

**UNIVERSITY
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**Evaluation of Service Delivery in Utility Companies in Zambia: A Case
Study of Zambia Electricity Supply Corporation Limited**

**A Dissertation Submitted in Partial Fulfilment for the requirement of the
program Master of Business Administration General (MBAGEN)**

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DECLARATION

I declare that:

This dissertation is the result of my independent research and effort. This piece has not been presented to any university for related purposes. Materials that have been borrowed I have acknowledged and cited by properly crediting the original Authors in the places where they are.

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ABSTRACT

This study evaluates the service delivery of utility companies in Zambia, with a focus on Zambia Electricity Supply Corporation Limited (ZESCO). A quantitative approach was employed using a survey design to assess customer satisfaction, loyalty, and service quality. Data was collected through structured questionnaires and analyzed using Microsoft Excel and SPSS (version 27.0). Wilcoxon, Friedman's, and Spearman's Correlation tests were conducted to measure customer satisfaction levels, loyalty, and the relationship between service quality and customer perceptions using the SERVQUAL model.

Findings indicate that the majority of respondents were dissatisfied with ZESCO's service delivery. However, despite this dissatisfaction, many customers expressed continued loyalty to ZESCO. The SERVQUAL analysis revealed variations across service dimensions, with strengths in responsiveness and empathy but deficiencies in tangibles, reliability, and assurance. A strong positive correlation between service quality and customer satisfaction was identified, which emphasized the critical role of reliability and assurance in improving overall customer experience.

The study concludes that addressing deficiencies in service quality is essential for enhancing customer satisfaction and loyalty. It recommends that ZESCO invest in infrastructure development, staff training, and strategic customer service initiatives to align service delivery with customer expectations and improve overall efficiency.

Keywords: *Service Delivery, Utility Companies, ZESCO, Customer Satisfaction, Service Quality, SERVQUAL Model, Customer Loyalty*

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Service quality and customer satisfaction are vital for the success of any business, as they play a significant role in customer retention, loyalty, and the overall reputation of the organization. Service quality is defined by how well a service meets or surpasses customer expectations. This is often assessed using the SERVQUAL model, which includes key dimensions such as reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman, Zeithaml, & Berry, 1988). When service quality is high, it fosters positive perceptions and trust, which are crucial for building customer loyalty (Zeithaml, Berry, & Parasuraman, 1996). Customer satisfaction, in contrast, is the emotional reaction that arises from how well a service aligns with customer expectations (Oliver, 1980). While satisfaction is closely linked to service quality, it can also be affected by external factors such as personal preferences and perceived value for money (Kotler & Keller, 2016). Research indicates a strong positive relationship between service quality and customer satisfaction, with improved service quality generally leading to higher satisfaction levels (Cronin & Taylor, 1992). For organizations, prioritizing these elements is essential for fostering customer loyalty, enhancing brand reputation, and gaining a competitive edge, making service quality and satisfaction critical for long-term growth.

1.2 Background of the Study

Electricity supply plays a fundamental role in national economic development, supporting industrialization, social well-being, and infrastructure growth. Zambia Electricity Supply Corporation Limited (ZESCO), established in 1970, is the state-owned enterprise responsible for electricity generation, transmission, and distribution across Zambia. As the country's primary electricity provider, ZESCO is critical to the functioning of major economic sectors such as mining, manufacturing, agriculture, and commerce. Given Zambia's reliance on mining, which contributes significantly to the GDP, a stable and efficient electricity supply is vital for economic productivity and industrial expansion.

Despite ZESCO's significance, concerns about service quality and customer satisfaction persist. Studies in other sectors and regions indicate that utility service providers often struggle with service quality due to infrastructure limitations, financial constraints, and operational inefficiencies. Service quality is commonly assessed through models such as the SERVQUAL model (Parasuraman et al., 1988), which evaluates service dimensions including reliability, responsiveness, assurance, empathy, and tangibles. Several studies have applied the SERVQUAL model to assess service quality across various industries. Sudin (2011), Prayudha and Harsanto (2014), and Kanyuka (2020) found that service reliability and responsiveness are key factors influencing customer satisfaction in banking and hospitality. Similarly, in Zambia's telecommunications sector, Chikoya (2022) found that service reliability and timely response to customer complaints were critical to customer perceptions of service quality.

The Discrepancy Theory, another widely used framework in customer satisfaction studies, posits that satisfaction arises from the gap between customer expectations and actual service experiences (Khalifa & Abou-Shouk, 2014). Studies by Mwila (2021) and Chikoya (2022) applied this theory to assess the impact of service shortfalls on customer perceptions. These studies highlight that perceived service failures, such as frequent power outages or delayed response times, significantly contribute to dissatisfaction.

In Zambia, ZESCO operates within a broader regional electricity trade network through the Southern African Power Pool (SAPP), which enables cross-border electricity trading within the Southern African Development Community (SADC). However, ZESCO faces numerous challenges, including aging infrastructure, financial sustainability issues, and increasing electricity demand, which have implications for service reliability and customer satisfaction.

Therefore, this study builds upon existing studies on service quality assessment and customer satisfaction by applying the SERVQUAL to the case of ZESCO. Given that empirical studies in Zambia's utility companies remain limited, this research sought to contribute to the understanding of service delivery challenges and potential strategies for enhancing customer satisfaction.

1.3 Problem Statement

ZESCO plays a critical role in the country's economic and social development by providing essential electricity services to households, businesses, and industries. The company offers various customer services, including new connections, metering, billing, and maintenance. Additionally, it provides customer support through multiple platforms, such as call centers, online services, and suggestion boxes, to handle customer inquiries and complaints.

Ideally, ZESCO should deliver high-quality services that meet customer expectations, ensuring reliability, responsiveness, and overall customer satisfaction. However, despite these efforts, concerns regarding the quality of service delivery have persisted. Studies on service quality indicate that customer satisfaction is influenced by key factors such as reliability, responsiveness, assurance, empathy, and tangibles (Sudin, 2011; Prayudha & Harsanto, 2014; Mwila, 2021). Empirical evidence from other sectors suggests that service deficiencies in these areas can lead to dissatisfaction, yet there is limited research directly linking ZESCO's service quality to customer perceptions and experiences.

Existing reports, including ZESCO's own bulletin (ZESCO, 2022), suggest increasing customer dissatisfaction due to issues such as frequent power outages, delayed fault repairs, inaccurate billing, and poor customer support. However, a systematic empirical assessment of these service quality gaps is lacking. This absence of data makes it difficult to determine the extent and specific areas of service deficiencies that contribute to customer dissatisfaction. Consequently, some customers have sought alternative energy sources, such as solar power, further affecting ZESCO's revenue and financial stability. Given the significant role of electricity in Zambia's economy and the impact of service quality on customer retention, it is crucial to evaluate ZESCO's service delivery from a customer satisfaction perspective.

1.4 Objectives of the Study

1.4.1 Primary objective:

This study was conducted to evaluate the service delivery of utility companies in Zambia, with a focus on Zambia Electricity Supply Corporation Limited (ZESCO).

1.4.2 Specific objectives:

1. To evaluate the level of customer satisfaction with the services of ZESCO.
2. To assess the level of customer loyalty with the services of ZESCO.
3. To determine the quality of the services of ZESCO based on SERVQUAL model.

