addition, ZESCO continued to dominate the industry with negative consequences. The company owns 78.67% of installed generation, 91.34% of transmission infrastructure and 94% of distribution infrastructures. ZESCO is also the sole purchaser of all the generated power and the lone operator of the country's transmission network. This discourages private investments because all IPPs and distributors are forced to enter into lopsided trading agreements with ZESCO for them to sale or purchase their power.

9.2.4. Research Design and Methodology

Chapter five explained the study's research design and methodology. Methodologically, since it was a study of the researcher and stakeholders' opinions on ZESCO's performance, the Ontology

assumption was chosen. The study also leaned on the radical change paradigm as it sought to improve ZESCO's performance by radically changing it from state to private owned and controlled. The study adopted both the positivist and interpretive philosophical perspective. This was because while the study tries as much as possible to apply natural science research methods, it also recognised that different stakeholders perceived ZESCO's performance differently. As such, the study sought to use scientific methods that also allow the collection of diverse views of various ZESCO stakeholders based on their recollections and interpretations of their lived experiences. Based on the above, the study adopted a mixed methods research design to enable the qualitative design supplement and sequence the quantitative design.

The study was descriptive in nature as it attempted to describe, explain and interpret a specified phenomenon. The study thus, used case study and survey strategies. Both primary and secondary data were used. The study was conducted in Lusaka District and targeted management officials from ZESCO, ERB, ZDA and relevant government institutions. Other targets were owner/managers of businesses and representatives of domestic consumers. The study's sampling frame consisted of PACRA's list of registered businesses and organisations which represented domestic consumers of electricity in Lusaka. The sample size was 816 (consisting of 16 key informants, 500 managers/owners of businesses and 300 managers/owners of organisations which represent domestic consumers of electricity in Lusaka). Key informants were selected using purposive sampling while respondents were picked using simple random sampling. Published literature, interview guides and questionnaires were the main methods of data collection. The study also ensured that instruments for collecting quantitative data had high validity and reliability, and instruments for collecting qualitative data were trustworthy.

Quantitative data from respondents, financial records and other statistics were analysed using SPSS, and were presented and interpreted using frequency distributions and regression analysis. Chi-square analysis was also performed to test the hypotheses. Thematic and Document Analysis were used to analyse qualitative data from interviews and published literature respectively. The study also developed a conceptual framework to guide the achievement of the study's objectives. The framework helped in understanding concepts in the research objectives and how they interlinked.

9.2.5. Stakeholders' View of ZESCO Limited's Performance

Chapter six examined the views of stakeholders regarding the performance of ZESCO as an SOE. The chapter's main objective was "*to analyse stakeholders' view of ZESCO's performance as an SOE.* The chapter was guided by the Agency Theory's position that SOEs performed poorly. The chapter used data collected from various stakeholders as well as literature reviewed from relevant documents. Further, the chapter also applied chi-square analysis to test the hypothesis that: **H_0:** *Stakeholders have a neutral view of ZESCO Limited's current performance.*

Background characteristics of the sample showed that the respondents were best placed to offer informed responses to the questions in the study. The study established that the majority of the respondents (68.8% of businesses and 58.4% of domestic consumers) held the view that ZESCO's SOE status negatively affected its performance.

The study found that ZESCO performed poorly with regard to the quality of electricity supply. Supply was very unreliable as most customers experienced frequent and extended periods of interruptions in power supply. For instance, SAIFI stood at 13.7, far higher than the ERB requirement of 5.25 or less. CAIDI stood at 7.3 hours, more than *ERB*'s requirement of 6 hours or less. SAIDI was 70.4 hours, exceptionally higher than *ERB*'s requirement of 27 hours or less. Ideally, electricity faults should be repaired within hours (within a day) of being reported. ZESCO repaired the majority of the electricity faults (over 80%) a week or more after being reported. The company's customer service was also poor. For instance, it failed to ensure customer safety. Despite being required to ensure zero fatalities, ZESCO recorded nearly 30 electricity related fatalities annually. In addition, most customers (over 80%) encountered difficulties when making service inquiries.

The study found that ZESCO performed poorly with regard to the quantity of electricity supply. Specifically, while installed generation capacity (2,981.31 MW) was above the country's national peak demand (2,500 MW), actual generation was below peak demand. The peak demand was projected to outstrip installed supply as early as 2021. In the last decade, ZESCO's installed generation capacity only increased by 29% compared to 47.4% for *CEC*. During the same period, ZESCO's network length (transmission and distribution) increased by 49%. Nevertheless, the network was not long enough to cover the whole country. This left many

places, especially in rural areas, without grid power. Consequently, the country had a national electrification rate of 33%, lower than the 47.7% average in sub-Saharan Africa.

The study found that ZESCO had poor financial performance. Specifically, in the last decade, it had invested over US$2,760 million in the construction of generation plants and over US$1.5 billion in expanding and rehabilitating the transmission and distribution network. Nevertheless, these investments were inadequate as generation capacity remained low while transmission and distribution infrastructure did not cover the entire country. Additionally, although the company managed to meter over 98% of its customers, it continued to face challenges collecting revenue from state institutions. Its losses continued to mount while all financial ratios remained poor.

The study found that ZESCO's productivity was poor. Specifically, it had high costs of operation on account of avoidable expenses like importing emergency power. This led to the government heavily subsidising the company's operations. While ZESCO did manage to keep its employee numbers within the establishment, its employee productivity was still low. ZESCO had low utilisation of infrastructure as its system loses of 16% were more than 3% above the international target. Availability of Generation Plant and Plant Capacity Factor were also low.

Another finding of the study was that ZESCO's competitiveness was poor. Over the last decade, the company applied for a total of 353% increase in electricity tariffs with ERB approving a 261.7% increase. However, Zambia's electricity tariffs remained among the lowest in sub-Saharan Africa. The company lost 19.2% of its market share in generation but only 0.4% in distribution. It grew its market share in distribution by 1.9%. However, the performance was the result of government policies which prevented the entry of new competitors while stifling existing ones.

Results of regression analysis also supported the Agency Theory's position that SOEs perform poorly. Stakeholders had the view that ZESCO being an SOE compromised all performance indicators. In addition, results from chi-square analysis all showed p-values below 0.05 ($p<0.05$) thus, conclusively showing evidence of a relationship between ZESCO being an SOE and poor performance. Therefore, the null hypothesis "*H_0: Stakeholders have a neutral view of ZESCO Limited's current performance"* was rejected.

9.2.6. Privatisation of ZESCO Limited and its Likely Performance

Chapter seven established whether privatising ZESCO would improve its performance. The chapter was guided by the Theory of Cyclical Change which posits that when one type of ownership and/or control does not yield desired results, there was need to change to a different type of ownership and/or control. For instance, if a firm performs poorly as an SOE, then it should be privatised. This position was supported by the Agency Theory's assertion that private ownership and/control led to superior firm performance. Since the study conclusively showed, in Chapter six, that ZESCO performed poorly as an SOE, then the solution would be to privatise it. Therefore, the chapter's objective was "*to establish whether privatising ZESCO Limited will improve its performance"*. The chapter used data collected from various stakeholders as well as literature reviewed from relevant documents. The objective was achieved by running frequency distributions, regression analysis and chi-square analysis to test the hypothesis that: **H_0:** *Once privatised, ZESCO Limited's performance will remain the same.*

The study found that the majority of the respondents (65.3% of businesses and 67.7% of domestic consumers) were of the view that privatisation was a good strategy for ZESCO. Most informants equally held the same view.

The study found that most stakeholders expected privatisation to improve the quality of electricity supplied by ZESCO. For instance, the majority of the informants and respondents (66.2% of businesses and 67.2% of domestic consumers) expected a privatised ZESCO to reduce the frequency of interruptions in power supply. This was in line with literature, which showed that most privatised power utilities managed to significantly, reduce interruptions in electricity supply. Privatisation was also expected to improve fault restoration time by reducing the time it took to restore electricity faults. The majority of the informants and respondents (66.9% of businesses and 66.1% of domestic consumers) expected fault restoration time to improve if ZESCO was privatised. Similarly, literature showed that most privatised power utilities managed to improve fault restoration time. Most of them repaired electricity faults within days of being made aware. Privatisation was also expected to improve ZESCO's customer service as most informants and respondents expected customers to be safer while easily making inquiries and/or complaints. These expectations were supported by literature, which showed that most of the privatised utilities improved both customer safety and easiness in making inquiries and/or

complaints.

Further, the study found that most stakeholders expected the quantity of electricity supply to increase if ZESCO was privatised. Specifically, the majority of the informants and respondents (66.6% of businesses and 66.7% of domestic consumers) expected privatising ZESCO to boost the country's installed capacity significantly above peak demand. ZESCO would be able to construct more power plants while market liberalisation would encourage IPPs to construct more power plants. These expectations were supported by literature, which showed that most of the privatised utilities increased installed generation capacity enabling the countries to meet local demand and export excess power. The majority of the stakeholders agreed that privatisation would increase ZESCO's network length. They expected the company to construct more transmission and distribution lines as it attempted to connect more customers. This would lead to acceleration in Zambia's electrification. Literature equally showed that privatised utilities managed to significantly increase the lengths of their transmission and distribution networks. This led to increase in the electrification rate.

The study also found that most stakeholders expected privatisation to improve ZESCO's financial performance. Most informants and respondents (65.2% of businesses and 67.0% of domestic consumers) expected privatisation to give ZESCO the financial muscle to make investments in electricity infrastructure. In addition, most informants and respondents (65.5% of businesses and 68.1% of domestic consumers) expected privatisation to improve ZESCO's profitability. This was because private owners would be well equipped at collecting revenue and minimising expenses. Literature also revealed that privatised power utilities became profitable and increased investment in power infrastructure.

The study found that most stakeholders expected privatisation to improve ZESCO's productivity. Most informants expected privatisation to reduce ZESCO's operational costs while increasing utilisation of labour and infrastructure. Literature also revealed that privatised power utilities managed to lower operational costs. They also improved labour utilisation by trimming employ numbers, hiring quality personnel and innovating technology. They also increased utilisation of infrastructure by maximising usage of generation plants while reducing system loses.

The study found that stakeholders had mixed expectations about privatisation improving

ZESCO's competitiveness. ZESCO's tariffs were below cost-recovery level. As such, private owners would likely significantly increase tariffs in order to maximise profit. Literature also indicated that tariffs rose in countries with privatised power utilities. In addition, informants felt that ZESCO's market share would only genuinely improve if privatisation was accompanied by market liberalisation. That way, entry of new enterprises could expose privatised enterprises to competitive market forces. Literature revealed that some privatised utilities had improved their market share. However, in some countries, privatisation merely converted public monopolies into private monopolies. This meant that utilities continued to dominate the market without actually being competitive, and some utilities which faced competition, especially in generation, lost a significant chunk of their market share.

Results of regression analysis also supported the Theory of Cyclical Change and the Agency Theory's positions that privatisation would improve firm performance. The majority of the stakeholders expected privatisation to improve all of ZESCO's performance indicators. In addition, results from chi-square analysis all showed p-values below 0.05 ($p<0.05$) thus, conclusively showing evidence of a relationship between privatising ZESCO and its likely performance. Therefore, the null hypothesis "*H_0: Once privatised, ZESCO Limited's performance will remain the same"* was rejected.

9.2.7. Appropriate Model for Privatising ZESCO Limited

Chapter eight focused on developing an appropriate model for ensuring successful privatisation of ZESCO. The chapter's objective was "t*o develop an appropriate model to be used to successfully privatise ZESCO Limited".* To achieve the objective, the study was guided by the Contingency Theory. The theory posits that there is no best model of privatising SOEs. Rather, each SOE is best privatised using a model that takes into account internal and external environmental factors surrounding it and the country at large. The chapter used data collected from various stakeholders as well as literature reviewed from relevant documents. The objective was achieved by running frequency distributions, regression analysis and chi-square analysis to test the hypothesis that: H_0: *The model used to privatise ZESCO Limited will have no impact on its performance.*

The study uncovered that developing a model for privatising ZESCO was justified. This was because suggesting the right divesture model would help overcome the Zambian Government's resistance to privatising ZESCO. It is also a legal requirement to tailor privatisation models to enterprise's specifications. The majority of stakeholders, including 71.3% of businesses and 70% of domestic consumers, were of the opinion that there is need to develop a model for privatising ZESCO. Frequency distributions and results of regression analysis showed that majority of the stakeholders were of the opinion that the right privatisation model would have a significant impact on improving ZESCO's operations across all performance indicators. Additionally, results from chi-square analysis all showed p-values below 0.05 ($p<0.05$) thus, conclusively showing evidence of a relationship between developing the right privatisation model and improvement in ZESCO's post-privatisation performance. Therefore, the null hypothesis "H_0: *The model used to privatise ZESCO Limited will have no impact on its performance"* was rejected. This provided justification for developing an appropriate model for privatising ZESCO.

Employing the Contingency Theory, the study analysed a number of factors to help determine the best model for privatising ZESCO. ZESCO was found to be a large scale enterprise. The company was operational though its performance was poor. The company was found to be very important both strategically and politically. Analysis was also conducted on the impact of privatisation models on post-privatisation performance of Zambian enterprises. The opinions of stakeholders regarding their preferred model for privatising ZESCO were also assessed. Based on the findings on these factors, *Concession* was chosen as the ideal model for divesting ZESCO. This was because concession was likely to both improve ZESCO's performance as well as be accepted by the Zambian Government. Its acceptability was based on the ability of the government to retake control in cases where concessionaires failed to meet performance targets.

The study unearthed the need to promote competition rather than merely turning ZESCO from a public to a private monopoly. Consequently, the study settled on developing a model called *Competitive Concession*. Prior to privatisation, the Zambian Government needs to promote competition across all segments of the electricity industry by amending *the Electricity Act*. In addition, *the Energy Regulation Act* should also be amended to make ERB more independent so that it operates without government interference. Once this is done, ZESCO should then be

vertically unbundled into separate generation, transmission and distribution segments. A holding company called *ZESCO Holdings Limited* should be created to oversee the unbundled units.

ZESCO's generation segment should then be horizontally unbundled by clustering power plants into three bundles. Local and international firms should then be invited to bid for the bundles. After careful scrutiny, successful bidders should be awarded 30-year concession contracts, reviewable every five years. To prevent monopoly, each successful bidder should only be awarded a concession for one bundle. *ZESCO Holdings Limited* should then develop a comprehensive performance measuring framework for assessing the performances of generation concessionaires every five years. Firms that fail to meet performance targets should have their concession contracts modified (by repossessing some power plants) or terminated. Firms that meet minimum performance requirements should be allowed to continue holding their concession contracts. The firms that perform exceptionally well should be allowed to continue holding their concession contracts. They should also be rewarded by being given an opportunity to take over repossessed power plants. In cases where none of the current concession holders perform beyond expectation, repossessed power plants should be competitively bided for by new firms. As a way of promoting competition, electricity generators, should be legally prohibited from owning and/or controlling the transmission grid.

ZESCO's entire transmission network should be divested as a single unit. Local and international firms should be invited to bid for the unit. After careful scrutiny, the successful bidder should be awarded a 30-year concession contract, reviewable every five years. The concession contract should include the license to operate the transmission network. *ZESCO Holdings Limited* should then develop a comprehensive performance measuring framework for assessing performance of the transmission concessionaire. The firm should keep the concession if it meets minimum performance requirements. The concession should be terminated if performance is below expectation, and if the concession contact is terminated, the transmission unit should be opened for competitive bidding from new firms. To ensure competition, transmitters should be legally prohibited from owning and/or controlling generation plants and distribution networks.

ZESCO's distribution segment should be horizontally unbundled into four divisions (*Southern, Lusaka, Copperbelt* and *Northern Division*) each covering a specific geographical area. Local and international firms should then be invited to bid for the distribution units. After careful

scrutiny, successful bidders should be awarded 30-year concession contracts, reviewable every five years. To prevent monopoly, each successful bidder should only be awarded a concession for one division. *ZESCO Holdings Limited* should then develop a comprehensive performance measuring framework for assessing the performances of distribution concessionaires. Firms that fail to meet performance targets should have their concession contracts terminated while firms that meet minimum performance requirements should be allowed to continue holding their concession contracts. Similarly, firms that perform exceptionally well should be allowed to continue holding their concession contracts. They should also be rewarded by being given an opportunity to take over repossessed distribution divisions. In cases where none of the concession holders performs beyond expectation, repossessed divisions should be competitively bided for by new firms. As a way of promoting competition, electricity distributors should be legally prohibited from owning and/or controlling generation plants and the transmission grid.

All concessionaires should have the exclusive right for operating, maintaining and carrying out investment for infrastructure under their concession. There should be minimal to no interference from both *ZESCO Holding Limited* and the Zambian Government. *ZESCO Holding Limited* should have the responsibility of offering technical assistance as well as monitoring and measuring the performances of concessionaires. Concession contracts should only be modified or terminated on the basis of poor performance, and *ERB* should guard against monopolistic tendencies among firms across all segments of the electricity industry.

9.3. Policy Recommendations

A number of gaps were identified in Zambia's electricity sector that needed improving. Therefore, the study recommended a number of policy changes. It is hoped that these additions would improve the performance of the country's electricity industry.

9.3.1. Improve Operations of the Zambia Development Agency

The Zambia Development Agency only produces status updates regarding which firms were privatised, the model used to privatise them, when they were privatised, who bought them and for how much. The latest of these updates was published in 2010. This is limiting as there is lack of information to inform future privatisation efforts. Therefore, there is need for *ZDA* to start

keeping track of the post-privatisation performance of enterprises. In addition, there is need to ensure that *ZDA* solidifies its research output so that it becomes better at providing investors with adequate incentives and updated market information.

The agency should be made more autonomous and independent. This would allow it to properly undertake privatisation process without political interference. This is especially important at the stages of evaluating, pricing and determining modes of privatisation. An independent *ZDA* would be in a better position to tap qualified and impartial consultants who would be ideally placed to offer neutral and informed recommendations of the best models for divesting Zambian SOEs. The consultants would also be best placed to critically scrutinise and negotiate with bidders for a favourable outcome.

9.3.2. Avoid Corruption by Promoting Transparency

Zambia's privatisation has been plagued by lack of transparency, insider dealing and corruption. This has resulted in enterprises being divested to connected cronies and political supporters who lack the ability to run and/or improve the enterprises' performance. To avoid this, there is need to ensure transparency throughout the privatisation process. Transparency should also extend to post-privatisation operations of enterprises. One way of guaranteeing transparency could be by publishing all privatisation actives in the media. For instance, names of bidders, consultants, valuators and lawyers dealing with privatisation should be made public. Names of successful bidders and the reasons for their selection should be made public and clearly explained.

9.3.3. Avoid Government Interference in the Operation of the Electricity Industry

Government agencies should not be allowed to meddle in the inner workings of privatised firms, especially those divested through concession. This can be achieved by ensuring that only *ZESCO Holding Limited* is charged with assessing the performance of concessionaires. Additionally, concession contracts should only be modified and/or terminated based on poor performance. Severe financial penalties should be imposed on the Zambian Government if it severed contracts for any other questionable reason. Another means of avoiding government interference is by improving *ERB*'s operational autonomy. One effect of this is that ERB would have the ability to set tariffs and punish offending electricity companies without undue political pressure. There is

also need to avoid duplication of functions among various energy institutions. For instance, only *ERB* should award energy licenses and provide overall regulation of the electricity industry. Other institutions like the Ministry of Energy should be limited to policy matters.

9.3.4. Diversify Sources of Electricity Generation

Zambia's energy mix needs to be diversified and move away from dependency on hydro, which remains vulnerable to droughts that have become frequent in recent years. There should be a shift to other renewable energy sources especially geothermal, biomass and solar. To achieve this, the Zambian Government should intensify solar mapping measuring services. This will provide investors with information regarding locations with generation quality solar radiation. Exploration of geothermal sources should be intensified to have a clear understanding of hot springs with potential for generation of geothermal power. The government should then award attractive incentives to firms which intend to invest in these energy sources.

9.3.5. Improve Incentives for Rural Electrification

There is need to improve incentives aimed at encouraging transmitters to construct transmission lines in rural areas. Once transmission lines reach rural areas, there is need to improve incentives aimed at encouraging distributors to connect more rural customers. Through *the Rural Electrification Master Plan (REMP, 2009–2030),* the government should intensify its development of least cost expansion alternatives for generation, transmission and distribution in rural areas. This could be done by having *Rural Electrification Authority* (*REA)* partner with private investors in expanding the national grid as well as building mini hydro and solar systems in rural areas. The partnership could include *REA* financing rural electrification using the *Rural Electrification Fund. Rural Electrification Authority* should also offer technical assistance to private investors. The government can also offer tax breaks to utilities operating and investing in rural areas.

9.3.6. Implement Cost Reflective Tariffs

The most effective way of encouraging private investment in the energy sector is ensuring that tariffs are attractive. This can be achieved through making tariffs cost reflective. Cost reflective

tariffs would also eliminate the need for the Zambian Government to spend colossal sums of money on subsidies. Tariffs can be made cost reflective by matching increments to the rate of depreciation in the Kwacha. This is because most of the costs incurred by electricity firms come from importing equipment, and as expected, imports are paid for using US Dollars.

9.4. Areas for Further Research

Since the study had a limited scope, areas not covered shall prompt future investigations. For instance, the study was confined to establishing the best model for privatising ZESCO in order to improve its performance. This meant that it concentrated on looking at the effect of ownership and/or control on the performance of ZESCO. Other factors determining ZESCO's performance were not looked at. Therefore, future studies can look at other performance indicators.

Further studies should also be carried out to develop models of commercialising ZESCO that are both economically and politically acceptable. Other studies should examine how to improve *ERB*'s performance indicators.

Further studies should look at developing modalities of improving electricity consumers' participation in decisions made by *ERB* and the Zambian Government. Other future researches can focus on managing corruption in the energy sector.

9.5. Chapter Summary

This chapter provided conclusions and policy recommendations. The study found that models used to privatise Zambian enterprises had an impact on their performance. Further, the study found that stakeholders viewed ZESCO's performance to be poor. In addition, the study also found that privatising ZESCO using the right model would improve its performance. The study, therefore, developed competitive concession as the best model for privatising ZESCO. It also recommended vertically and horizontally unbundling ZESCO prior to its divesture.

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APPENDICES

Appendix 1: Research Instruments

INTERVIEW GUIDE FOR OFFICIALS FROM ZESCO LIMITED, THE INDUSTRIAL DEVELOPMENT CORPORATION, THE ENERGY REGULATION BOARD, THE MINISTRY OF ENERGY AND THE RURAL ELECTRIFICATION AUTHORITY

Good morning/afternoon/evening, my name is Royd Malisase pursuing a PhD in Public Management and Governance at North West University, Vaal Triangle Campus, South Africa. My thesis is entitled **"Privatisation of ZESCO Limited: In Search of an Appropriate Method"**. The participants of this study include members of the public, organisation owners/managers, and officials from ZESCO Limited, the Energy Regulation Board and representatives of electricity consumers.

You have been identified as one of the respondents and I'm kindly requesting for your time and cooperation to respond to the questions in this interview. Please note that this interview is voluntary and you may withdraw at any time especially if you feel the study is causing any mental, emotional or physical harm. The researcher will uphold and guarantee confidentiality and anonymity. The information gathered from the participants will be used for academic purposes only and the responses will be kept for the duration stipulated by the University.

Date _____

Start time _____ End time: _____

Organisation _____

Position held by Interviewee _____

Gender_____Age_____

Highest education qualification_____

Number of years worked in the organisation_____

Notes to interviewee:

- Thank you for your participation. I believe your input will be valuable to this research
- Confidentiality of responses is guaranteed
- Approximate length of interview: 60 minutes

Your participation will be greatly appreciated.

Questions

1. What role does your organisation play in Zambia's electricity industry?
2. How would you rate the performance of Zambia's electricity industry?
3. How would you rate the current performance of ZESCO Limited in terms of **quality of service provision**? Probe with regards to:
    a) Reliability as determined by the frequency of electricity interruptions.
    b) Customer service as determined by
        i. Number of ZESCO Limited's call and traditional walk-in centres
        ii. Operating hours of ZESCO Limited's call and traditional walk-in centres
        iii. Convenience for customers to call or talk to agents face-to-face regarding inquiries, complaints or reporting electric faults
        iv. The time it takes to repair or reinstall major breakdowns in electricity infrastructure, especially following storms or other disasters.
4. How would you rate the current performance of ZESCO Limited in terms of **quantity of electricity generation**? Probe with regards to:
    a) Quantity generated compared to actual demand
    b) Proportion of the population connected to electricity supply. As determined by:
        i. The Number of connections compared to actual connections demanded
        ii. The percentage of connections compared to actual connections demanded
5. How would you rate the current **financial performance** of ZESCO Limited? Probe with regards to:
    a) Levels of investment in:
        i. Generation infrastructure
        ii. Transmission infrastructure, and
        iii. Distribution infrastructure.
    b) Profitability as determined by
        i. Net Profit Margin (NPM)
        ii. Return on Equity (ROE)
        iii. Return on Assets (ROA).
6. How would you rate the current performance of ZESCO Limited in terms of **productivity**? Probe with regards to:

a) Cost of operation
b) Utilization of labour (e.g. man hours spent producing a KW of electricity)
c) Utilization of infrastructure. As determined by:
    i. Installed generation capacity compared to actual electricity generated.
    ii. Installed transmission capacity compared to actual electricity transmitted.
    iii. Installed distribution capacity compared to actual electricity distributed.
    iv. Energy losses in the production, transmission and distribution system.

7. How would you rate the current performance of ZESCO Limited in terms of **competitiveness**? Probe with regards to:
    a) Price of electricity (tariffs) compared to other countries
    b) Number of new market entrants in:
        i. Generation
        ii. Transmission, and
        iii. Distribution.
    c) Market share in
        i. Generation
        ii. Transmission, and
        iii. Distribution.
8. What would you say are the main factors that help to improve the performance of ZESCO Limited?
9. What would you say are the main factors hindering the performance of ZESCO Limited?
10. In your opinion, if the government decided to privatise ZESCO limited, would the **quality of service provision** improve? Probe with regards to:
    a) Reliability as determined by the frequency of electricity interruptions.
    b) Customer service as determined by
        i. Number of ZESCO Limited's call and traditional walk-in centres
        ii. Operating hours of ZESCO Limited's call and traditional walk-in centres
        iii. Convenience for customers to call or talk to agents face-to-face regarding inquiries, complaints or reporting electric faults
        iv. The time it takes to repair or reinstall major breakdowns in electricity infrastructure, especially following storms or other disasters.

11. In your opinion, if the government decided to privatise ZESCO limited, would **quantity of electricity generation** improve? Probe with regards to:
    a) Quantity generated compared to actual demand
    b) Proportion of the population connected to electricity supply. As determined by:
        i. The Number of connections compared to actual connections demanded
        ii. The percentage of connections compared to actual connections demanded
12. In your opinion, if the government decided to privatise ZESCO limited, would its financial **performance** improve? Probe with regards to:
    a) Levels of investment in:
        i. Generation infrastructure
        ii. Transmission infrastructure, and
        iii. Distribution infrastructure.
    b) Profitability as determined by
        i. Net Profit Margin (NPM)
        ii. Return on Equity (ROE)
        iii. Return on Assets (ROA).
13. In your opinion, if the government decided to privatise ZESCO limited, would its **productivity improve**? Probe with regards to:
    a) Cost of operation
    b) Utilization of labour (e.g. man hours spent producing a KW of electricity)
    c) Utilization of infrastructure. As determined by:
        i. Installed generation capacity compared to actual electricity generated.
        ii. Installed transmission capacity compared to actual electricity transmitted.
        iii. Installed distribution capacity compared to actual electricity distributed.
        iv. Energy losses in the production, transmission and distribution system.
14. In your opinion, if the government decided to privatise ZESCO limited, would its **competitiveness** improve? Probe with regards to:
    a) Price of electricity (tariffs) compared to other countries
    b) Number of new market entrants in:
        i. Generation
        ii. Transmission, and

iii. Distribution.

c) Market share in

i. Generation

ii. Transmission, and

iii. Distribution.

15. What are the main models used to privatise State Owned Enterprises in Zambia?
16. Looking at the privatisation experience in Zambia, what are the strengths of each of these models?
17. Looking at the privatisation experience in Zambia, what are the weaknesses of each of these models?
18. If the government decided to privatise ZESCO limited, how will each of these models impact its performance?
19. In your opinion, what would be the ideal privatisation model to ensure that ZESCO limited succeeded if privatised? Please explain why you think so.
20. Do you have any additional comments on the topic? Kindly share

Thank You for Your Participation

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

INTERVIEW GUIDE FOR OFFICIALS FROM THE COMPETITION AND CONSUMER PROTECTION COMMISSION

Good morning/afternoon/evening, my name is Royd Malisase pursuing a PhD in Public Management and Governance at North West University, Vaal Triangle Campus, South Africa. My thesis is entitled **"Privatisation of ZESCO Limited: In Search of an Appropriate Method"**. The participants of this study include members of the public, organisation owners/managers, and officials from ZESCO Limited, the Energy Regulation Board, industries/Manufacturing Enterprises and scholars from the University of Zambia.

You have been identified as one of the respondents and I'm kindly requesting for your time and cooperation to respond to the questions in this interview. Please note that this interview is voluntary and you may withdraw at any time especially if you feel the study is causing any mental, emotional or physical harm. The researcher will uphold and guarantee confidentiality and anonymity. The information gathered from the participants will be used for academic purposes only and the responses will be kept for the duration stipulated by the University.