1.5 Research Questions:

This study sought to answer the following questions:

- 1) What is the level of customer satisfaction with ZESCO's services?
- 2) What is the level of customer loyalty to ZESCO's services?
- 3) What is the quality of the services of ZESCO based on SERVQUAL model?

1.6 Hypotheses

H0: There is no significant relationship between service quality dimensions (tangibles, reliability, responsiveness, assurance, and empathy) and customer satisfaction at ZESCO.

H1: There is a significant positive relationship between service quality dimensions (tangibles, reliability, responsiveness, assurance, and empathy) and customer satisfaction at ZESCO.

1.7 Significance of the Study

Understanding customer satisfaction with service quality is crucial for ZESCO's long-term success and effective policy-making. As Zambia's primary electricity provider, ZESCO plays a significant role in the nation's economic growth and social well-being. The ability to meet customers' expectations for reliable and high-quality service is essential for the utility to fulfill its mandate and maintain its reputation. The study's findings will provide understanding of the importance of customer satisfaction and guide ZESCO in making informed decisions to improve its operations and policies. This study will be significant as follows:

1. The findings of the study may enhance service quality and operational efficiency at ZESCO. Evaluating customer satisfaction enables ZESCO to identify specific areas of its service that fall short of customer expectations, such as power reliability, billing accuracy, response times, and customer support. By addressing these issues, ZESCO can optimize its operational processes, reduce the

frequency of service disruptions, and enhance overall service quality. This leads to more efficient use of resources, lower operational costs, and improved service delivery.

2. It can also help in building Customer Trust and Loyalty. Electricity is a fundamental service that affects almost every aspect of daily life, and customers expect a reliable and consistent power supply. When service quality meets or exceeds expectations, it fosters trust and increases customer satisfaction. By understanding and addressing the root causes of dissatisfaction, ZESCO can rebuild trust with its customers. Improved customer satisfaction enhances loyalty and reduces the likelihood of customer complaints and disputes, contributing to a better public image.
3. Furthermore, it may contribute to supporting Economic Growth and Development. Reliable electricity is vital for the economic development of Zambia. It enables businesses to operate efficiently, supports industrial activities, and improves the quality of life for households. Understanding customer satisfaction helps ZESCO prioritize improvements that support economic growth by ensuring a stable power supply, thereby minimizing disruptions to businesses and essential services like healthcare and education.
4. The study's findings will provide data-driven insights that can inform ZESCO's strategic planning and policy development. This includes decisions related to infrastructure investments, customer service initiatives, and regulatory compliance. By aligning its policies with customer needs and expectations, ZESCO can develop more customer-centric strategies that improve service quality, address service gaps, and ensure that resources are allocated efficiently.
5. Regulatory bodies in Zambia may have established service quality benchmarks that ZESCO must meet. Understanding customer satisfaction levels will help to ensure that the company is in compliance with these standards, thereby avoiding potential fines or penalties. The insights gained from the study can also be used to advocate for policy changes or regulatory adjustments that better reflect the challenges and needs of both ZESCO and its customers.

6. For ZESCO to achieve sustainable growth, it must maintain a balance between expanding its infrastructure, managing costs, and meeting customer expectations. A deeper understanding of customer satisfaction provides a foundation for sustainable service improvements that can help the company achieve its long-term objectives. Customer feedback can also guide ZESCO in adopting innovative solutions, such as renewable energy sources and smart grid technologies, which enhance service reliability and sustainability.

1.8 Definition of Key Terms of the Study

The following are the identified key terms underpinning the study and below are the working definitions of the study.

1. In this study, **assessment** implies the process of evaluating or appraising something to determine its quality, effectiveness, or performance. In this study, assessment refers to the systematic analysis of customer reviews to understand their perceptions of service quality provided by Zambia Electricity Supply Corporation Limited (ZESCO).
2. **Customer Satisfaction** means feedback or opinions provided by customers regarding their experiences with a product or service. In the context of this study, customer reviews specifically pertain to the comments, ratings, and feedback shared by individuals who have interacted with ZESCO's services, particularly those related to electricity supply.
3. **Service Quality** means the degree to which a service meets or exceeds customer expectations and requirements. Service quality encompasses various dimensions, including reliability, responsiveness, assurance, empathy, and tangibles. In this study, service quality refers to customers' perceptions of the quality of services provided by ZESCO, as reflected in their reviews.
4. In this study, the **case study** approach is used to examine customer reviews of service quality perceptions at the Zambia Electricity Supply Corporation Limited Headquarters (ZESCO), providing insights into the unique challenges and opportunities faced by the organization.
5. Zambia Electricity Supply Corporation Limited (ZESCO) is the state-owned utility company responsible for generating, transmitting, and distributing electricity in

Zambia. ZESCO plays a central role in providing electricity services to households, businesses, and industries across the country, making it the focus of this study. These key terms lay the foundation for clear and precise communication, ensuring a shared understanding of the central concepts within the research title.

1.9 Chapter Summary

This chapter highlighted the importance of service quality and customer satisfaction in utility companies, with a particular focus on ZESCO. It has provided background information on ZESCO's role in Zambia's electricity sector and outlined the challenges it faces in service delivery. The chapter also presented the research problem. The study objectives, research questions, and hypotheses were formulated to guide the investigation. Additionally, the significance of the study was discussed. Finally, key terms were defined to ensure clarity and consistency throughout the research. This chapter lays the groundwork for the subsequent sections, which will further explore the theoretical and empirical perspectives on service quality and customer satisfaction.

CHAPTER TWO LITERATURE REVIEW

2.1 Overview

The Empirical Review, Theoretical Review, and Conceptual Framework of the research problem will be discussed in this chapter. It will consider results from earlier studies on customer satisfaction levels regarding service quality.

2.2 Empirical Review

2.2.1 Table of Authors and Theory Used

| | Author | Theory Used |
|----|--|-----------------------------------|
| 1 | Avikal et al. (2023) | Kano Model |
| 2 | Sudin, S. (2011) | SERVQUAL (Service Quality) |
| 3 | Verhoef, P. C., et al. (2009) | Customer Experience Theory |
| 4 | Khalifa, G. S., & Abou-Shouk, M. A. (2014) | Expectancy-Disconfirmation Theory |
| 5 | Prayudha, A. N., & Harsanto, B. (2014) | SERVQUAL (Service Quality) |
| 6 | Buttle, F. A. (1998) | Word-of-Mouth Theory |
| 7 | Watiki, C. (2014) | SERVQUAL (Service Quality) |
| 8 | Kanyuka, P. (2020) | SERVQUAL (Service Quality) |
| 9 | Mwila, S. (2021). | SERVQUAL (Service Quality) |
| 10 | Chikoya, M. (2022). | SERVQUAL (Service Quality) |

The study will use the service quality (SERVQUAL) theory. Findings from the table indicate that SERVQUAL is the mostly used theory

2.2.1 Extent of Customer Satisfaction with Service Quality Delivery

Understanding customer satisfaction regarding service quality is crucial for businesses. It influences customer loyalty and their likelihood of remaining with a company. A study by Sudin (2011) highlighted that important factors such as reliability, responsiveness, assurance, empathy, and tangibles significantly impact how customers perceive the service they receive. When companies excel in these areas, customers tend to be more satisfied. The study emphasizes that reliability, essentially, how consistently a service meets expectations is particularly important. If a company reliably delivers on its promises, customers are more likely to trust them and develop loyalty. This is further supported by Prayudha and Harsanto (2014), who focused on the hospitality industry. Their research showed that when customers' expectations are not just met but exceeded, satisfaction levels increase. However, it was also found that any shortcomings, such as service delays or insufficient attention from staff, can lead to dissatisfaction.