Date _____

Start time _____ End time: _____

Organisation _____

Position held by Interviewee _____

Gender_____Age_____

Highest education qualification_____

Number of years worked in the organisation_____

Notes to interviewee:

- Thank you for your participation. I believe your input will be valuable to this research
- Confidentiality of responses is guaranteed
- Approximate length of interview: 60 minutes

Your participation will be greatly appreciated.

Questions

1. What role does your organisation play in Zambia's electricity industry?
2. What is the current electricity legal and regulatory framework in Zambia
3. What rights are enjoyed by electricity consumers in Zambia?
4. What are the obligations of electricity consumers in Zambia?
5. What are the obligations of ZESCO Limited to its consumers?
6. What are the obligations of the Energy Regulation Board to electricity consumers?
7. What measures have you put in place to protect electricity consumers?
8. What challenges are consumers currently facing in accessing electricity from ZESCO Limited? Probe with regards to:
    a) The reliability of electricity supply
    b) Customer service
    c) Adequacy of electricity supply
    d) Quality of electricity infrastructure
    e) Price of electricity (tariffs)
9. Do you think the Zambian Government's policy of privatisation would improve ZESCO Limited's performance thus reducing challenges customers currently face in accessing electricity? Probe with regards to:
    a) The reliability of electricity supply
    b) Customer service
    c) Adequacy of electricity supply
    d) Quality of electricity infrastructure
    e) Price of electricity (tariffs)
10. Which privatisation models are you familiar with? Please explain.
11. In your opinion, what would be the ideal privatisation model to ensure that ZESCO limited succeeded if privatised?
12. Do you have any additional comments on the topic? Kindly share

Thank You for Your Participation

NORTH-WEST UNIVERSITY
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VAAL TRIANGLE CAMPUS

INTERVIEW GUIDE FOR OFFICIALS FROM BUSINESS ASSOCIATIONS

Good morning/afternoon/evening, my name is Royd Malisase pursuing a PhD in Public Management and Governance at North West University, Vaal Triangle Campus, South Africa. My thesis is entitled **"Privatisation of ZESCO Limited: In Search of an Appropriate Method"**. The participants of this study include members of the public, organisation owners/managers, and officials from ZESCO Limited, the Energy Regulation Board and representatives of electricity consumers.

You have been identified as one of the respondents and I'm kindly requesting for your time and cooperation to respond to the questions in this interview. Please note that this interview is voluntary and you may withdraw at any time especially if you feel the study is causing any mental, emotional or physical harm. The researcher will uphold and guarantee confidentiality and anonymity. The information gathered from the participants will be used for academic purposes only and the responses will be kept for the duration stipulated by the University.

Date _____

Start time _____ End time: _____

Organisation _____

Position held by Interviewee _____

Gender_____Age_____

Highest education qualification_____

Number of years worked in the organisation_____

Notes to interviewee:

- Thank you for your participation. I believe your input will be valuable to this research
- Confidentiality of responses is guaranteed
- Approximate length of interview: 60 minutes

Your participation will be greatly appreciated.

Questions

1. How do you rate the reliability (determined by the frequency of electricity interruptions) of electricity supplied by ZESCO Limited? Kindly explain.
2. How does this affect the operations of businesses?
3. How do you rate the quality of ZESCO's customer services? Probe with regards to
    a) Convenience for customers to call or talk to agents face-to-face regarding inquiries, complaints or reporting electric faults
    b) The time it takes to repair or reinstall major breakdowns in electricity infrastructure, especially following storms or other disasters.
4. How does this affect the operations of businesses?
5. How would you rate the adequacy of electricity supplied to businesses?
6. How does this affect the operations of businesses?
7. How do you rate ZESCO Limited's electricity supply infrastructure? Please explain.
8. How do you rate the cost of electricity for businesses? Please explain.
9. How does the cost of electricity impact the running of businesses?
10. In your opinion, how does lack of competition affect ZESCO Limited's performance?
11. Do you think the Zambian Government's policy of privatisation would improve ZESCO Limited's performance? Probe with regards to:
    f) The reliability of electricity supply
    g) Customer service
    h) Adequacy of electricity supply
    i) Quality of electricity infrastructure
    j) Profitability
    k) Cost of Operation
    l) Price of electricity (tariffs)
12. Which privatisation models are you familiar with? Please explain.
13. In your opinion, what would be the ideal privatisation model to ensure that ZESCO limited succeeded if privatised?
14. Do you have any additional comments on the topic? Kindly share

Thank You for Your Participation

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SURVEY QUESTIONNAIRE FOR BUSINESSES

Good morning/afternoon/evening, my name is Royd Malisase pursuing a PhD in Public Management and Governance at North West University, Vaal Triangle Campus, South Africa. My thesis is entitled **"Privatisation of ZESCO Limited: In Search of an Appropriate Method"**. The participants of this study include business owners/managers, members of the public and officials from ZESCO Limited, the Energy Regulation Board and representatives of electricity consumers.

You have been identified as one of the respondents and I'm kindly requesting for your time and cooperation to respond to the questions in this questionnaire. Please note that your participation is voluntary and you may withdraw at any time especially if you feel the study is causing any mental, emotional or physical harm. The researcher will uphold and guarantee confidentiality and anonymity (use of pseudo names on subjects). The information gathered from the participants will be used for academic purposes only and the responses will be kept for the duration stipulated by the University.

Questionnaire number: _____

Date of survey: _____

Start Time: _____ End Time: _____

Gender of interviewee_____

Notes to interviewee:

- Thank you for your participation. I believe your input will be valuable to this research
- Confidentiality of responses is guaranteed
- Approximate length: **60 minutes**

Your participation will be greatly appreciated.

PART 1: GENERAL INFORMATION

1.1. Location of business _____

1.2. Company Size (number of employees)	
Micro Enterprise (up to 10 employees)	1
Small enterprise (11 to 50 Employees)	2
Medium Enterprise (51 to 100 employees)	3
Large enterprise (more than 100 employees)	4
I don't know	9
No response	10

1.3. Year of commencement of business _____ (1)

I Don't know .....(9)

1.4. Sector of the economy business operates in	
Primary sector	1
Secondary/Manufacturing sector	2
Tertiary/Service sector	3
Quaternary sector	4
I don't Know	5

1.5. Geographical coverage of the business	
Immediate surrounding areas	1
District	2
Province	3
Countrywide	4
I Don't Know	9

1.6. Does your business have holdings or operations in other countries?	
Yes	1
No	2
Don't Know	9

1.7. How was your business established (circle one)?	
Originally private firm	1
Privatization of a state-owned firm	2
Private subsidiary of a formerly state-owned firm	3
Joint venture, domestic and foreign private owners	4
Others (Specify)	5
Don't Know	9

1.8. What is your job title?	
Owner/proprietor	1
Manager	2

1.9. What is your highest education qualification?	
No formal education	1
Primary education	2
Secondary education	3
College education	4
University undergraduate education	5
University post-graduate education	6
I Don't Now	9

1.10. Have you worked in the public sector before?	
Yes	1
No	2
Don't Know	9

1.11. What is the gender of the most senior manager/owner of your business?	
Male	1
Female	2

PART 2: STAKEHOLDERS' VIEW OF ZESCO LIMITED'S CURRENT PERFORMANCE AS AN SOE

2.1. Is your business connected to the ZESCO electricity system?	
Yes	1
No	2

2.2. ZESCO's SOE status (being owned and controlled by the government) negatively affects its performance	
Strongly agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

2.3. How frequent does your business experience electricity power interruptions?	
Never	1
Rarely (at least once a year)	2
Occasionally (at least once a month)	3
Frequent (at least once a week)	4
Very Frequent (at least once a day)	5
Don't Know	9

2.4. On average, how long do the electricity interruptions last?.....Hours

2.5. How significant is the negative impact of electricity power interruptions on your business?	
No Impact	1
Minor Impact	2
Moderate Impact	3
Significant Impact	4
Very Significant Impact	5
Don't Know	9

2.6. During the last year, did you or any one you know have any reason to make a complaint about services provided by ZESCO Limited?	
Yes	1
No (skip to question 2.9)	2

2.7. If "Yes" to question 2.6, did you or they make a complaint?	
Yes	1
No (skip to question 2.9)	2
Not Applicable	8
Don't Know (skip to question 2.9)	9

2.8. If "yes" to question 2.7, how much impact did the complaint have?	
Full Impact	1
Significant Impact	2
Moderate Impact	3
Little Impact	4
No Impact	5
Not Applicable	8
Don't Know	9

2.9. During the last year, did you or any one you know, contact ZESCO Limited regarding an electric fault?	
Yes	1
No=> skip to question 2.11.	2

2.10. If "Yes" to question 2.9, how long did ZESCO Limited take to fix the electric fault?	
Within a day of reporting	1
Within a week of reporting	2
Within a month of reporting	3
More than a month after reporting	4
Not Yet Repaired	5
Not applicable	8
Don't Know	9

2.11. How easy is it to make inquiries about services provided by ZESCO Limited?	
Very easy	1
Easy	2
Neither difficult nor easy	3
Difficult	4
Very difficult	5
Don't Know	9

2.12. How do you rate ZESCO Limited in terms of ensuring safety of its customers?	
Very Effective	1
Effective	2
Moderate	3
Ineffective	4
Very Ineffective	5
Don't Know	9

2.13. How would you rate the adequacy of electricity supplied by ZESCO to your business?	
Very adequate	1
Adequate	2
Moderate	3
Inadequate	4
Very inadequate	5
Don't Know	9

2.14. How do you rate ZESCO's electricity distribution infrastructure (such as transformers)?	
Excellent	1
Good	2
Moderate	3
Poor	4
Very Poor	5
Don't Know	9

2.15. How much do you spend on paying for ZESCO Limited's electricity for your business every month? _____ Kwacha

2.16. How is the price of ZESCO Limited's electricity for your business?	
Very Cheap	1
Cheap	2
Fairly cheap	3
Expensive	4
Very Expensive	5
Don't Know	9

2.17. Does your business own a standby generator?	
Yes	1
No=> skip to question 2.19	2

2.18. If “yes” to question 2.17, during the past one year, how much did your business spend on operating electricity generators every month? _____ Kwacha

2.19. How significant is the negative impact of the cost of electricity on your business?	
No Impact	1
Minor Impact	2
Moderate Impact	3
Significant Impact	4
Very Significant Impact	5
Don’t Know	9

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2.20. How do you rate ZESCO Limited’s financial performance?	
Excellent	1
Good	2
Moderate	3
Poor	4
Very Poor	5
Don’t Know	9

2.21. How do you rate ZESCO Limited’s productivity?	
Excellent	1
Good	2
Moderate	3
Poor	4
Very Poor	5
Don’t Know	9

2.22. How do you rate ZESCO Limited's competitiveness?	
Excellent	1
Good	2
Moderate	3
Poor	4
Very Poor	5
Don't Know	9

PART 3: WHETHER STAKEHOLDERS THINK PRIVATISING ZESCO LIMITED WILL IMPROVE ITS PERFORMANCE

3.1. Government policy of privatisation is a good strategy for ZESCO Limited.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.2. Privatising ZESCO Limited will reduce the frequency of electricity power interruptions.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.3. Privatising ZESCO Limited will reduce time it takes to fix electricity faults.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.4.Privatisation will make it easy to make inquiries about services provided by ZESCO Limited.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.5. Privatising ZESCO Limited will improve safety of its customers.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.6. Privatising ZESCO Limited will improve the adequacy of electricity supplied.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.7. Privatising ZESCO Limited will improve electricity distribution infrastructure (such as transformers).	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.8. Privatising ZESCO Limited will reduce the price of electricity thus making it affordable.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.9. Privatising ZESCO Limited will improve investment in infrastructure.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.10. Privatising ZESCO Limited will improve its profitability.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.11. Privatising ZESCO Limited will improve its productivity.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.12. Privatising ZESCO Limited will improve its market share.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

PART 4: APPROPRIATE MODEL FOR SUCCESSFUL PRIVATISATION OF ZESCO LIMITED

4.1. A particular choice of privatisation model will have an impact on the performance of ZESCO.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

4.2. Privatisation model will have an impact on quality of electricity supplied by ZESCO Limited.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don’t Know	9

4.3. Privatisation model will have an impact on quantity of electricity supplied by ZESCO Limited.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don’t Know	9

4.4. Privatisation model will have an impact on the ZESCO Limited's financial performance.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don’t Know	9

4.5. Privatisation model will have an impact on the ZESCO Limited's productivity.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

4.6. Privatisation model will have an impact on the ZESCO Limited's competitiveness.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

4.7. Which privatisation model would you recommend for privatising ZESCO Limited?	
Management - Employee Buyouts (MEBO)	1
Share Issue (Public Offering and Dilution of government holding)	2
Sale of Assets (through negotiated and/or competitive bids)	3
Management Contracts	4
Concession	5
Leases	6
Voucher Privatisation	7
Please specify others ……..	
Don't Know	9

Please provide brief comments on any issue not covered by the survey in the space provided below:

THE SURVEY ENDS HERE, THANK YOU FOR YOUR COOPERATION

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

SURVEY QUESTIONNAIRE FOR ORGANISATIONS THAT REPRESENT ELECTRICITY CONSUMERS

Good morning/afternoon/evening, my name is Royd Malisase pursuing a PhD in Public Management and Governance at North West University, Vaal Triangle Campus, South Africa. My thesis is entitled **"Privatisation of ZESCO Limited: In Search of an Appropriate Method"**. The participants of this study include members of the public, organisation owners/managers, and officials from ZESCO Limited, the Energy Regulation Board and representatives of electricity consumers.

You have been identified as one of the respondents and I'm kindly requesting for your time and cooperation to respond to questions in this questionnaire. Please note that your participation is voluntary and you may withdraw at any time, especially if you feel the study is causing any mental, emotional or physical harm. The researcher will uphold and guarantee confidentiality and anonymity. The information gathered from the participants will be used for academic purposes only and the responses will be kept for the duration stipulated by the University.

Date _____

Start time _____ End time: _____

Position held by respondent _____

Gender_____Age_____

Highest education qualification_____

Number of years worked in the organisation_____

Notes to interviewee:

- Thank you for your participation. I believe your input will be valuable to this research
- Confidentiality of responses is guaranteed
- Approximate length: 60 minutes

Your participation will be greatly appreciated.

PART 1: GENERAL INFORMATION

1.1. In which sector of the economy does your organisation operate in?	
Agriculture and fisheries	1
Mining and Quarrying	2
Manufacturing	3
Water and Electricity	4
Construction	5
Retail	6
Transport and communication	7
Financial services	8
Administration and other services	9
Specify others…….	