A study by Watiki (2014) pointed out specific issues related to customer satisfaction. It found that customers appreciate prompt responses to their inquiries. When banks resolve complaints quickly, customers tend to report higher satisfaction levels. However, another study by Mwila (2021) revealed that many customers experience frustration due to long wait times and inadequate communication. While it's essential to meet basic service delivery standards to avoid dissatisfaction, there are also "excitement" factors that can greatly enhance satisfaction. According to Avikal et al. (2023), personalized services or unique features can truly delight customers and improve their overall experience. This suggests that businesses should not only focus on fulfilling basic expectations but also aim to exceed them. Effective communication between the company and the client, whether in person or online, contributes to greater satisfaction. When a company ensures consistency across all interactions, customers are more likely to feel valued and satisfied with their overall experience, as noted by Verhoef et al. (2009).

A study by Kanyuka (2020) focused on the hospitality sector in Lusaka and found that customer satisfaction is closely tied to the professionalism of staff and the overall atmosphere. Customers tend to prefer interacting with knowledgeable and friendly employees, which significantly boosts their perception of service quality. Moreover, the reliability of service emerged as a crucial factor affecting customer satisfaction. Many

customers expressed dissatisfaction during network outages, highlighting the need for consistent service availability (Chikoya, 2022). Satisfied customers are more inclined to recommend services to others, a factor that holds increasing importance in today's world where social media can amplify these experiences. Therefore, businesses must prioritize service quality to build positive relationships and encourage customers to share their experiences.

A study by Mwandila and Phiri (2023) examined customer satisfaction with utility services in Zambia, focusing on the water and electricity sectors. Using a mixed-methods approach, they conducted surveys and interviews with 500 customers across Lusaka. Their findings indicated that while customers appreciated the availability of services, inconsistent supply and poor customer service significantly impacted satisfaction. The study concluded that reliability and responsiveness were the most influential factors in determining customer perceptions. This aligns with the current study's focus on ZESCO, as similar complaints regarding electricity supply and service delays have been noted, reinforcing the need to assess these aspects systematically.

Similarly, Nyambe et al. (2022) investigated customer satisfaction in the telecommunications sector in Zambia. Their quantitative study, which employed structured surveys, found that assurance and empathy played critical roles in shaping customer satisfaction. Customers valued service providers that offered clear communication, knowledgeable staff, and prompt issue resolution. While the sector differs from electricity supply, the findings highlight that customer expectations of service quality are consistent across industries, further supporting the SERVQUAL model used in the current study.

In a broader African context, Okafor and Uche (2021) analyzed service quality in Nigeria's electricity sector using the SERVQUAL model. Their study, which surveyed 800 electricity consumers, found that billing transparency and timely fault resolution were the primary concerns affecting customer satisfaction. Their research concluded that improved customer service and digitalization of billing systems could enhance satisfaction. These findings resonate with the current study's aim to assess ZESCO's service quality using SERVQUAL, emphasizing the importance of clear communication and efficiency in issue resolution.

A study by Kapembwa and Mulenga (2023) focused on customer experience with energy service providers in Southern Africa. Using qualitative methods, including focus group discussions and in-depth interviews, they found that service disruptions and poor feedback mechanisms were common sources of dissatisfaction. Their findings suggested that proactive customer engagement and transparency in service provision could significantly improve customer perceptions. This study complements the current research by highlighting the role of communication in shaping customer experiences with utility providers like ZESCO.

Mundia and Kalumba (2021) examined customer satisfaction levels in Zambia's telecommunications sector, focusing on the responsiveness and reliability of service providers. Using a mixed-methods approach, they conducted surveys and interviews with 500 customers across Lusaka and Ndola. Their findings highlighted that delayed service response times and inconsistent service delivery were major contributors to dissatisfaction. The study concluded that firms must enhance their responsiveness to customer needs and offer consistent service experiences. This study aligns with the current research on ZESCO by reinforcing the importance of service consistency and responsiveness in customer satisfaction, particularly in the utility sector.

Nkhata (2022) explored customer satisfaction with service quality in Malawi's electricity sector, using the SERVQUAL model to assess five dimensions: reliability, responsiveness, assurance, empathy, and tangibles. The study employed a quantitative research design, surveying 600 customers of the Electricity Supply Corporation of Malawi (ESCOM). Findings indicated that reliability and responsiveness were the most critical factors affecting satisfaction, with frequent power outages and slow complaint resolution leading to customer frustration. The study recommended infrastructural improvements and better communication channels. Compared to the current study on ZESCO, Nkhata's research provides a regional perspective and highlights similar challenges in electricity service delivery, emphasizing the role of reliability in customer satisfaction.

Kunda and Phiri (2023) investigated customer satisfaction in Zambia's banking sector, assessing the role of digital platforms in enhancing service quality. Their study utilized a case study approach, collecting data from bank customers using structured questionnaires and focus group discussions. Results showed that banks that integrated

digital platforms for customer interaction and complaint resolution experienced higher satisfaction levels. The study concluded that accessibility and responsiveness via digital channels were crucial for improving service perceptions. While the focus was on banking, the findings suggest that ZESCO could improve customer satisfaction by leveraging digital platforms to enhance communication and service accessibility.

Mwape et al. (2023) assessed service quality in the water supply sector in Zambia, examining how service disruptions affect customer satisfaction. Using a cross-sectional survey of 450 households, they found that frequent water supply interruptions led to dissatisfaction, despite efforts by service providers to communicate with customers. The study concluded that while effective communication mitigates frustration, reliable service delivery remains the key determinant of satisfaction. This study reinforces the importance of service reliability, which is directly relevant to the current research on ZESCO's electricity supply services.

Rodriguez and Martinez (2021) investigated customer satisfaction with electricity services in Argentina, focusing on service reliability and billing transparency. Using a quantitative survey of 750 households in Buenos Aires, the study assessed factors such as power outage frequency, billing accuracy, and customer service responsiveness. Findings indicated that while customers valued affordability, service reliability and clear billing were the primary drivers of satisfaction. The study concluded that improved communication and infrastructure investments were necessary to enhance service delivery. Compared to the current study on ZESCO, this research highlights similar issues of reliability but also emphasizes the role of billing transparency, which could be further explored in the Zambian context.

Chen et al. (2022) analyzed the impact of privatization on electricity service satisfaction in China. The study employed a mixed-methods approach, combining customer surveys with in-depth interviews with industry experts. Findings revealed that while privatization led to improved efficiency and reduced outages, customers remained dissatisfied with price increases and perceived lack of government regulation. The study concluded that while privatization can enhance service quality, regulatory oversight is essential to maintain consumer trust. Unlike ZESCO, which operates as a state-owned enterprise,

this study provides insights into how market liberalization affects service quality and customer perceptions.

Brown and Taylor (2023) examined customer satisfaction with electricity utilities in the United Kingdom, focusing on customer service and complaint resolution. Using a longitudinal study of customer complaints over five years, they found that companies with proactive complaint resolution mechanisms experienced higher customer retention rates. The study concluded that responsiveness and problem-solving efficiency were critical to maintaining customer trust. This research is relevant to the ZESCO case, suggesting that improving complaint resolution mechanisms can significantly enhance customer satisfaction.

Gómez and Silva (2023) conducted a study on customer perceptions of smart grid implementation in Brazil. Using a case study approach, they analyzed the impact of smart meters and automated services on customer satisfaction. Results indicated that customers appreciated the convenience of real-time billing updates and remote monitoring but were concerned about data privacy and higher costs. The study concluded that while smart grids improve efficiency, customer education on the benefits and security of these technologies is crucial. This study provides a futuristic perspective on electricity service delivery, which could be relevant to ZESCO if it adopts similar technologies.

2.2.2 Service Quality aspects and Customers satisfaction

When it comes to customer satisfaction, several elements of service quality can greatly impact how customers perceive their experiences. Research shows that factors like communication, staff behavior, and the speed of service delivery are essential in shaping customer opinions. A study by Khalifa and Abou-Shouk (2014) emphasized that clear communication and quick resolution of issues are crucial for improving customer satisfaction. They discovered that when service staff communicate effectively and address concerns promptly, customers feel more appreciated and satisfied with the overall service. Additionally, a study by Watiki (2014) revealed that responsiveness is a critical factor for customers. Many expressed frustration when their inquiries went unanswered for extended periods or when they experienced delays in service.

Mwila (2021) found that customers in Zambia's banking sector frequently experienced frustration due to long wait times and poor follow-up on complaints. This highlights the

need for organizations to improve their responsiveness to boost customer satisfaction. The professionalism of staff and the quality of the physical environment play crucial roles in customer satisfaction. When staff are friendly and knowledgeable, it greatly enhances the customer experience, increasing the likelihood of repeat visits. Conversely, customers expressed dissatisfaction when they encountered unhelpful staff or when the service environment was unattractive, as noted by Prayudha and Harsanto (2014).

A study conducted by Chikoya (2022) on Zambia's telecommunications sector found that the reliability of service is a key factor in customer satisfaction. Many customers expressed their frustrations regarding network outages and service interruptions, which left them feeling undervalued. This observation is supported by Kanyuka (2020), who highlighted that customers typically expect consistent and reliable services, and any shortcomings in this area can lead to dissatisfaction. Additionally, the aspect of tangibles, which encompasses the physical elements of service delivery, also influences customer satisfaction. Watiki (2014) pointed out that customers value clean and modern facilities in the public sector, as a well-maintained environment enhances customer perceptions. However, it is important to note that while tangibles are significant, they often take a backseat to factors such as service responsiveness and staff behavior.

Chisanga and Banda (2022) explored the impact of service quality dimensions on customer satisfaction in Zambia's banking sector. Their study employed a quantitative survey approach, gathering responses from 600 banking customers. Results showed that reliability and responsiveness were the strongest predictors of customer satisfaction, with long wait times and inefficient complaint resolution being major concerns. These findings align with the current study's focus on ZESCO, as similar service quality gaps such as delays in response to faults can lead to customer dissatisfaction in the electricity sector.

Expanding on service quality, Mwansa et al. (2023) assessed how digital service delivery influenced customer satisfaction in Zambia's retail sector. Their mixed-methods study found that businesses that integrated digital platforms for customer engagement had higher satisfaction ratings. The study concluded that the use of mobile applications and automated customer support improved responsiveness. While their research focused on retail, it is relevant to ZESCO's service delivery, particularly as the company adopts online payment systems and digital customer interaction platforms.

A study by Ng'andu and Tembo (2021) investigated service quality perceptions among customers of state-owned enterprises in Zambia. Using SERVQUAL, they surveyed 750 customers across different sectors, finding that empathy and assurance significantly influenced satisfaction levels. Customers preferred service providers that showed a willingness to listen to complaints and resolve them promptly. This study supports the current research's focus on measuring service quality at ZESCO, particularly in terms of customer service responsiveness and complaint handling.

In a related study, Okonkwo and Adeyemi (2023) examined customer satisfaction in Ghana's power sector. Their research employed structured interviews and surveys with electricity consumers. The findings revealed that frequent power outages, high tariffs, and poor customer support were the main drivers of dissatisfaction. The study recommended policy reforms and investment in infrastructure to enhance service delivery. While Ghana's power sector differs in regulatory structure from Zambia's, the findings parallel concerns raised in the current study regarding ZESCO's reliability and customer engagement.

Moyo and Banda (2023) analyzed the impact of employee professionalism on customer satisfaction in Zambia's transport sector. They adopted a qualitative research approach, conducting interviews with 50 frequent public transport users. Findings indicated that courteous and knowledgeable staff significantly enhanced customer satisfaction, while rude or uninformed employees contributed to dissatisfaction. The study concluded that employee training and professionalism play a crucial role in shaping customer experiences. The results align with the ZESCO study in emphasizing the need for well-trained personnel in customer service roles.

Chisanga et al. (2022) investigated the role of communication in service quality perception in Zambia's insurance sector. Using a survey of 300 policyholders, the study assessed how timely updates, clarity of information, and responsiveness affected customer satisfaction. Results showed that policyholders who received timely and clear communication were more satisfied than those who experienced delays or miscommunication. The study concluded that effective communication was a key determinant of service quality perceptions. This finding is relevant to ZESCO's service

delivery, where transparent communication regarding outages and billing issues could improve customer satisfaction.

Mugala and Tembo (2021) studied the impact of service tangibles, such as physical infrastructure and service environment, on customer satisfaction in Zambia's hospitality industry. They used observational methods and customer surveys at 20 hotels across Lusaka and Livingstone. Results showed that well-maintained facilities and aesthetically pleasing environments positively influenced customer satisfaction. The study concluded that service tangibles play a significant role in shaping customer perceptions, which is applicable to ZESCO in terms of infrastructure quality, office accessibility, and equipment maintenance.

Kasanga (2023) examined how responsiveness affects customer perceptions in Zambia's health sector, focusing on hospital wait times and emergency response efficiency. Using a quantitative approach, the study surveyed 400 patients from public hospitals. Findings revealed that long wait times led to dissatisfaction, while hospitals with quick response mechanisms saw higher satisfaction ratings. The study concluded that organizations must prioritize responsiveness to enhance customer experiences. This finding is directly relevant to ZESCO, where delays in resolving complaints and outages negatively impact customer satisfaction.

Johnson and Peterson (2022) studied the effect of service responsiveness on customer satisfaction in Canada's telecommunication sector. Using a large-scale customer survey, the study found that companies with 24/7 customer support and fast issue resolution had significantly higher satisfaction scores. The study concluded that investing in efficient customer service mechanisms enhances customer loyalty. This aligns with the ZESCO study by emphasizing the need for improved customer service response times.