1.2. Have you worked in the public sector before?	
Yes	1
No	2
Don't Know	3

1.3. What is the gender of the most senior manager of your organisation?	
Male	1
Female	2
Don't Know	9

PART 2: STAKEHOLDERS' VIEW OF ZESCO LIMITED'S CURRENT PERFORMANCE

2.1. Are your clients connected to the ZESCO electricity system?	
Yes	1
No	2
I Don't Know	9

2.2. ZESCO's SOE status (being owned and controlled by the government) negatively affects its performance.	
Strongly agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

2.3. How frequent do your clients experience electricity power interruptions?	
Never	1
Rarely (at least once a year)	2
Occasionally (at least once a month)	3
Frequent (at least once a week)	4
Very Frequent (at least once a day)	5
Don't Know	9

2.4. On average, how long do the electricity interruptions last?.....Hours

2.5. How significant is the negative impact of electricity power interruptions on your clients?	
No Impact	1
Minor Impact	2
Moderate Impact	3
Significant Impact	4
Very Significant Impact	5
Don't Know	9

2.6. During the last year, did any of your clients have any reason to make a complaint about services provided by ZESCO Limited?	
Yes	1
No=> skip to question 2.9	2
Don't Know=> Skip to question 2.9	9

2.7.If "Yes" to question 2.6, did they make a complaint?	
Yes	1
No=> skip to question 2.9	2
Not Applicable=> skip to question 2.9	8
I Don't Know=> skip to question 2.9	9

2.8. If "Yes" to question 2.7, how much impact did the complaint have?	
Full Impact	1
Significant Impact	2
Moderate Impact	3
Little Impact	4
No Impact	5
Not Applicable	8
Don't Know	9

2.9. During the last year, did any of your clients contact ZESCO regarding an electricity fault?	
Yes	1
No=> skip to question 2.11.	2
Don't Know=> skip to question 2.11,	9

2.10. If "Yes" to question 2.9, how long did ZESCO Limited take to fix the electricity fault?	
Within a day of reporting	1
Within a week of reporting	2
Within a month of reporting	3
More than a month after reporting	4
Not Yet Repaired	5
Not applicable	8
Don't Know	9

2.11. How easy is it for your clients to make inquiries about services provided by ZESCO?	
Very easy	1
Easy	2
Neither difficult nor easy	3
Difficult	4
Very difficult	5
Don't Know	9

2.12. How do your clients rate ZESCO Limited in ensuring safety of its customers?	
Very Effective	1
Effective	2
Moderate	3
Ineffective	4
Very Ineffective	5
Don't Know	9

2.13. How do your clients rate the adequacy of electricity supplied by ZESCO Limited?	
Very adequate	1
Adequate	2
Moderate	3
Inadequate	4
Very inadequate	5
Don't Know	9

2.14. How do your clients rate ZESCO's distribution infrastructure (such as transformers)?	
Excellent	1
Good	2
Moderate	3
Poor	4
Very Poor	5
Don't Know	9

2.15. On average, how much do your clients spend on paying for ZESCO electricity every month? _____ Kwacha

2.16. How is the price of ZESCO Limited's electricity for your clients?	
Very Cheap	1
Cheap	2
Fairly cheap	3
Expensive	4
Very Expensive	5
Don't Know	9

2.17. Do any of your clients own standby generators?	
Yes	1
No=> skip to question 2.20	2
Don't Know=> skip to question 2.19	9

2.18. If "Yes" to question 2.17, during the past one year, how much did your clients spend on operating electricity generators? _____ Kwacha

2.19. How significant is the negative impact of the cost of electricity on your clients?	
No Impact	1
Minor Impact	2
Moderate Impact	3
Significant Impact	4
Very Significant Impact	5
Don't Know	9

2.20. How do you rate ZESCO's financial performance?	
Excellent	1
Good	2
Moderate	3
Poor	4
Very poor	5
Don't Know	9

2.21. How do you rate ZESCO's financial performance?	
Excellent	1
Good	2
Moderate	3
Poor	4
Very poor	5
Don't Know	9

2.22. How do you rate ZESCO's competitiveness?	
Excellent	1
Good	2
Moderate	3
Poor	4
Very poor	5
Don't Know	9

PART 3: WHETHER STAKEHOLDERS THINK PRIVATISING ZESCO LIMITED WILL IMPROVE ITS PERFORMANCE

3.1. Government policy of privatisation is a good strategy for ZESCO Limited.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.2. Privatising ZESCO Limited will reduce the frequency of electricity power interruptions.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.3. Privatising ZESCO Limited will reduce time it takes to fix electricity faults.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.4. Privatisation will make it easy to make inquiries about services provided by ZESCO Limited.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.5. Privatising ZESCO Limited will improve safety of its customers.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.6. Privatising ZESCO Limited will improve the adequacy of electricity supplied.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.7. Privatising ZESCO Limited will improve electricity distribution infrastructure (such as transformers).	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.8. Privatising ZESCO Limited will reduce the price of electricity thus making it affordable.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.9. Privatising ZESCO Limited will improve investment in infrastructure.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.10. Privatising ZESCO Limited will improve its profitability.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.11. Privatising ZESCO Limited will improve its productivity.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

3.12. Privatising ZESCO Limited will improve its market share.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

PART 4: APPROPRIATE MODEL FOR SUCCESSFUL PRIVATISATION OF ZESCO LIMITED

4.1. A particular choice of privatisation model will have an impact on the performance of ZESCO.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

4.2. Privatisation model will have an impact on quality of electricity supplied by ZESCO Limited.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don’t Know	9

4.3. Privatisation model will have an impact on quantity of electricity supplied by ZESCO Limited.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don’t Know	9

4.4. Privatisation model will have an impact on ZESCO Limited's financial performance.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don’t Know	9

4.5. Privatisation model will have an impact on the ZESCO Limited's productivity.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

4.6. Privatisation model will have an impact on the ZESCO Limited's competitiveness.	
Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5
Don't Know	9

4.7. Which privatisation model would you recommend for privatising ZESCO Limited?	
Management - Employee Buyouts (MEBO)	1
Share Issue (Public Offering and Dilution of government holding)	2
Sale of Assets (through negotiated and/or competitive bids)	3
Management Contracts	4
Concession	5
Leases	6
Voucher Privatisation	7
Please specify others ……..	
Don't Know	9

Please provide brief comments on any issue not covered by the survey in the space provided below:

THE SURVEY ENDS HERE, THANK YOU FOR YOUR COOPERATION

Appendix 2: Participant Information Leaflet and Consent Form for Key Informants

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

PO Box 1174, Vanderbijlpark
South Africa, 1900

Web: http://www.nwu.ac.za

DATE: 23/08/2019

BaSSREC Authorization

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM FOR KEY INFORMANTS

TITLE OF THE RESEARCH PROJECT: PRIVATISATION OF ZESCO LIMITED: IN SEARCH OF AN APPROPRIATE METHOD

REFERENCE NUMBERS: NWU-2019-0061

PRINCIPAL INVESTIGATOR: ROYD MALISASE

ADDRESS: UNIVERSITY OF ZAMBIA, P.O BOX 32379, LUSAKA, ZAMBIA.

CONTACT NUMBER: +260-979-380601

You are being invited to take part in a research project that forms part of my PhD in Public Management and Governance. Please take some time to read the information presented here, which will explain the details of this project. Please ask the researcher any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part. Prior to publication of the study's results (or the point that publication is in process), you may also withdraw the data you generate.

This study has been approved by the **Basic Social Sciences Research Ethics Committee (BaSSREC) of the Faculty of Humanities of the North-West University (NWU-2019-0061)** and will be conducted according to the ethical guidelines and principles of the international Singapore Statement on Research Integrity (2010) and the ethical guidelines of the National Health Research Ethics Council. It might be necessary for the research ethics committee members or relevant authorities to inspect the research records to make sure that we (the researchers) are conducting research in an ethical manner.

What is this research study all about?

- *This study will be conducted in Lusaka District, Zambia and will involve conducting interviews using semi-structured interview guides. The researchers have been trained to use the methods mentioned in the previous sentence.*
- *Approximately 816 participants will be included in this study.*
- *The main objective of this study is:*
    - *To establish the best model for privatising ZESCO Limited so as to ensure successful supply of electricity in Zambia.*
- *Secondary-specific objectives of this study are:*
    - *To examine the models which were used to privatise State Owned Enterprises in Zambia?*
    - *To analyse stakeholders' view of the current performance of ZESCO Limited.*
    - *To examine the factors affecting the current performance of ZESCO Limited.*
    - *To establish whether privatising ZESCO Limited will improve its performance.*
    - *To develop an appropriate model to be used to successfully privatise ZESCO Limited*

Why have you been invited to participate?

- *You have been invited to participate because you have knowledge and experience with the performance of ZESCO Limited and/or electricity supply in Zambia and can therefore contribute much to our understanding and knowledge of the best model for the successful privatisation of ZESCO Limited.*
- *You have also complied with the following inclusion criteria"*
    - *Either you or your clients are customers of ZESCO Limited.*
    - *You work for ZESCO Limited or an organisation that directly affects its operation.*
    - *You are a mentally sound adult.*
- *You will be excluded if:*
    - *Neither you nor your clients are customers of ZESCO Limited.*
    - *You neither work for ZESCO Limited nor an organisation that directly affects its operation.*
    - *You are not a mentally sound adult.*

What will your responsibilities be?

- *You will be expected to spend about 60 minutes responding to questions in an interview. The interview will be held at your convenience, but within a week of you agreeing to participate in this research. This will only be a one off activity and you will not be requested to participate again.*

Will you benefit from taking part in this research?

- *The direct benefits for you as a participant will probably be an opportunity to voice your thoughts and concerns regarding the current performance of ZESCO Limited and how it can be improved improvement.*
- *The indirect benefit will probably be the development of an appropriate model to be used to successfully privatise ZESCO Limited. Another one will probably be improvement in the performance of the Zambian economy as a result of improved electricity supply should research recommendations be applied to ZESCO Limited and the electricity sector in general.*

Are there risks involved in your taking part in this research and how will these be managed?

- *The risks in this study, and how these will be managed, are summarised in the table below:*

Probable/possible risks/discomforts	***Strategies to minimize risk/discomfort***
Spending time answering questions could take your attention away from carrying out your normal work, business or social activities.	The researchers will suggest that you participate in the research during your lunch break or let you suggest the most appropriate time to participate in the research so as to minimise impact on your work, business or social activities.

- *However, we do believe that the benefits to you and to science (as noted in the previous section) outweigh the risks we have listed. If you disagree, then please feel free not to participate in this study. We will respect your decision.*

- *Should we learn, in the course of the research, that someone is harming you, or that you are intending to harm someone, then we must tell someone who can help you/warn the person you are intending to harm.*

Who will have access to the data?

- *Anonymity (that is, in no way will your results be linked to your identity) will be ensured by assigning a number to identify the audio record of your interview instead of your name. Only I will know what your number is and I will ensure that information is kept safe.*
- *Sharing the Results*
- *Nothing that you tell us today will be shared with anybody outside and nothing will be attributed to you by name or any distinguishable feature. Confidentiality (that is, I/we assure you that we will protect the information we have about you) will be ensured by not disclosing information about you to your company or anyone outside of the research team. Reporting of findings will be anonymous by removing identifiers such as your name, organisation and/or position.*
- *Only the researchers and my academic supervisor will have access to the raw data. Data will be kept safe and secure by locking hard copies in locked cupboards in the researcher's office and for electronic data it will be password protected.*
- *Audio-recorded data will be sent to a transcriber who will sign a confidentiality clause (i.e., she will not be allowed to talk to anyone about any aspect of the data). As soon as data has been transcribed it will be deleted from the recorders. The transcripts will be stored on a password-protected computer. All co-coders will sign confidentiality clauses.*
- *Data will be stored for five years in a protected cloud platform, Dropbox.*

What will happen to the data?

The data from this study will be reported in the following ways: 1. using aggregated figures and percentages; and 2. using Indirect or direct quotations without any identifiers. In all of this reporting, you will not be personally identified. This means that the reporting will not include your name or details that will help others to know that you participated (e.g., your address or the name of your school).

This is a once-off study, so the data will not be re-used.

Will you be paid/compensated to take part in this study and are there any costs involved?
No, you will not be paid/compensated to take part in the study.

How will you know about the findings?

- The general findings of the research will be shared with you by the researcher upon request. The results will then be published so that other interested people may learn from the research.
- If you would like feedback on your personal results, then feel free to contact the researcher, Royd Malisase, on +260-979-380601 or rmalisase@yahoo.com...

Is there anything else that you should know or do?

- You can contact Royd Malisase at +260-979-380601 or rmalisase@yahoo.com if you have any further queries or encounter any problems.
- You can contact the chair of the Basic Social Sciences Research Ethics Committee (Prof C van Eeden) at 016 910 3441 or chrizanne.vaneeden@nwu.ac.za if you have any concerns or complaints that have not been adequately addressed by the researcher.
- You will receive a copy of this information and consent form for your own records.

Declaration by participant

By signing below, I ……..…… agree to take part in a research study entitled: ***Privatisation of ZESCO: In search of an appropriate method***

I declare that:

- I have read and understood this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions to both the person obtaining consent, as well as the researcher (if this is a different person), and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I understand that what I contribute (what I report/say/write/draw/produce visually) could be reproduced publically and/or quoted, but without reference to my personal identity.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (*place*) .....….....…….. on (*date*) ……...……. 20....

....

Signature of participant **Signature of witness**

- You may contact me again ☐ **Yes** ☐ **No**
- I would like a summary of the findings of this research ☐ **Yes** ☐ **No**
- I would like feedback on my functioning/wellbeing as reflected in the questionnaires I completed ☐ **Yes** ☐ **No**

The best way to reach me is:

Name & Surname: _____
Postal Address: _____
Email: _____
Phone Number: _____
Cell Phone Number: _____

In case the above details change, please contact the following person who knows me well and who does not live with me and who will help you to contact me:
Name & Surname:

_____

Phone/ Cell Phone Number /Email:

_____

Declaration by person obtaining consent

I *(name)* ……..…… declare that:

- I explained the information in this document to ……..
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter.

Signed at (*place*) .....….....…….. on (*date*) ……...…….. 20....

....

Signature of person obtaining consent **Signature of witness**

Declaration by researcher

I *(name)* ……..…… declare that:

- I explained the information in this document to ……..
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter.

Signed at (*place*) .....….....…….. on (*date*) ……...…….. 20....

....**Signature of researcher**

.... Signature of witness

Appendix 3: Consent Form for Audio Taping and Transcribing Interviews

CONSENT FORM FOR AUDIO TAPING AND TRANSCRIBING INTERVIEWS

Study Title: Privatisation of ZESCO Limited: In Search of an Appropriate Method

Researcher: Royd Malisase, PhD student in Public Management and Governance at North West University, Vaal Triangle Campus, South Africa .

This study involves the audio taping of your interview with the researcher. Neither your name nor any other identifying information will be associated with the audiotape or the transcript. Only the research team will be able to listen to the tapes.

The tapes will be transcribed by the researcher and erased once the transcriptions are checked for accuracy. Transcripts of your interview may be reproduced in whole or in part for use in presentations or written products that result from this study. Neither your name nor any other identifying information (such as your voice) will be used in presentations or in written products resulting from the study.

Immediately following the interview, you will be given the opportunity to have the tape erased if you wish to withdraw your consent to taping or participation in this study.

By Signing this form you are consenting to:

- ☐ having your interview taped;
- ☐ to having the tape transcribed;
- ☐ use of the written transcript in presentations and written products.

By checking the box in front of each item, you are consenting to participate in that procedure.

I also understand that this consent for recording is effective until the following date: _____. On or before that date, the tapes will be destroyed.

Participant's Signature _____ Date_____

Appendix 4: Participant Information Leaflet and Consent Form for Respondents

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

PO Box 1174, Vanderbijlpark
South Africa, 1900

Web: http://www.nwu.ac.za

DATE: 23/08/2019

BaSSREC Authorization

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM RESPONDENTS FROM FOR BUSINESS ORGANISATIONS AND REPRESENTATIVES OF ELECTRICITY CONSUMERS

TITLE OF THE RESEARCH PROJECT: PRIVATISATION OF ZESCO LIMITED: IN SEARCH OF AN APPROPRIATE METHOD

REFERENCE NUMBERS: NWU-2019-0061

PRINCIPAL INVESTIGATOR: ROYD MALISASE

ADDRESS: UNIVERSITY OF ZAMBIA, P.O BOX 32379, LUSAKA, ZAMBIA.

CONTACT NUMBER: +260-979-380601

You are being invited to take part in a research project that forms part of my PhD in Public Management and Governance. Please take some time to read the information presented here, which will explain the details of this project. Please ask the researcher any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part. Prior to publication of the study's results (or the point that publication is in process), you may also withdraw the data you generate.

This study has been approved by the **Basic Social Sciences Research Ethics Committee (BaSSREC) of the Faculty of Humanities of the North-West University (NWU-2019-0061)** and will be conducted according to the ethical guidelines and principles of the international Singapore Statement on Research Integrity (2010) and the ethical guidelines of the National Health Research Ethics Council. It might be necessary for the research ethics committee members or relevant authorities to inspect the research records to make sure that we (the researchers) are conducting research in an ethical manner.

What is this research study all about?

- *This study will be conducted in Lusaka District, Zambia and will involve you responding to semi-structured questionnaires. The researchers have been trained to use the methods mentioned in the previous sentence.*
- *Approximately 816 participants will be included in this study.*
- *The main objective of this study is:*
    - *To establish the best model for privatising ZESCO Limited so as to ensure successful supply of electricity in Zambia.*
- *Secondary-specific objectives of this study are:*
    - *To examine the models which were used to privatise State Owned Enterprises in Zambia?*
    - *To analyse stakeholders' view of the current performance of ZESCO Limited.*
    - *To examine the factors affecting the current performance of ZESCO Limited.*
    - *To establish whether privatising ZESCO Limited will improve its performance.*
    - *To develop an appropriate model to be used to successfully privatise ZESCO Limited*

Why have you been invited to participate?

- *You have been invited to participate because you have knowledge and experience with the performance of ZESCO Limited and/or electricity supply in Zambia and can therefore contribute much to our understanding and knowledge of the best model for the successful privatisation of ZESCO Limited.*
- *You have also complied with the following inclusion criteria"*
    - *Either you or your clients are customers of ZESCO Limited.*
    - *You are a mentally sound adult.*
- *You will be excluded if:*
    - *Neither you nor your clients are customers of ZESCO Limited.*
    - *You are not a mentally sound adult.*

What will your responsibilities be?

- *You will be expected to spend about 60 minutes answering questions from a questionnaire posed to you by the researcher. The questionnaire will be submitted to you at your convenience, but within a week of you agreeing to participate in this research. This will only be a one off activity and you will not be requested to participate again.*

Will you benefit from taking part in this research?

- *The direct benefits for you as a participant will probably be improvement in your business operations should electricity supply improve as a result of research recommendations being applied to ZESCO Limited and the electricity sector in general.*
- *The indirect benefit will probably be the development of an appropriate model to be used to successfully privatise ZESCO Limited. Another one will probably be improvement in the performance of the Zambian economy as a result of improved electricity supply should research recommendations be applied to ZESCO Limited and the electricity sector in general.*

Are there risks involved in your taking part in this research and how will these be managed?

- *The risks in this study, and how these will be managed, are summarised in the table below:*

Probable/possible risks/discomforts	*Strategies to minimize risk/discomfort*
Spending time answering questions could take your attention away from carrying out your normal work, business or social activities.	The researchers will suggest that you participate in the research during your lunch break or let you suggest the most appropriate time to participate in the research so as to minimise impact on your work, business or social activities.

- *However, we do believe that the benefits to you and to science (as noted in the previous section) outweigh the risks we have listed. If you disagree, then please feel free not to participate in this study. We will respect your decision.*

- *Should we learn, in the course of the research, that someone is harming you, or that you are intending to harm someone, then we must tell someone who can help you/warn the person you are intending to harm.*

Who will have access to the data?

- *Anonymity (that is, in no way will your results be linked to your identity) will be ensured by assigning a number to identifying the questionnaire you will respond to instead of your name. Only I will know what your number is and I will ensure that information is kept safe.*
- *Sharing the Results*
- *Nothing that you tell us today will be shared with anybody outside and nothing will be attributed to you by name or any distinguishable feature. Confidentiality (that is, I/we assure you that we will protect the information we have about you) will be ensured by not disclosing information about you to your company or anyone outside of the research team. Reporting of findings will be anonymous by using aggregated figures and percentages.*
- *Only the researchers and my academic supervisor will have access to the raw data. Data will be kept safe and secure by locking hard copies in locked cupboards in the researcher's office and for electronic data it will be password protected.*
- *Audio-recorded data will be sent to a transcriber who will sign a confidentiality clause (i.e., she will not be allowed to talk to anyone about any aspect of the data). As soon as data has been transcribed it will be deleted from the recorders. The transcripts will be stored on a password-protected computer. All co-coders will sign confidentiality clauses.*
- *Data will be stored for five years in a protected cloud platform, Dropbox.*

What will happen to the data?

The data from this study will be reported in the following ways: 1. using aggregated figures and percentages; and 2. using Indirect or direct quotations. In all of this reporting, you will not be personally identified. This means that the reporting will not include your name or details that will help others to know that you participated (e.g., your address or the name of your school).

This is a once-off study, so the data will not be re-used.

Will you be paid/compensated to take part in this study and are there any costs involved?
No, you will not be paid/compensated to take part in the study.

How will you know about the findings?

- The general findings of the research will be shared with you by the researcher upon request. The results will then be published so that other interested people may learn from the research.

- If you would like feedback on your personal results, then feel free to contact the researcher, Royd Malisase, on +260-979-380601 or rmalisase@yahoo.com...

Is there anything else that you should know or do?

- You can contact Royd Malisase at +260-979-380601 or rmalisase@yahoo.com if you have any further queries or encounter any problems.
- You can contact the chair of the Basic Social Sciences Research Ethics Committee (Prof C van Eeden) at 016 910 3441 or chrizanne.vaneeden@nwu.ac.za if you have any concerns or complaints that have not been adequately addressed by the researcher.
- You will receive a copy of this information and consent form for your own records.

Declaration by participant

By signing below, I ……..……. agree to take part in a research study entitled:

I declare that:

- I have read and understood this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions to both the person obtaining consent, as well as the researcher (if this is a different person), and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I understand that what I contribute (what I report/say/write/draw/produce visually) could be reproduced publically and/or quoted, but without reference to my personal identity.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (*place*) .....…..…….. on (*date*) ……...…….. 20....

....

Signature of participant **Signature of witness**

- You may contact me again ☐ **Yes** ☐ **No**
- I would like a summary of the findings of this research ☐ **Yes** ☐ **No**
- I would like feedback on my functioning/wellbeing as reflected in the questionnaires I completed ☐ **Yes** ☐ **No**

The best way to reach me is:

Name & Surname: _____
Postal Address: _____
Email: _____
Phone Number: _____
Cell Phone Number: _____

In case the above details change, please contact the following person who knows me well and who does not live with me and who will help you to contact me:
Name & Surname:

_____

Phone/ Cell Phone Number /Email:

_____

Declaration by person obtaining consent

I *(name)* ……..……. declare that:

- I explained the information in this document to ……..
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter.

Signed at (*place*) .....….....…….. on (*date*) ……...…….. 20....

....

Signature of person obtaining consent **Signature of witness**

Declaration by researcher

I *(name)* ……..…… declare that:

- I explained the information in this document to ……..
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter.

Signed at (*place*) .....….....…….. on (*date*) ……...…….. 20....

....**Signature of researcher**

.... **Signature of witness**

Appendix 5: Gatekeeper Letters

ZESCO

Powering the Nation & the Region

Our Ref: A200/HRD/1351/2019

1 August 2019

Mr Royd Malisase
C/O North West University
Vaal Triangle Campus
SOUTH AFRICA

Dear Mr Malisase

REQUEST TO CONDUCT AN ACADEMIC RESEARCH

We wish to acknowledge receipt of your request to carry out an academic research on "***Privatization of ZESCO Limited: In Search of an Appropriate Method.***" This is in line with the PhD in Public Management and Governance you are studying at North West University, Vaal Triangle Campus in South Africa

This serves to inform you that permission has been granted to you on the following terms and conditions:

1. That all information regarding the research should be handled with all the confidentiality it deserves and shall be used for academic purposes only.
2. The final report should be availed to the office of the undersigned before submission to your school for a go ahead in writing.
3. A copy of the final report shall be retained by ZESCO Limited for future reference.

Kindly fill in the attached form to indicate whether you are agreeable to these Terms and Conditions and return a copy to the office of the undersigned.

Please report to the Senior Manager – Business Development for commencement of your research.

Yours sincerely
ZESCO LIMITED

CHILESHE M LUPUTA (MRS)
SENIOR MANAGER - HUMAN RESOURCE DEVELOPMENT

CC: Director – HR
Director – S & CS
Senior Manager – Business Development
Senior Manager – Systems Operations and Trading
Senior Manager – Accounting Services
Senior Manager – Customer Services
Training File

CML/jcs

All correspondence to be addressed to the Managing Director
ZESCO Limited, Stand No. 6949 Great East Road, P.O. Box 33304, Lusaka-Zambia
Tel: +260-211-361111, Fax: +260-211-222753, E-mail: zesco@zesco.co.zm
www.zesco.co.zm

1 August 2019

Mr Royd Malisase
C/O North West University
Vaal Triangle Campus
SOUTH AFRICA

REQUEST TO CONDUCT RESEARCH STUDY (TERMS & CONDITIONS)

.....

I ROYD MALISASE ..... *agree/~~do not agree,~~ to the above Terms and Conditions. Phone No: 0979380601

Signature: ..... Date: 02/08/2019

***Delete that which is not applicable.**

Witness: Jean Sakala ..... Phone No: 0718911886

Date: 2 August 2019 .....

ENERGY REGULATION BOARD

Head Office
Plot No. 9330 Off Alick Nkhata Road
P.O. Box 37631, Lusaka 10101, Zambia
Tel: +260 211 258844-9
Fax: +260 211 258852
Email: erb@erb.org.zm
Toll free line 8484

Copperbelt Region Office
Plot No. 332, Independence Avenue
P.O. Box 22281, Kitwe, Zambia
Tel: +260 212 220941,43,44
Fax: +260 212 220945

Southern Region Office
Plot No. 708, Chimwemwe Road
P.O. Box 60292, Livingstone, Zambia
Tel: +260 213 321562 / 321563
Fax: +260 213 321576

Northern Region Office
Plot No. 76, Mayadi
P.O. Box 480052, Chinsali, Zambi
Tel: +260 214 565160
Fax: +260 214 565171

ERB/105.1

14th June, 2019

Pro. MT. Lukamba
School of Government Studies Department of Public Management and Administration
P.O Box 1174, Vanderbijlpark
South Africa 1900

Dear Prof. MT. Kuamba,

RE: INTRODUCTORY LETTER FOR MR. ROYD MALISASE

Reference is made to the above captioned subject matter.

We acknowledge receipt of your introductory letter for Mr. Royd Malisase who is a PhD (Public Management and Governance) student at your university. We wish to inform you that we have granted Mr. Royd Malisase permission to collect data from our institution. In this regard, we will coordinate the key informative interviews with Mr. Royd Malisase.

Yours faithfully,
ENERGY REGULATION BOARD

Langiwe H. Lungu (Ms.)
EXECUTIVE DIRECTOR

Competition and Consumer Protection Commission

Promoting and Enhancing Competition and Consumer Welfare in the Economy for the Benefit of the People of Zambia

CCPC
Fourth Floor
Main Post Office
Cairo Road
P.O. Box 34919
Lusaka, Zambia
Tel: 260-211222787 / 260-211-232657
Fax: 260-211-222789
E-mail: zcomp@ccpc.org.zm
Website: www.ccpc.org.zm

12th June, 2019

CCPC/RSE/053

Prof. MT. Lukamba

North Western University, Vaal Campus

School of Government Studies

Department of Public Management and Administration

P.O. Box 1174, Vanderbijlpark

South Africa 1900.

Dear Sir/Madam

RE: CLEARANCE FOR DATA COLLECTION

Reference is made to the above subject matter and your letter dated 20th May, 2019 in which you requested the Competition and Consumer Protection Commission ("the Commission") to give clearance to Mr. Royd Malisase, student number 31375499 to collect data from the Commission as part of his PhD Research.

The Commission has taken note of your letter and is granting permission to Mr. Royd Malisase to collect data.

In the interim, if you wish to seek further details and/or clarifications on any aspect of this letter, or if you need any assistance, please do not hesitate to get in touch with our **Chief Analyst – Mr. Parret Muteto** or the undersigned on Tel: 260 211 222787/260 211 232657, Fax: 260 211 222789 or email: zcomp@ccpc.org.zm.

Yours sincerely,

Chilufya Sampa

Executive Director

Rural Electrification Authority

REA/101/4/30
24th June 2019

Professor MT. Lukamba
School of Government Studies Department of Public Administration
North West University
P.O Box 1174, Vanderbijlpark
South Africa

Dear Sir,

RE: DATA COLLECTION REQUEST- PRIVATISATION OF ZESCO LIMITED:IN SEARCH OF AN APPROPRIATE METHOD

We wish to acknowledge receipt of your letter dated 20th May 2019 which we received on 3rd June 2019 regarding your request that we assist Mr. Royd Malisase of North West University, Vaal Campus in South Africa to conduct data collection in our organization.

We are delighted to inform you that we will provide sufficient assistance and available information relevant to the students research titled "Privatisation of ZESCO Limited:In Search of an Appropriate Method".

Do not hesitate to contact the undersigned in case of any queries.