Kumar et al. (2023) examined the role of digital service channels in improving customer satisfaction in India's banking industry. Through a mixed-methods approach, they analyzed survey responses from 1,000 banking customers and conducted interviews with service managers. Results showed that customers who accessed services via digital platforms reported higher satisfaction levels due to convenience and speed. The study concluded that organizations must integrate digital solutions to enhance service

accessibility. This finding is applicable to ZESCO, which could leverage digital platforms to improve customer interactions.

Schmidt and Müller (2021) explored the impact of employee training on service quality in Germany's public transportation sector. The study used experimental research, comparing customer satisfaction before and after staff underwent specialized training programs. Findings indicated that well-trained employees were more effective in handling customer concerns, leading to increased customer satisfaction. The study concluded that continuous training is essential for service quality improvement. This is relevant to ZESCO in highlighting the importance of staff capacity-building in enhancing service delivery.

Rodriguez and Fernandez (2022) investigated the influence of perceived fairness in billing on customer satisfaction in Spain's electricity sector. Using a qualitative approach, they conducted focus group discussions with electricity consumers. Findings showed that customers who perceived their bills as fair and transparent were more likely to express satisfaction, even when faced with occasional service disruptions. The study concluded that companies must ensure billing clarity and fairness to build customer trust. This insight is valuable for ZESCO, as unclear billing remains a common customer complaint.

2.2.3 Improving Service Quality to Enhance Service Satisfaction

Enhancing service quality is crucial for businesses looking to increase customer satisfaction and loyalty. Many studies have pointed out different strategies and methods that organizations can use to improve their service quality. For instance, a study by Sudin (2011) highlighted that ongoing staff training is a key strategy for enhancing service quality. When staff are well-trained, they are more capable of meeting customer expectations, addressing inquiries, and resolving issues effectively. This leads to a more enjoyable experience for customers, which in turn boosts retention rates. Additionally, Watiki (2014) found that organizations that conduct regular performance evaluations and actively seek customer feedback often experience notable improvements in service quality. By paying close attention to customer concerns and suggestions, businesses can pinpoint areas that need improvement and tackle them effectively. This ongoing feedback process not only aids in enhancing service delivery but also creates a sense of involvement among customers, ultimately boosting their overall satisfaction.

Verhoef et al. (2009) pointed out that by integrating advanced technologies like customer relationship management systems and data analytics, organizations can gain a deeper understanding of customer needs and preferences. Utilizing this information allows companies to customize their services to align with specific expectations, ultimately boosting customer satisfaction. This perspective is supported by Avikal et al. (2023), who emphasized that businesses should focus on features that meet or surpass customer expectations. Enhancing service quality necessitates a strong emphasis on customer experience. Investments in modern facilities and amenities, along with staff training in customer engagement, contribute to increased satisfaction levels. Additionally, it was found that customers are more inclined to return to places where they feel appreciated and well-treated, highlighting the significance of fostering a positive service environment. Kanyuka (2020)

Mwila (2021) argues that organizations that frequently evaluate their service delivery processes and implement necessary changes are more likely to improve customer satisfaction. This strategy not only aids in pinpointing inefficiencies but also shows a dedication to service excellence, which in turn strengthens customer loyalty.

Lungu and Chileshe (2023) investigated how service improvements in Zambia's transport sector influenced customer satisfaction. Using a case study approach, they analyzed customer feedback on service enhancements such as better infrastructure and staff training. Their findings suggested that continuous investment in service improvement led to increased customer satisfaction and loyalty. This study is relevant to the current research, as it highlights the need for ZESCO to improve infrastructure and service delivery to enhance customer satisfaction.

A study by Kabwe et al. (2022) examined the role of employee training in enhancing service quality within Zambia's hospitality industry. Using a quasi-experimental design, they found that employees who underwent regular training programs provided better service, leading to higher customer satisfaction. These findings support the need for ZESCO to invest in employee training to improve customer interactions and service delivery.

In another study, Moyo and Ndlovu (2021) assessed how customer feedback mechanisms impacted service quality in Zimbabwe's public utilities. Their research used

qualitative interviews with service providers and customers, concluding that organizations that actively sought and acted on customer feedback experienced higher customer satisfaction levels. This aligns with the current study's recommendation for ZESCO to enhance its feedback systems, ensuring prompt responses to customer concerns.

Daka and Phiri (2023) explored how technological advancements improved service quality in Zambia's telecommunications sector. Their study found that automated systems and AI-driven customer service tools significantly reduced response times and improved customer experiences. While their focus was on telecommunications, the findings are applicable to ZESCO, particularly in terms of leveraging technology to enhance service efficiency and communication.

Simfukwe and Mumba (2023) explored strategies for improving customer service quality in Zambia's retail sector. Using a case study approach, they analyzed customer feedback from leading supermarkets in Lusaka. The study found that businesses that actively sought customer feedback and implemented service improvements reported higher customer retention rates. The study concluded that continuous feedback mechanisms are essential for enhancing service quality. This finding can be applied to ZESCO, emphasizing the need for regular customer surveys and service adjustments based on feedback.

Kamanga and Banda (2022) studied the effect of employee training on service quality in Zambia's banking industry. Through a quasi-experimental design, they assessed two banks—one that implemented regular customer service training and another that did not. Findings indicated that banks that invested in training had better customer satisfaction scores and fewer complaints. The study concluded that service quality improvements depend on equipping employees with the necessary skills. This study highlights the importance of staff training, which is applicable to ZESCO in ensuring its customer service personnel are well-equipped to handle customer concerns.

Mwansa et al. (2022) analyzed the impact of digital transformation on service quality in Zambia's government institutions. Using mixed methods, they examined the effectiveness of e-service platforms in reducing customer complaints. Findings showed that institutions that integrated online portals for customer engagement saw improved service efficiency and satisfaction. The study concluded that technology adoption

enhances responsiveness and accessibility. This is relevant to ZESCO, which could benefit from expanding its digital customer service platforms to streamline service delivery.

Ngoma (2023) investigated customer-centric approaches to service quality improvement in Zambia's telecommunications industry. The study used focus groups and in-depth interviews with customers of major telecom providers. Results showed that companies that prioritized customer needs and provided personalized services had higher satisfaction levels. The study concluded that businesses must adopt customer-focused strategies to remain competitive. For ZESCO, this suggests that tailoring services to meet customer expectations and improving engagement strategies could enhance overall satisfaction.

Williams and Scott (2023) analyzed the impact of customer feedback systems on service quality improvements in the United States' water utility sector. Using a case study of major utility companies, the study found that organizations that actively incorporated customer feedback into service improvements reported higher satisfaction levels. The study concluded that structured feedback mechanisms are crucial for continuous service enhancement. This finding is relevant to ZESCO, which could benefit from more systematic engagement with customer feedback.

López and Ramírez (2022) examined the role of corporate social responsibility (CSR) in shaping customer perceptions of service quality in Mexico's energy sector. Using survey data from 800 customers, they found that companies that engaged in CSR initiatives, such as supporting community electrification projects, experienced higher customer loyalty. The study concluded that corporate responsibility initiatives enhance customer trust and satisfaction. This study suggests that ZESCO could improve public perception by investing in community-focused initiatives.