Yours Faithfully
RURAL ELECTRIFICATION AUTHORITY

CLEMENT CHIWELE
ACTING CHIEF EXECUTIVE OFFICER

All Correspondence should be addressed to Chief Executive Officer
Plot 5033, Longolongo Road, Post Net Box 349, Private Bag E891 Lusaka
Tel: +260 211 241296/8, +260 966 862 081, +260 977 640 740
E-mail: info@rea.org.zm, www.rea.org.zm

Industrial Development Corporation

61 Independence Avenue, Prospect Hill
P.O. Box 37232, Lusaka, Zambia
T: +260 211 427000 • E: info@idc.co.zm • W: www.idc.co.zm

REF: IDC/RS/NWU/030719

3rd July 2019

Prof. MT. Lukamba
North Western University, Vaal Campus
School of Government Studies
Department of Public Management and Administration
P.O. Box 1174, Vanderbijlpark
South Africa 1900.

Dear Sir/Madam

RE: CLEARANCE FOR DATA COLLECTION

Reference is made to the above subject matter and your letter dated 20th May 2019 in which you requested the Industrial Development Corporation ("IDC") to give clearance to Mr. Royd Malisase, student number 31375499 to collect data from IDC as part of his PhD Research.

We have taken note of your letter and are granting permission to Mr. Royd Malisase to collect data.

In the interim, if you wish to seek further details and/clarifications on any aspect of this letter, or if need any assistance, please do not hesitate to get in touch with the undersigned via email: khetiwe.lubinga@idc.co.zm

Yours sincerely

INDUSTRIAL DEVELOPMENT CORPORATION LIMITED

Khetiwe Lubinga
SENIOR ANALYST – RESEARCH AND STRATEGY

All communications should be addressed to be
Permanent Secretary
Telephone: (260-211) 230840
Facsimile: 230468

In reply please quote

MOE/101/12/1
No:.....

REPUBLIC OF ZAMBIA

MINISTRY OF ENERGY

OFFICE OF THE PERMANENT SECRETARY
P.O. Box 36079
LUSAKA
ZAMBIA

8th July, 2019

Prof. M.T. Lukamba
School of Government Studies Department of Public Management and Administration
North West University Vaal Campus
P.O. Box 1174, Vanderijlpark
SOUTH AFRICA

RE: REQUEST FROM MR. ROYD MALISASE (PHD STUDENT) FOR COLLECTION OF DATA TO SUPPORT RESEARCH TOPIC ON PRIVATISATION OF ZESCO LIMITED

We acknowledge receipt of your letter introducing Mr. introducing Mr. Royd Malisase, a PHD student (ID number 31375499) at the North West University Vaal Campus in South Africa who is undertaking a research topic titled ***"Privatization of ZESCO Limited: in Search of an Appropriate Method"***.

Further to your request, we wish to grant Mr. Malisase permission to coilect data from our institution. In this regard, the collection of data will be coordinated by the Acting Director of Energy, at the Department of Energy.

Brig. Gen. E. Chola
Permanent Secretary
MINISTRY OF ENERGY

cc: Mr. Arnold Milner Simwaba, Acting Director, Department of Energy, LUSAKA

ZAMBIA CHAMBER OF SMALL AND MEDIUM BUSINESS ASSOCIATIONS
ZCSMBA stand, Bluegum Walk, showground P.O.Box 32932, Lusaka Zambia Telephone +260-211-253 372 / 254 855
Fax:+260-211-253 013 Email: secretariat@zcsmba.org, Website: www.zcsmba.org

Date 18th June 2019

Pro. M T Lukamba
School of Government Studies Department of Public Management and Administration
P O Box 1174, Vanderbijipark
South Africa 1900

Dear Prof. Lukamba,

RE **INTRODUCTORY LETTER – STUDENT ROYD MALISASE**

This serves to acknowledge receipt of the request to conduct some interviews with our members within and outside Lusaka. We do not have any objection but would like to inform you that some meetings may require venue(s) to be organized to meet with our members and may attract costs, which we may not be prepared to handle. This means that all costs related to this exercise will have to be settled by yourselves.

Yours faithfully,

ZAMBIA CHAMBER OF SMALL AND MEDIUM BUSINESS ASSOCIATIONS
16 JUN 2019
P.O. BOX 32932
LUSAKA.

Moto Ng'ambi
Chief Executive Officer

M: +260978 775255
E: **ceo@zcsmba.org**

Supported by:

EU

THE AFRICAN CAPACITY BUILDING FOUNDATION

Oxfam Novib

ZAMBIA CHAMBER OF COMMERCE AND INDUSTRY
Lusaka Showgrounds, Financial Services Lane No. A10, P.O. Box 30844, Lusaka, Zambia / Tel: +260 211 252483
+260 211 253007 / Telefax: +260 211 253020 / Cell: 0971 581467 / secretariat@zacci.co.zm www.zambiachamber.org

ZACCI/NWU/2019 **13th June 2019**

Mr. Royd Malisase
NWU student
Lusaka

Mr. Malisase,

RE: INTERVIEWS WITH ZACCI

Reference is made to your letter dated 3rd May, 2019 in which you were requesting for written permission to collect data from our organisation for your PhD research.

We wish to grant you permission to collect information from our organisation. Our research officer, Mr. Alfred Chitalu will attend to you. Kindly contact him on 0979 518 054 or by email to alfredchitalu@gmail.com.

We wish you all the best in your research.

Yours sincerely,
ZAMBIA CHAMBER OF COMMERCE AND INDUSTRY

Prisca M Chikwashi (Ms)
CHIEF EXECUTIVE OFFICER

Appendix 6: Registration of Title

NWU®
NORTH-WEST UNIVERSITY
NOORDWES-UNIVERSITEIT
YUNIBESITI YA BOKONE-BOPHIRIMA

Private Bag X6001, Potchefstroom
South Africa, 2520

Tel: (018) 299-1111/2222
Web: http://www.nwu.ac.za

Higher Degree Administration

Tel: 0169103107
Email: 24123129@nwu.ac.za
Enquiries: MRS MP VAN RHYN

2 November 2020

Dear MR MALISASE
University number: 31375499

REGISTRATION OF TITLE

At the recent meeting of a relevant committee meeting of the NWU Faculty of Humanities your title was approved as follows:

Privatisation of ZESCO Limited: In search of an appropriate method

The above-mentioned title may under **no circumstances** be changed without consulting your supervisor and obtaining the approval from the relevant committee in the mentioned faculty, in regard of which this office must be furnished with the latest approved title.

In the instance that you wish to submit for examination, please inform your supervisor/promoter accordingly. *Also ensure absolute adherence to the prescripts of A Rule 4.10 for the submission of a Master's study and of A Rule 5.10 for the sumbission of Doctoral thesis.*

Upon approval of your supervisor/promoter, please ensure that the Notice of Submission form is submitted THREE months in advance to this office.

Note that the Notice of Submission form is availbale on the NWU DIY portal.

For ease of reference, herewith a reference to the following useful resources:

- General Academic Rules (A-reëls):
- Manual for Higher Degree Studies:
- Policy on academic integrity:

We wish you a pleasant and successful period of study.

Kind regards

NWU®
NORTH-WEST UNIVERSITY
NOORDWES-UNIVERSITEIT
YUNIBESITI YA BOKONE-BOPHIRIMA
2020/11/02

Registrar

Reference number: 7.1.11.1.2

Appendix 7: Vaal Campus Humanities Research Management (VCHRM) Committee Letter

PO Box 1174, Vanderbijlpark
South Africa, 1900

Faculty of Humanities
Vaal Campus Humanities Research
Management Committee
Tel: (016) 910-3660
23991437@nwu.ac.za
Date: 4 April 2019

Mr R Malisase

Student no: 31375499

Research title as approved by the VCHRM committee:

PRIVATISATION OF ZESCO LIMITED: IN SEARCH OF AN APPROPRIATE METHOD

Dear Mr Malisase

This letter serves to confirm that your PHD research proposal has been approved by the Vaal Campus Humanities Research Management Committee.

The ethics application is referred to the:

* Research Ethics Committee- BaSSREC:_X___.

* Research Ethics Committee-HHREC:_____.

You will find the details on the procedure that you will have to follow to submit to the Ethics Committee on the NWU-website. For the VCHRM-records, please inform Ms Precious Nale as responsible person to folder the ethical submission when your submission has been successfully completed and approved (Precious.Nale@nwu.ac.za).

Yours sincerely

Prof C Hofisi
Chairperson: Vaal Campus Humanities Research Management Committee

1

Appendix 8: Ethics Approval Letter of Study

NORTH-WEST UNIVERSITY
NOORDWES-UNIVERSITEIT
YUNIBESITI YA BOKONE-BOPHIRIMA

Private Bag X1290, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Fax: 018 299-4910
Web: http://www.nwu.ac.za

Research Ethics Regulatory Committee
Tel: 018 299-4849
Email: nkosinathi.machine@nwu.ac.za

23 September 2019

ETHICS APPROVAL LETTER OF STUDY

Based on approval by the **Basic and Social Sciences Research Ethics Committee (BaSSREC)** on 23/09/2019, the Basic and Social Sciences Research Ethics Committee hereby **approves** your study as indicated below. This implies that the North-West University Research Ethics Regulatory Committee (NWU-RERC) grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: Privatisation of ZESCO Limited: In search of an appropriate method.
Study Leader/Supervisor (Principal Investigator)/Researcher: Prof MT Lukamba
Student: Mr R Malisase

Ethics number: N W U - 0 1 8 7 3 - 1 9 - S 7
Institution Study Number Year Status
Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation

Application Type: Single Study
Commencement date: 23/09/2019 **Risk:** Low
Expiry date: 22/09/2020
Approval of the study is initially provided for a year, after which continuation of the study is dependent on receipt and review of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation.

Special in process conditions of the research for approval (if applicable):

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, the following general terms and conditions will apply:

- *The study leader/supervisor (principle investigator)/researcher must report in the prescribed format to the BaSSREC:*
  - *annually (or as otherwise requested) on the monitoring of the study, whereby a letter of continuation will be provided, and upon completion of the study; and*
  - *without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.*
- *The approval applies strictly to the proposal as stipulated in the application form. Should any amendments to the proposal be deemed necessary during the course of the study, the study leader/researcher must apply for approval of these amendments at the BaSSREC, prior to implementation. Should there be any deviations from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.*
- *Annually a number of studies may be randomly selected for an external audit.*
- *The date of approval indicates the first date that the study may be started.*
- *In the interest of ethical responsibility, the NWU-RERC and BaSSREC reserves the right to:*
  - *request access to any information or data at any time during the course or after completion of the study;*
  - *to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process;*
  - *withdraw or postpone approval if:*
    - *any unethical principles or practices of the study are revealed or suspected;*

- *it becomes apparent that any relevant information was withheld from the BaSSREC or that information has been false or misrepresented;*
- *submission of the annual (or otherwise stipulated) monitoring report, the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and / or*
- *new institutional rules, national legislation or international conventions deem it necessary.*

- *BaSSREC can be contacted for further information or any report templates via BaSSREC@nwu.ac.za.*

The BaSSREC would like to remain at your service as scientist and researcher, and wishes you well with your study. Please do not hesitate to contact the BaSSREC or the NWU-RERC for any further enquiries or requests for assistance.

Yours sincerely

Prof C. van Eeden
Chairperson NWU Basic and Social Sciences Research Ethics Committee

Original details: (22351930) C:\Users\22351930\Desktop\ETHICS APPROVAL LETTER OF STUDY.docm
8 November 2018

File reference: 9.1.5.4.2

Appendix 9: Notice of Submission

PO Box 1174, Vanderbijlpark
South Africa 1900
Tel: 016-910-3182
Web: http://www.nwu.ac.za

For Registrar
Tel: 016-910-3033
Email: Jenna.Wilson@nwu.ac.za

16 October 2020

Dear Mr R Malisase

NOTICE OF SUBMISSION

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Yours sincerely

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Appendix 10: Proof of Editing

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23rd November, 2020

TO WHOM IT MAY CONCERN,

North-West University
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South Africa, 2520

Dear Sir/Madam,

REF: EDITORIAL CERTIFICATE

This is to certify that I **Florence Tembo-Mpandamabula** a qualified Editor, working for the University of Zambia Press (UNZA Press) has edited and proofread the thesis titled **Privatisation of ZESCO Limited: In Search of an Appropriate Method** by ROYD MALISASE (University number: 31375499). The thesis has been edited for language, grammar, punctuation, spelling, and overall style. The research content or author's ideas or intentions have not been altered in any way during the editing process. Overall, the work was well written and can be submitted for examination.

Yours sincerely,

Florence Tembo-Mpandamabula
Editor, UNZA Press

Apendix 11: Post-Privatisation Performance of Zambian Enterprises

Performance of firms privatised through Management - Employee Buyout Out

Year	Name of Firm	Sector (Type of Business)	Size of Firm	Performance of Firm after Privatisation	Current Status of Firm
1993	AFE Limited	Agriculture (Farming Equipment)	Medium	Mixed	Active
1994	Crushed Stone Sales Ltd	Quarrying	Small	Mixed	Active
1995	Indeco Milling – Mansa Mill	Afro Processing (Milling)	Small	Declined	Defunct
1995	Indeco Milling – Mukushi Mill	Agro Processing (Milling Company)	Small	Declined	Defunct
1995	Kacholola Hotel	Tourism (Hospitality)	Small	Declined	Active
1996	MIL Construction Limited	Construction (Building contractors)	Small	Declined	Defunct
1996	MIL Engineering & Tooling	Engineering	Small	Declined	Defunct
1996	Mansa Hotel	Tourism (Hospitality)	Small	Mixed	Active
1996	Mindeco Small Mines Limited	Mining (Mining Precious Stones)	Small	Mixed	Active
1997	Mpelembe Drilling Limited	Service (Drilling Services)	Medium	Declined	Defunct
1995	NIEC Overseas Services Zambia Ltd	Service (Export and Import Services)	Small	Declined	Defunct
2001	Rycus Heavy Haulage	Transport (Transport services)	Small	Declined	Defunct
1995	Monarch Zambia	Manufacturing (Windows and Door Frames)	Small	Declined	Defunct
1998	Roan Air (Mines Air Services Ltd)	Transport (Air transport)	Small	Declined	Defunct
2001	ZAFFICO – Kafubu Sawmill	Wood processing (Wood products)	Small	Mixed	Active
2001	ZAFFICO – Kalibu Sawmill	Wood processing (Wood products)	Small	Mixed	Active

1996	ZAL Elevators	Service (Elevators Maintenance)	Small	Improved	Active
1999	ZCCM – Bulk Transport	Transport (Transportation of Mine products)	Medium	Declined	Defunct
1999	ZCCM – Techpro Zambia Limited	Service (Mine technical services)	Small	Declined	Defunct
1996	Zamcargo	Service (Freight and forwarding)	Small	Declined	Defunct
1996	Zambia Ceramics Limited	Manufacturing (Ceramic products)	Small	Declined	Defunct
1997	Zambia National Insurance Brokers Ltd	Finance (Insurance broking)	Small	Mixed	Active
1997	Zambia State Financing Company Limited	Finance (Financial services)	Small	Declined	Defunct