Tanaka et al. (2021) investigated the impact of automation on service efficiency in Japan's municipal service sector. Through observational research and customer interviews, they found that self-service kiosks and AI-driven customer support significantly reduced wait times and improved satisfaction levels. The study concluded that automation is an effective tool for improving service delivery. This finding is applicable to ZESCO, which could explore automation to enhance customer experience.

Fischer and Weber (2023) studied the effect of service decentralization on customer satisfaction in France’s electricity sector. Using a comparative analysis of centralized and decentralized service models, they found that regions with localized service centers reported higher satisfaction levels due to faster response times. The study concluded that decentralization enhances service accessibility and efficiency. This insight could be useful for ZESCO in considering how regional service hubs might improve customer experiences.

2.3 Theoretical Framework

The theoretical framework for this research draws on key theories and models that explain the relationship between service quality and customer satisfaction, focusing on the utility sector, specifically electricity provision by ZESCO. The framework combines the SERVQUAL model and Discrepancy Theory of formation.

A review of literature shows that the SERVQUAL model is used frequently in measuring service quality as shown in table 2.1

Table 2.1 Studies Employing the SERVQUAL Model

| Author | Use of the SERVQUAL model and the independent variable |
|--|--|
| Prayudha, A. N., & Harsanto, B. (2014) | Utilized the SERVQUAL model to analyze the gap between customer expectations of the service and their actual experiences. They measured service quality through surveys that contrasted these expectations with the real-life service received. |
| Sudin, S. (2011) | The SERVQUAL model was utilized to assess the quality of service by examining five essential areas: reliability, assurance, tangibles, empathy, and responsiveness. The findings indicated that these factors could effectively measure service quality. |
| Watiki, C. (2014) | Utilized the SERVQUAL model to assess service quality by comparing it to customer expectations. The evaluation of |

| | |
|--------------------|--|
| | service quality focused on aspects such as reliability and customer support. |
| Kanyuka, P. (2020) | Utilized the SERVQUAL model to examine the disparity between customer expectations and the actual service they received. This approach effectively measured service quality... |
| Mwila, S. (2021) | The focus was on the SERVQUAL model to assess how effectively the service met customer expectations across various dimensions. This approach allowed for a clear measurement of service quality by identifying areas where the service either fell short or surpassed expectations |
| Chikoya, M. (2022) | They utilized the SERVQUAL model to assess the quality of the service by looking into various aspects, such as its reliability and responsiveness. This approach allowed them to obtain clear insights on service quality based on customer feedback. |

The findings from the table show how different studies or authors have utilized the SERVQUAL model. It is evident that most of these studies successfully used the theory to measure the independent variable (service quality) that influences customer satisfaction. The authors' emphasis on various dimensions of service quality highlights the model's versatility and its capacity to offer clear insights into areas where services either meet or fall short of customer expectations.

The SERVQUAL model, created by A. Parasuraman, Valarie Zeithaml, and Leonard Berry in 1988, is a well-known framework for assessing service quality. It operates on the principle that service quality can be gauged by comparing what customers expect with their actual experiences of service performance. This model offers businesses a structured approach to pinpoint discrepancies between customer expectations and their experiences, allowing organizations to effectively focus on areas for improvement (Parasuraman, Zeithaml, & Berry, 1988). At its foundation, SERVQUAL is rooted in the "gap theory," which outlines five gaps that can influence service delivery: the gap between

customer expectations and management's understanding of those expectations, the gap between management's understanding and the specifications for service quality, the gap between service quality specifications and the actual service provided, the gap between the service provided and what is communicated to customers, and the gap between customer expectations and their perceptions of the service received. Tackling these gaps is essential for delivering quality services that meet customer needs and expectations. The model also highlights five dimensions for measuring service quality: reliability, responsiveness, assurance, empathy, and tangibles.

Reliability refers to the ability to consistently deliver the promised service. For ZESCO, this means maintaining a steady and dependable electricity supply, with minimal outages or disruptions (Parasuraman et al., 1988; Zeithaml et al., 2006).

Responsiveness is about the willingness to assist customers and provide quick service. ZESCO's effectiveness in addressing customer complaints, repairing faults, and responding to outages are indicators of this dimension (Parasuraman et al., 1988; Kotler et al., 2015).

Assurance involves the knowledge and courtesy of employees, and their capacity to instill trust and confidence in customers. For ZESCO, this would mean ensuring that employees are well-trained, approachable, and able to provide accurate information about services (Zeithaml et al., 2006).

Empathy is about offering personalized attention to customers, understanding their needs, and tailoring services accordingly. ZESCO could demonstrate empathy by providing special support during prolonged outages or by addressing specific customer concerns effectively (Parasuraman et al., 1988; Kotler et al., 2015).

Tangibles represent the physical appearance of facilities, equipment, and personnel. ZESCO's infrastructure, the condition of their offices, the clarity of their billing statements, and the professionalism of their staff are tangible elements that contribute to the overall service quality (Zeithaml et al., 2006).

2.3.2 DISCREPANCY THEORY

| Author | Use of Discrepancy Theory (Dependent Variable: Customer Satisfaction) |
|--|--|
| Khalifa, G. S., & Abou-Shouk, M. A. (2014) | Applied Discrepancy Theory to evaluate customer satisfaction by looking at the differences between what customers expected and the actual service they received. I gathered data through surveys to effectively measure this dependent variable |
| Sudin, S. (2011) | Utilized Discrepancy Theory to assess the gaps between perceived service quality and customer expectations, establishing a direct link to satisfaction levels. |
| Prayudha, A. N., & Harsanto, B. (2014) | Utilized Discrepancy Theory to assess customer satisfaction by examining the gaps between what customers expected and their actual service experience. The dependent variable, customer satisfaction, was accurately measured through data analysis. |
| Kanyuka, P. (2020) | Analyzed customer satisfaction using Discrepancy Theory by looking into how the gap between expected and actual service affected satisfaction levels. |
| Mwila, S. (2021) | Applied Discrepancy Theory to explore the relationship between gaps in service quality and customer satisfaction. |
| Chikoya, M. (2022) | Analyzed customer satisfaction using Discrepancy Theory, concentrating on the difference between expected and actual service quality. |

The findings suggest that the use of the Discrepancy Theory was effective to measured customer satisfaction in various studies. By examining the difference between what customers expected and their actual service experience, the authors identified important factors that impact satisfaction levels.

Discrepancy Theory is a psychological and sociological concept used to explain the relationship between expectations and satisfaction, particularly in the context of customer

satisfaction. The theory suggests that satisfaction or dissatisfaction arises from the difference (discrepancy) between what is expected and what is actually experienced.

In the context of ZESCO, the theory can explain how customer satisfaction is influenced by factors like the reliability of electricity supply, speed of response to outages, and accuracy of billing. If the actual service quality significantly deviates (positively or negatively) from what customers expect, it will affect their overall satisfaction levels. In assessing customer satisfaction with service quality at ZESCO, Discrepancy Theory can help identify specific areas where the utility's service fails to meet customer expectations (e.g., frequent power outages or delayed fault repairs). By understanding these gaps, ZESCO can develop strategies to better align their service delivery with customer expectations, thereby improving satisfaction levels.

This theoretical framework will be used to evaluate how ZESCO's service delivery aligns with customer expectations and to identify specific areas where service quality can be improved. It provides a comprehensive approach to:

- Assess the impact of various service quality dimensions (reliability, responsiveness, assurance, empathy, and tangibles) on customer satisfaction.
- Identify gaps in service delivery that lead to dissatisfaction.
- Explore strategies for improving service quality, including enhancing infrastructure, training staff, and utilizing digital platforms for customer engagement.

2.4 Conceptual Framework

In evaluating service delivery at Zambia Electricity Supply Corporation Limited (ZESCO), this study adopts the SERVQUAL model as the guiding Model. The SERVQUAL model, developed by Parasuraman, Zeithaml, and Berry (1988), is a widely used approach to assessing service quality by measuring the gap between customer expectations and actual service perceptions. The model consists of five key dimensions: tangibles, reliability, responsiveness, assurance, and empathy, all of which influence customer satisfaction. Given that customer satisfaction is a crucial determinant of customer loyalty, this framework provides a structured way to analyze the effectiveness of ZESCO's service delivery.

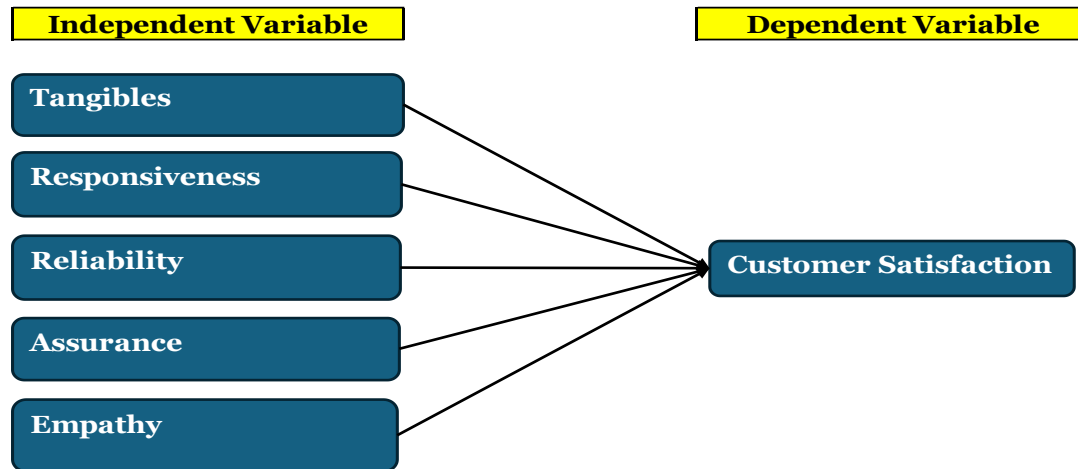


Figure 2.11: The relationship between a dependent variable and the independent variables

The model shows an interaction between the independent variables (tangibles, responsiveness, reliability, assurance, and empathy) that influence customer satisfaction is the dependent variable.

The model illustrates the relationship between service quality dimensions (independent variables), customer satisfaction (dependent variable), and customer loyalty (another key outcome). Each service quality dimension contributes to shaping customer satisfaction, which in turn influences customer loyalty.

1. Tangibles refer to the physical aspects of service delivery, including infrastructure, technology, and personnel appearance. In the context of ZESCO, this includes power supply equipment, customer service centers, and online billing systems. High-quality tangibles create a positive impression on customers and enhance satisfaction.
2. Reliability represents the ability of the service provider to deliver services consistently and dependably. This is crucial in electricity supply, as frequent outages and billing errors negatively impact customer trust and satisfaction. If ZESCO can improve its reliability, it will likely enhance customer satisfaction.
3. Responsiveness refers to how promptly and effectively ZESCO addresses customer concerns, such as handling complaints and providing timely information about power outages. Poor responsiveness often leads to frustration and dissatisfaction among customers.

4. Assurance relates to the knowledge, courtesy, and professionalism of employees, as well as their ability to instill confidence in customers. In ZESCO's case, well-trained staff who can effectively communicate billing information and provide technical assistance contribute to greater customer satisfaction.
5. Empathy involves the personalized attention and care given to customers. When ZESCO personnel demonstrate concern for customer needs and make an effort to resolve issues efficiently, customers are more likely to feel valued and satisfied.

This study evaluates service delivery at ZESCO by analyzing how these five service quality dimensions influence customer satisfaction. Additionally, the study explores how customer satisfaction subsequently affects customer loyalty. Satisfied customers are more likely to continue using ZESCO's services, recommend them to others, and have a lower tendency to switch to alternative energy providers if such options become available. By applying the SERVQUAL model, this study provides a structured way to measure and assess ZESCO's service performance, identify gaps in service quality, and propose actionable recommendations for improving customer satisfaction and loyalty. The findings will be essential in guiding policy and operational improvements within ZESCO and similar utility companies.

2.5 Research Designs used in Service Quality Satisfaction Studies.

The table below indicates that most studies (authors) employed a quantitative research design which enabled the researchers to statistically analyze and validate the relationship between service quality and customer satisfaction.

| Author | Research Design Used |
|--|--|
| Khalifa, G. S., & Abou-Shouk, M. A. (2014) | The study used a questionnaire to collect data from 311 hotel customers about their perceptions on Egyptian hotel websites. It employed structural equation modelling, an advanced multivariate technique to measure the dimensions of e-service quality of hotel websites and their effect on website competitiveness |
| Prayudha, A. N., & Harsanto, B. (2014) | In their study, Prayudha and Harsanto (2014) used both primary and secondary methods of data collection to develop and formulate the service quality model for the first time. Secondary data were gathered from various journals, research papers, articles, and international and national conference proceedings, which provided a theoretical foundation for the study. For primary data, the authors designed a survey questionnaire to collect direct feedback from hotel guests about their perceptions of service quality. |
| Sudin, S. (2011) | In the study by Sudin (2011), the researcher used an exploratory research design to investigate the dimensions of service quality in higher education in India, specifically employing the SERVQUAL model by Parasuraman (1985). The research aimed to assess the quality of services by comparing students' expectations and perceptions across various dimensions, including reliability, responsiveness, and assurance. The study used both primary and secondary data, with a structured survey designed to collect responses from students, offering insights into service quality gaps within the higher education sector. |

| Author | Research Design Used |
|--------------------|--|
| Watiki, C. (2014) | <p>The study used a mixed-methods approach to investigate the relationship between customer satisfaction and service quality in Kumasi's star-rated hotels. It focused on food service and its impact on perceived satisfaction. Stratified random sampling resulted in a sample size of 349 respondents from two- and three-star hotels. Standardized questionnaires were used for data collection, and the findings were presented in tables.</p> |
| Kanyuka, P. (2020) | <p>The data collection process involved a survey administered to hotel customers, which was quantitative in nature. The survey focused on Discrepancy Theory, which examines the gap between customer expectations and their actual experiences</p> |
| Mwila, S. (2021) | <p>The study used survey questionnaires as the primary tool for data collection. Participants were drawn from a selection of hotels, where they rated their expected service quality against the actual service received. Discrepancy Theory was central to the analysis, providing a framework to investigate how variations between expected and actual service quality influenced satisfaction. Descriptive statistics (like means, percentages) and inferential statistics (such as correlation tests or regression analysis) were used to test the hypotheses</p> |
| Chikoya, M. (2022) | <p>In this study, survey questionnaires were again the main data collection tool, and participants were asked about their expectations and actual service experiences. Discrepancy Theory guided the analysis of the gap between these two variables. Statistical methods such as</p> |

| Author | Research Design Used |
|--------|---|
| | correlation and regression analysis were likely employed to examine the impact of service quality gaps on customer satisfaction |

The use of quantitative research designs in previous studies has important implications for my research methodology. Since earlier research in the field mainly relies on surveys and statistical analyses, it indicates that these methods are effective for assessing customer satisfaction and service quality. By using survey questionnaires, I can align my work with existing literature and make meaningful comparisons, which will enhance the reliability and generalizability of my findings. Additionally, these studies inform my choices regarding sampling techniques and sample sizes to ensure thorough data collection. However, while quantitative methods are prevalent, incorporating a mixed-methods approach could offer a more well-rounded understanding.