Performance of firms privatised through Share Issue

Year	Name of Firm	Sector (Type of Business)	Sector (Type of Business)	% of State Ownership before Privatisation	% of State Ownership after Privatisation	Performance of Firm after Privatisation	Current Status of Firm
1993	Nanga Farms	Agriculture (Farm Produce)	Medium	100	14.27	Improved	Active
1997	Indeni Petroleum	Energy (Oil Refinery)	Large	50	45	Mixed	Active (Re-nationalised
2001	Kagem Minerals Limited	Mining (Gemstone)	Medium	100	25	Improved	Active
1995	Kapiri Glass Products Limited	Manufacturing (Grass Products)	Small	89	2	Declined	Defunct
2009	Maamba Collieries Limited	Mining (Coal Mining)	Medium	100	35	Improved	Active
1996	Metal Fabricators of Zambia Limited	Manufacturing (Copper Cables)	Large	51	18	Improved	Active
2008	Zambia National Commercial Bank plc	Finance (Banking)	Large	100	25	Improved	Active
1997	ZCCM (B) – Luanshya Division/Baluba	Mining (Mining Precious Metals)	Large	100	15	Improved	Active

2000	ZCCM (C) – Mufurila Division	Mining (Mining Precious Metals)	Large	100	10	Improved	Active
1998	ZCCM (D) – Chambishi Copper Mine	Mining (Mining Precious Metals)	Large	100	15	Improved	Active
1998	ZCCM (G) – Chambishi Copper Mine	Mining (Cobalt Mining)	Large	100	10	Improved	Active
1997	ZCCM (E) – Kansanshi Copper Mine	Mining (Mining Precious Metals)	Large	100	20	Improved	Active
2000	ZCCM (F) – Nampundwe Pyrite Mine	Mining (Pyrite Mining)	Large	100	20	Mixed	Active
1997	ZCCM (J) – Power Division	Energy (Electricity Distribution)	Large	100	20	Improved	Active
2000	ZCCM (L) – Chingola Refractory Ores Dumps	Mining (Copper Ore Dumps)	Large	100	20	Mixed	Active
1997	ZCCM – Chibuluma Mine	Mining (Copper and Cobalt Mining)	Large	100	15	Improved	Active
2000	ZCCM – Konkola Division	Mining (Copper and Cobalt Mining)	Large	100	20	Mixed	Active
2000	ZCCM – Nchanga Division	Mining (Copper and Cobalt Mining)	Large	100	20	Mixed	Active
2000	ZCCM – Nkana Mine	Mining (Copper and Cobalt Mining)	Large	100	10	Improved	Active
1997	Zambia Oxygen Limited	Energy (Industrial gas production)	Medium	100	30	Improved	Active

Performance of firms privatised under Sale of Assets

Year	Name of Firm	Sector (Type of Business)	Size of Firm	Buyer's Country of Origin	Performance of Firm after Privatisation	Current Status of Firm
1996	AGIP (Zambia) Limited	Energy (Oil Marketing)	Medium	Foreign	Mixed	Active
2001	Amalgamated Milling – Roncaglia Mill	Agro processing (Milling)	Small	Local	Declined	Active
1993	Auto Care Limited	Transport (Used Vehicle Supplier)	Small	Local	Mixed	Active
1996	BP Zambia – Zamlube Re-refiners	Energy (Lubricants)	Small	Foreign	Improved	Active
1996	BP Zambia Limited	Energy (Oil Marketing and Distribution)	Large	Foreign	Improved	Active
1994	Chilanga Cement Limited	Manufacturing (Cement producer)	Large	Foreign	Improved	Active
1996	Choma Milling Company	Agro processing (Milling Company)	Small	Local	Mixed	Active
1996	Cleanwell Dry Cleaners	Service (Dry Cleaning)	Small	Local	Declined	Defunct
1996	Consolidated Tyre Services	Manufacturing (Tyre Producer)	Small	Local	Mixed	Active
1993	Coolwell systems Ltd	Manufacturing (Air conditioning)	Small	Local	Declined	Active
2000	Crested Crane Hotel	Tourism (Hospitality)	Small	Local	Mixed	Active
1996	Dairy Produce Board – Chipata	Agro processing (Dairy products)	Small	Local	Improved	Active
1996	Dairy Produce Board – Kabwe	Agro processing (Dairy products)	Small	Local	Improved	Active
1996	Dairy Produce Board – Lusaka, Mazabuka, Kitwe, Chingola, Mufulira depots	Agro processing (Dairy products)	Small	Foreign	Improved	Active
1996	Dairy Produce Board – Ndola	Agro processing (Dairy products)	Small	Local	Improved	Active
1998	Duncan, Gilbey and Matheson (Z) Limited	Manufacturing (Alcoholic beverages)	Small	Foreign	Improved	Active
2001	Dunlop (Zambia) Limited	Manufacturing (Tyres producer)	Medium	Foreign	Declined	Active
1993	Eagle Travel Limited	Tourism (Hospitality)	Small	Local	Declined	Defunct
2008	ESCO Properties	Real Estate (Property development)	Medium	Various	Improved	Active
2008	ESCO Properties - LUSAKA	Real Estate (Property development)	Small	Local	Improved	Active

1996	Elephant's Head Hotel	Tourism (Hospitality)	Small	Local	Improved	Active
1998	Forest Department - Kabwe Sawmill	Wood processing (Wood Products)	Small	Local	Mixed	Active
1994	Forest Department – Solowezi Sawmill	Wood processing (Wood Products)	Small	Local	Mixed	Active
1994	General Pharmaceuticals Limited	Health (Manufacturing Medicine)	Medium	Local	Declined	Active
1995	Indeco Milling – Kasama Mill	Agro processing (Milling)	Small	Local	Improved	Active
1996	Indeco Milling – Luangwa Mill	Agro processing (Milling)	Small	Local	Declined	Defunct
1995	Indeco Milling – Mongu Mill	Agro processing (Milling)	Small	Local	Improved	Active
1997	Indeco Milling – Ndola Mill	Agro processing (Milling)	Small	Local	Improved	Active
1998	Intercontinental Hotel – Livingstone	Tourism (Hospitality)	Medium	Foreign	Improved	Active
1998	Intercontinental Hotel – Lusaka	Tourism (Hospitality)	Medium	Foreign	Improved	Active
1996	Kabwe Industrial fabrics Limited	Manufacturing (Textile garments)	Medium	Foreign	Declined	Defunct
2009	Kabwe Tannery Limited	Manufacturing (Tannery company)	Medium	Foreign	Mixed	Active
1997	Kafironda Limited	Manufacturing (Explosives producer)	Large	Foreign	Improved	Active
-	Zambia Seed Company Limited	Agriculture (Agricultural seed)	Medium	Local	Mixed	Active
1996	Kawambwa Tea Company	Agriculture (Growing of tea)	Small	Foreign	Declined	Active (National ised)
2005	Kafue Textiles (Zambia) Limited	Manufacturing (Textile Garments)	Large	Local	Declined	Defunct
1996	La Hacienda Hotel	Tourism (Hospitality)	Small	Local	Mixed	Active
1996	Lake Hotels Limited	Tourism (Hospitality)	Small	Local	Mixed	Active
1996	Lint Company of Zambia -Chipata Unit	Agriculture (Cotton Producer)	Small	Foreign	Improved	Active
1995	Lint Company of Zambia - Gwembe Unit	Agriculture (Cotton Producer)	Small	Foreign	Improved	Active
1996	Lint Company of Zambia Lusaka Unit	Agriculture (Cotton Producer)	Small	Foreign	Improved	Active
1997	Luangwa Industries	Manufacturing (Bicycle Assembly)	Medium	Mixed	Declined	Defunct

2000	Lublend Limited	Manufacturing (Lubricants)	Small	Mixed	Mixed	Active
1996	Lusaka Engineering Company Limited	Manufacturing (Engineering products)	Medium	Local	Improved	Active
1996	Lyambai Hotel	Tourism (Hospitality)	Small	Local	Declined	Active
1996	MEMACO Farms	Agriculture (Farm produce)	Small	Local	Mixed	Active
1996	MIL Sawmilling & Joinery Limited	Wood processing (Wood Products)	Small	Local	Declined	Defunct
1996	NDC Property – Chililabonbwe	Retail trade (Department store)	Small	Local	Improved	Active
1995	NDC Property – Kabwe	Retail trade (Department store)	Small	Foreign	Improved	Active
1996	NDC Property – Livingstone	Retail trade (Department store)	Small	Local	Improved	Active
1995	NDC Property – Mazabuka	Retail trade (Department store)	Small	Local	Improved	Active
1995	NDC Property - Monze	Retail trade (Department store)	Small	Local	Improved	Active
1995	NDC Property – Mufulira	Retail trade (Department store)	Small	Local	Improved	Active
1995	NDC Property – Ndola	Retail trade (Department store)	Small	Local	Improved	Active
2000	NDC Property – Parklands Kitwe	Retail trade (Department store)	Small	Foreign	Improved	Active
1996	NHDC – Pamodzi Hotel	Tourism (Hospitality)	Medium	Local	Improved	Active
1995	NHS Property – Cairo Road, Lusaka	Retail trade (Department store)	Small	Foreign	Improved	Active
1995	NHS Property – Kabwata, Lusaka	Retail trade (Department store)	Small	Foreign	Improved	Active
1995	NHS Property – Matuka Ave, Kitwe	Retail trade (Department store)	Small	Foreign	Improved	Active
1995	NHS Property – Livingstone	Retail trade (Department store)	Small	Foreign	Improved	Active
1995	NHS Property – Mufulira	Retail trade (Department store)	Small	Foreign	Improved	Active
1995	NHS Property – Ndola	Retail trade (Department store)	Small	Foreign	Improved	Active
1996	NIECO Farms Limited	Agriculture (Farm produce)	Small	Local	Mixed	Active
1995	National Breweries Limited	Manufacturing (Opaque beer production)	Medium	Foreign	Improved	Active
1996	National Drug Company Limited	Health (Medical drugs)	Small	Local	Mixed	Active

1996	National Milling Company	Agro processing (Milling company)	Large	Foreign	Improved	Active
1997	Nchanga Farms – Mbala Farm	Agriculture (Farm produce)	Small	Local	Mixed	Active
1995	Nchanga Farms – Mukumpu Ipumbu Farm	Agriculture (Farm produce)	Medium	Local	Improved	Active
1995	Nchanga Farms – Munkumpu Kampemba Ranch	Agriculture (Farm produce)	Medium	Local	Improved	Active
2002	New Savoy Hotel	Tourism (Hospitality)	Small	Foreign	Mixed	Active
1995	Nkwazi Manufacturing Company Limited	Manufacturing (Fish nets producer)	Small	Local	Declined	Defunct
1997	Norgroup Plastics Limited	Manufacturing (Plastic products)	Small	Local	Declined	Defunct
1996	Northern Breweries (1995) PLC	Manufacturing (Alcoholic beverages)	Large	Foreign	Improved	Active
1993	Poultry Processing Company Limited	Agriculture (Day old chicks hatchery)	Small	Local	Improved	Active
1993	Prime Marble Products Limited	Manufacturing (Marble products)	Small	Local	Mixed	Active
1995	ROP (Refined Oil Products) Limited	Manufacturing (Cooking oil producer)	Medium	Foreign	Improved	Active
1995	Rothmans Zambia Ltd	Manufacturing (Cigarettes producer)	Medium	Foreign	Improved	Active
1998	Scaw Limited	Manufacturing (Steel products)	Medium	Foreign	Improved	Active
1996	Supa Baking Company – Kitwe Bakery	Manufacturing (Bakery products)	Medium	Local	Declined	Defunct
1996	National Tobacco Company	Agriculture (Tobacco)	Small	Local	Improved	Active
1995	ZADL Farms – Chainda Dairy Farm HS Limited	Agriculture (Dairy farms)	Small	Local	Mixed	Active
1997	ZADL Farms – Chilongolo Farm	Agriculture (Dairy farms)	Small	Local	Mixed	Active
1996	ZADL Farms – Chipata Dairy Farm	Agriculture (Dairy farms)	Small	Local	Improved	Active
1994	ZADL Farms – Hartley Farm	Agriculture (Dairy farms)	Small	Local	Improved	Active
1994	ZADL Farms – Holding Farm	Agriculture (Dairy farms)	Small	Local	Mixed	Active
1996	ZADL Farms – Kafubu Dairy Farm,	Agriculture (Dairy farms)	Small	Local	Declined	Defunct

	Ndola					
1997	ZADL Farms – Kapilyomba Dairy Farm	Agriculture (Dairy farms)	Small	Local	Declined	Defunct
1996	ZADL Farms – Kasama Dairy Farm	Agriculture (Dairy farm)	Small	Local	Declined	Defunct
1996	ZADL Farms – Katito Crop Farm	Agriculture (Farm produce)	Small	Local	Improved	Active
1996	ZADL Farms – Mansa Dairy Farm	Agriculture (Dairy farm)	Small	Local	Mixed	Active
1996	ZADL Farms – Minisini Crop Farm	Agriculture (Farm produce)	Small	Local	Improved	Active
1996	ZADL Farms – Mongu Dairy Farm	Agriculture (Dairy farm)	Small	Local	Mixed	Active
1996	ZADL Farms – Nkumba Piggery & Feedlot	Agriculture (Livestock farm)	Small	Local	Mixed	Active
1996	ZADL Farms – Simmenthal Stud Farm	Agriculture (Livestock farm)	Small	Local	Declined	Defunct
1996	ZADL Farms – Solwezi Dairy Farm	Agriculture (Dairy farms)	Small	Local	Mixed	Active
2002	ZAFFICO – Dola Hill Sawmill	Wood processing (Wood products)	Small	Local	Improved	Active
1996	ZCBC Property – Cairo Road	Retail trade (Department store)	Small	Foreign	Improved	Active
1996	ZCBC Property – Chililabombwe	Retail trade (Department store)	Small	Foreign	Mixed	Active
1995	ZCBC Property – Chingola	Retail trade (Department store)	Small	Foreign	Improved	Active
1995	ZCBC Property – Kabwe	Retail trade (Department store)	Small	Foreign	Improved	Active
1995	ZCBC Property – Kasama	Retail trade (Department store)	Small	Foreign	Mixed	Active
1996	ZCBC Property – Kitwe	Retail trade (Department store)	Small	Foreign	Improved	Active
1996	ZCBC Property – Luanshya	Retail trade (Department store)	Small	Foreign	Improved	Active
1995	ZCBC Property – Mufulira	Retail trade (Department store)	Small	Foreign	Declined	Defunct
1996	ZCBC Property – Petauke	Retail trade (Department store)	Small	Foreign	Improved	Active
1996	ZCBC Property – River Side, Kitwe	Retail trade (Department store)	Small	Local	Improved	Active

1996	ZCBC Property – Solowezi	Retail trade (Department store)	Small	Foreign	Improved	Active
1998	ZCCM (H) – Ndola precious Metals Plant	Mining (Precious metals plant)	Small	Foreign	Declined	Defunct
1999	ZCCM Kabwe Water and Sewerage Plants	Water and sanitation (Water and sanitation)	Small	Local	Mixed	Active
2001	ZCCM Lunsemfwa and Mulungushi Power Station	Energy (Electricity supply)	Medium	Foreign	Improved	Active
1995	ZNWMC Property – Chipata	Retail (Wholesale store)	Small	Local	Mixed	Active
1995	ZNWMC Property – Choma	Retail (Wholesale store)	Small	Local	Improved	Active
1996	ZNWMC Property– Kasama	Retail (Wholesale store)	Small	Local	Mixed	Active
1996	ZNWMC Property – Katete	Retail (Wholesale store)	Small	Foreign	Improved	Active
1996	ZNWMC Property – Longolongo Road	Retail (Wholesale store)	Small	Local	Improved	Active
1995	ZNWMC Property – Mongu	Retail (Wholesale store)	Small	Local	Mixed	Active
1996	ZSBS – Kalambo Rd, Lusaka	Real Estate (Property)	Small	Local	Improved	Active
1996	ZSBS – Kitwe Manufacturing Unit	Real Estate (Property)	Small	Local	Improved	Active
1996	ZSBS – Kitwe Sales Outlet	Real Estate (Property)	Small	Foreign	Improved	Active
1996	ZSBS – Lusaka Door Manufacturing Unit	Real Estate (Property)	Small	Local	Mixed	Active
1996	ZSBS – Sales Outlet, Buyantanshi Rd	Real Estate (Property)	Small	Local	Improved	Active
1994	Zambia Breweries Limited (Lusaka)	Manufacturing (Alcoholic beverages)	Large	Foreign	Improved	Active
1997	Zambia Cashew Company	Agro processing (Cashew nuts production)	Small	Mixed	Mixed	Active
1996	Zambia Clay Industries – Houses	Real Estate (Houses)	Small	Local	Mixed	Active
1996	Zambia Coffee Company Ltd	Agriculture (Coffee production)	Small	Foreign	Declined	Defunct
1996	Zambia Cold Storage - Chipata Plant	Real Estate (Meat Storage Plant)	Small	Local	Declined	Defunct

1996	Zambia Cold Storage – Kabwe Retail Outlet	Real Estate (retail store)	Small	Local	Mixed	Active
1996	Zambia Cold Storage – Kasama Plant	Real Estate (Meat Storage Plant)	Small	Local	Declined	Defunct
1996	Zambia Cold Storage – Livingstone Plant	Real Estate (Meat Storage Plant)	Small	Local	Declined	Defunct
1997	Zambia Cold Storage – Lusaka Plant	Real Estate (Meat Storage Plant)	Small	Local	Improved	Active
1997	Zambia Cold Storage – Mongu Plant	Real Estate (Meat Storage Plant)	Small	Local	Declined	Active
1997	Zambia Cold Storage Corp – Fountain Farm	Agriculture (Farm produce)	Small	Local	Mixed	Active
1997	Zambia Concrete Limited	Manufacturing (Rail sleepers production)	Small	Local	Mixed	Active
1997	Zambia Detonators	Service (Explosives services)	Medium	Foreign	Improved	Active
1995	Zambia Engineering and Contracting Company Limited	Construction (Building construction)	Medium	Foreign	Improved	Active
1996	Zambia Horticultural Products Ltd – Lusaka	Agro processing (Fruit and vegetables)	Medium	Foreign	Declined	Defunct
1996	Zambia Horticultural Products Ltd - Mkushi	Agro processing (Fruit and vegetables)	Small	Local	Declined	Defunct
1996	Zambia Maltings Ltd	Agro processing (Barley malting)	Small	Local	Mixed	Active
1997	Zambia Oxygen Limited	Energy (Industrial gas production)	Medium	Foreign	Improved	Active
1996	Zambia Pork Products	Agro processing (Pork products)	Small	Local	Declined	Defunct
1995	Zambia Sugar Company Limited	Manufacturing (Sugar products)	Large	Foreign	Improved	Active
1993	Zuva Zambia Ltd	Manufacturing (jewelry/ precious minerals)	Small	Local	Declined	Defunct
1999	Mulungushi Travellers Limited	Transport (Passenger Bus Services)	Small	Foreign	Declined	Defunct
1995	Mpongwe Development Company	Agriculture (Farm Produce)	Medium	Foreign	Declined	Defunct
1996	Intercontinental travel Limited	Transport	Small	Foreign	Declined	Defunct

Performance of firms privatised under Concession

Year	Name of Firm	Sector (Type of Business)	Concession Holder	Concession Period	Size of firms	Performance of Firm after Privatisation	Current status of Firm	Current Concession Status
2003	**Zambia Railways Limited**	Transport (Rail Transport)	Railway Systems of Zambia	2003 - 2023	Large	Mixed	Active	Concession cancelled in 2012
2003	**Mulobezi Railway**	Transport (Rail Transport)	Leasons General Contractors	2003 - 2013	Medium	Mixed	Active	Concession expired in 2013 (not renewed)

Performance of firms privatised under Lease

Year	Name of Firm	Sector (Type of Business)	Size of Firm	Change in Lease Holder	Performance of Firm after Privatisation	Current Status of Firm
1997	Bangweulu GMA – Shoebill Camp	Tourism (Safari)	Small	Yes	Mixed	Active
1996	Blue Lagoon Park – Nakeenda Lodge	Tourism (Safari)	Small	Yes	Declined	Active
1993	Blue Lagoon Park – Shamikobo Camp	Tourism (Safari)	Small	Yes	Mixed	Active
1996	Kafue National Park – Kafwala Camp	Tourism (Safari)	Small	No	Mixed	Active
1996	Kafue National Park – Lufupa Camp	Tourism (Safari)	Small	Yes	Improved	Active
1999	Kafue National Park – Moshi Camp	Tourism (Safari)	Small	No	Declined	Defunct
2003	Kafue National Park – Muyukuyuku Picnic Spot	Tourism (Safari)	Small	No	Declined	Defunct
1999	Kafue National Park – Ntemwa Lodge	Tourism (Hospitality)	Small	No	Declined	Defunct
1996	Kafue National Park – Nanzhila Park	Tourism (Safari)	Small	No	Declined	Defunct
1998	Kafue National Park – Treetops Camp	Tourism (Safari)	Small	Yes	Mixed	Active
1996	Lower Zambezi Park – A2	Tourism (Safari)	Small	No	Declined	Defunct

	Chifungulu Camp					
1996	Lower Zambezi Park – B3 Musanga Camp	Tourism (Safari)	Small	No	Declined	Defunct
2001	Lundazi Castle Hotel	Tourism (Hospitality)	Small	No	Mixed	Active
1999	Mosi oa Tunya Park – Fairyland Camp	Tourism (Hospitality)	Small	No	Declined	Defunct
1999	NHDC – Chichele Lodge	Tourism (Hospitality	Small	Yes	Mixed	Active
1997	NHDC – Kasaba Bay Lodge	Tourism (Safari)	Small	Yes	Declined	Defunct
1999	NHDC – Lochinvar Lodge	Tourism (Safari)	Small	Yes	Declined	Defunct
1996	NHDC – Mfuwe Lodge	Tourism (Safari)	Small	Yes	Improved	Active
1996	NHDC – Nkamba Bay Lodge	Tourism (Hospitality	Small	Yes	Declined	Defunct
1998	Rainbow Lodge	Tourism (Hospitality)	Small	No	Improved	Active
1996	Nyika National Park – Nyika Camp	Tourism (Safari)	Small	Yes	Declined	Defunct
1996	South Luangwa Park – Nsolo Camp	Tourism (Safari)	Small	Yes	Mixed	Active
1997	South Luangwa Park – Big Lagoon	Tourism (Safari)	Small	Yes	Declined	Defunct
1996	South Luangwa Park – Chamilandu Camp	Tourism (Safari)	Small	Yes	Improved	Active
1996	South Luangwa Park – Kakuli Camp	Tourism (Safari)	Small	Yes	Mixed	Active
1996	South Luangwa Park – Kapamba Camp	Tourism (Safari)	Small	Yes	Mixed	Active
1999	South Luangwa Park – Luambe Camp	Tourism (Safari)	Small	Yes	Improved	Active
1992	South Luangwa Park – Luamfwa Camp	Tourism (Safari)	Small	Yes	Declined	Defunct
1996	South Luangwa Park – Luwi Camp	Tourism (Safari)	Small	No	Mixed	Active
1996	South Luangwa Park – Manzi Camp	Tourism (Safari)	Small	No	Declined	Defunct
1996	South Luangwa Park – Mchenja Camp	Tourism (Safari)	Small	Yes	Mixed	Active
1996	South Luangwa Park – Nsefu Camp	Tourism (Safari)	Small	Yes	Mixed	Active
1997	South Luangwa Park – Lion Camp	Tourism (Safari)	Small	Yes	Improved	Active
1996	South Luangwa Park – Tena Tena Camp	Tourism (Safari)	Small	No	Improved	Active

1996	South Luangwa Park – Zebra Pans Camp	Tourism (Safari)	Small	No	Declined	Defunct
1996	South Luangwa Park – Zebra Plain Camp	Tourism (Safari)	Small	Yes	Mixed	Active
1996	ZNPWS – Chakwenga Lodge	Tourism (Safari)	Small	Yes	Declined	Defunct
1998	ZNPWS – Munda Wanga Sanctuary and Botanical Gardens	Tourism (Environmental Park)	Small	No	Declined	Active (Lease terminate in 2016)

Performance of firms privatised through Voucher Privatisation

Year	Name of Firm	Sector (Type of Business)	Size of Firm	Performance of Firm after privatisation	Current Status of Firm
1996	Amalgamated Milling – Ghirardi Milling Company	Agro processing (Milling)	Medium	Improved	Active
1995	KM Katai		Small	Declined	Defunct
	Antelope Milling	Agro processing (Milling)	Small	Improved	Active
1995	Chico Milling	Agro processing (Milling)	Small	Declined	Defunct
	Chimanga Milling	Agro processing (Milling)	Small	Mixed	Active
	Jamas Milling	Agro processing (Milling)	Small	Mixed	Active
1992	Mpende Fisheries	Agro Processing (Fishery)	Small	Improved	Active
1996	Ndole Bay Lodge	Tourism (Hospitality)	Small	Improved	Active
1992	PC Sichivula	-	Small	Declined	Defunct
1992	Ntingila Fisheries	Agro Processing (Fishery)	Small	Declined	Defunct
1995	Cape Kachese Fisheries	Agro Processing (Fishery)	Small	Declined	Defunct
1992	Chimba Crocodile Farm	Agriculture (Crocodile Farming)	Small	Declined	Defunct

Performance of firms privatised through Liquidation

Year	Name of Company	Sector (Type of Business)	Size of Firm	Performance of Firm after privatisation	Current Status of Firm
1995	Africa Bounds Limited	Tourism (Safari)	Small	N/A	Defunct
1995	Amalgamated Milling – EC Milling	Agro processing (Milling)	Small	N/A	Defunct
1992	Anros Industries Limited	Manufacturing (Window and Door Frames)	Small	N/A	Defunct
1995	Buildwell Construction	Construction (Building)	Small	N/A	Defunct
1997	Lukanga Investment and Development Company Limited	Service (Development consultancy)	Medium	N/A	Defunct
1995	NHDC – Mufulira Hotel	Tourism (Hospitality)	Small	N/A	Defunct
1995	NIEC Agencies Limited	Trading	Small	N/A	Defunct
1995	Redirection Placement Limited	Trading	Small	N/A	Defunct
1992	ZSIC – Zambia State Property Development Company	Service (Property development)	Small	N/A	Defunct
1992	ZSIC – Zambia State Security Limited	Service (Security services)	Small	N/A	Defunct
1995	Zambia Housing Development Fund Ltd	Real estate (Housing development)	Small	N/A	Defunct
1995	Zambia National Shipping Line	Transport (Freight and forwarding)	Small	N/A	Defunct
1995	United Bus Company of Zambia Limited	Transport (Passenger Bus Services)	Large	N/A	Defunct
1994	Contract Haulage	Transport (Freight and forwarding)	Large	N/A	Defunct
1994	Zambia Airways Corporation Limited	Transport (Air transport)	Large	N/A	Defunct
1996	MEMACO Group	Mining (Metal Marketing)	Large	N/A	Defunct

1995	Mpelembe Properties	Construction (Building Properties)	Medium	N/A	Defunct
1995	National Air Charters (Zambia) Ltd.	Transport (Air Transport)	Medium	N/A	Defunct
1996	Premium Oil Industries Ltd.	Agro Processing (Edible Oils	Medium	N/A	Defunct
1994	City Radio and Refrigeration Supplies.	Trading (Radio and Refrigeration Supplies)	Small	N/A	Defunct
1995	Livingstone Motor Assembly	Transport (Motor vehicle assembly)	Small	N/A	Defunct
1994	Mama Batteries	Manufacturing (Battery Manufacturing)	Small	N/A	Defunct
1995	Mwinilunga Canneries Ltd	Agro Processing (Pineapple Canning)	Small	N/A	Defunct
1997	National Drum and Can Co.	Manufacturing	Small	N/A	Defunct
1998	Zambia Emerald Industries Ltd	Mining (Emerald Mining)	Small	N/A	Defunct
1996	National Dairy Produce Board	Agro processing (Dairy products)	Medium	N/A	Defunct
1995	National Home Stores Limited	Trading (Department Store)	Large	N/A	Defunct
2003	National Hotels Development Corporation	Tourism (Hospitality)	Large	N/A	Defunct
1996	Consumer Buying Corporation of Zambia	Trading (Department Store)	Large	N/A	Defunct
1998	Zambia Agriculture Development Limited	Agriculture (Farm produce)	Large	N/A	Defunct
1998	Zambia Cold Storage Corporation	Agro Processing (Meat Processing)	Medium	N/A	Defunct
1997	Zambia Steel and Building Supplies	Construction (Supply of building material)	Medium	N/A	Defunct
1995	INDECO Milling Limited	Agro Processing (Milling company)	Medium	N/A	Defunct

1996	Lint Company of Zambia	Agriculture (Cotton Producer)	Medium	N/A	Defunct
1996	Supa Baking Company	Manufacturing (Bakery products)	Medium	N/A	Defunct
1995	Zambia National Wholesale and Marketing Corporation	Trading (Wholesale store)	Large	N/A	Defunct
1996	Zambia Horticultural Products Ltd	Agro processing (Farm Produce)	Medium	N/A	Defunct
1996	Mwaiseni Stores Limited	Retail Trade (Department Store)	Medium	N/A	Defunct
2002	Zambia Hotel properties Limited	Tourism (Hospitality)	Large	N/A	Defunct
	National Import And Export Corporation Limited	Trading (Import And Export)	Medium	N/A	Defunct
2003	Circuit Safaris Limited	Tourism (Safari)	Small	N/A	Defunct
1996	Mulungushi Investments Limited	Various (Holding Company)	Large	N/A	Defunct

Source: Author's own interpretation of reviewed literature

Note: The classification of enterprises by size and sector is from Progess Reports produced by the Zambia Privatisation Agency (ZPA).