2.6 Chapter Summary

This chapter has reviewed previous studies on customer satisfaction with service quality delivery, the relationship between service quality dimensions and customer satisfaction, and strategies for improving service quality to enhance customer satisfaction. Additionally, the theoretical and conceptual frameworks guiding the study have been presented, outlining key models and variables that influence customer perceptions of service quality. These discussions provide a foundation for understanding the factors affecting service delivery at ZESCO and highlight gaps that this study seeks to address.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Chapter four analyzes the research methodology used by the researcher to evaluate customer satisfaction and service quality at Zambia Electricity Supply Corporation Limited. This chapter focuses on the research approach, research design, population of the study, sampling techniques, sample size, data collection method, method of data analysis and ethical consideration. Study objectives 1, 2 and 3 were satisfied by study efforts.

3.2 Research Approach

The research utilized a quantitative approach. This approach was chosen for its effectiveness in highlighting the relationships among the research variables. It allowed the researcher to examine patterns and correlations using statistical methods to clarify the observed effects. The study aimed to uncover the causal relationships among the dimensions of the SERVQUAL model; tangibles, reliability, responsiveness, assurance, and empathy and their contributions to customer satisfaction.

3.3 Research Design

This study utilized a survey research design, which is a quantitative method that involves collecting standardized data from a sizable sample through structured questionnaires. The choice of survey design was made due to its effectiveness in efficiently and systematically gathering extensive data, enabling an assessment of customer satisfaction levels and pinpointing specific aspects of service quality that need enhancement. The ability of this approach to yield statistically reliable results and allow for generalization to a broader population made it the most suitable choice for this research.

3.4. Study Population

The study included all ZESCO customers who used services in Mpika, Muchinga Province of Zambia. According to ZESCO, there are a total of 13,064 customers in Mpika district, which is made up of 11,372 residential customers and 1,437 commercial customers. Most of these customers are between the ages of 20 and 70.

3.5 Sampling Techniques

Convenience sampling, also known as availability sampling, was appropriate for this study because it allowed easy access to customers who came to ZESCO for services. This method is a non-probability technique where participants are chosen based on how easily they can be reached and how close they are to the researcher. It involved interacting with customers who were available, which made collecting data fast and cost-effective.

3.6 Sample size

The research utilized Slovin's formula to calculate the necessary sample size for the study. This statistical method is commonly applied when the population's characteristics are unknown. It helps find the minimum sample size needed for accurate statistical estimations while ensuring the margin of error stays within acceptable limits. Choosing the right sample size guarantees that the study is adequately powered to identify significant connections between customer reviews and perceptions of service quality. A larger sample size enhances the reliability and generalizability of the findings (Schober, Boer, and Schwarte, 2018).

Slovin's formula is expressed as follows:

$$n = \frac{N}{N + e^2}$$

Where N represents the population size, n is the sample size, and e is the margin of error. For instance, with N = 13,064 and e = 0.05, the calculation yields n = 388 respondents. Selecting an appropriate sample size is crucial for accurately detecting notable relationships between customer reviews and service quality perceptions. A bigger sample size also boosts the reliability and applicability of the study results (Schober, Boer, and Schwarte, 2018).

3.7 Data collection and Data collection Instruments

The study gathered information from customers using ZESCO's services. A set questionnaire was employed to collect details about the customers' demographics, satisfaction levels, and opinions on the SERVIQUAL model aspects. Using a questionnaire helped to maintain uniformity. This structured approach guarantees

consistency and objectivity in collecting and analyzing numerical data from the feedback (Thakur, 2018).

3.8 Data analysis

Data was analyzed using Microsoft excel and SPSS version 27.0. The research conducted descriptive analysis to summarize findings relating to frequencies and percentages for SERVIQUAL dimensions. Tables were also used to provide visual summaries and trends. The research analyzed customer's demographic characteristics, customer satisfaction levels and their loyalty to the corporation. Further, One-Sample Wilcoxon and Related-Samples Friedman's tests was conducted to determine the levels of satisfaction and loyalty, and Spearman's Correlation test was performed to assess the relationship between customer satisfaction and service quality dimensions; tangibles, responsiveness, assurance, reliability and empathy.

3.9 Ethical consideration

The study paid careful attention to ethics. It took important steps to make sure that the identity of the respondents was not included in the questionnaire. No names or any information that could reveal who they were was asked for. Additionally, permission was obtained from ZESCO. Participants were also informed about the study's goals and purpose, and their consent was obtained. The study prioritized the safety and protection of respondents during data collection. Privacy was another key aspect, allowing respondents to share accurate information without concern. These ethical practices helped ensure that the data collected and the findings were reliable.

3.10 Chapter Summary

This chapter outlined the research methodology used to evaluate customer satisfaction and service quality at ZESCO. A quantitative approach was employed, it utilized a survey research design to systematically collect data through structured questionnaires. The study population comprised ZESCO customers in Mpika, Muchinga Province. Convenience sampling was used for respondent selection. Data analysis was conducted using Microsoft Excel and SPSS version 27.0, employing descriptive statistics, One-Sample Wilcoxon, Related-Samples Friedman's tests, and Spearman's Correlation test to assess satisfaction levels and their relationship with service quality. Ethical

considerations included ensuring respondent anonymity, obtaining informed consent, and securing approval from ZESCO, ensuring the integrity and reliability of the study.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1 Introduction

This chapter presents the analysis and findings from the study, organized into seven sections. The first section outlines the demographic profile of the respondents. Section two addresses the reliability assessment of the data collection instrument used. In section three, the distribution of responses is explored to determine whether the responses are normally distributed or not. Section four examines the level of customer satisfaction with services of ZESCO. Section five investigates the level of customer loyalty, focusing on the likelihood of customers continuing to use the services in the future. Section six evaluates the quality of the services using the SERVQUAL model by analysing five dimensions namely tangibles, reliability, responsiveness, assurance, and empathy. Finally, section seven provides a summary of the findings. The analysis was guided by the research questions.

1. What is the level of customer satisfaction with ZESCO's services?
2. What is the level of customer loyalty to ZESCO's services?
3. What is the quality of ZESCO's services based on the SERVQUAL model?

Data collected were analysed using quantitative method. Responses from the questionnaire were first coded and analysed in Microsoft Excel to determine the aggregate scores for the 388 respondents (refer to Appendix 2). Aggregate data were analysed for the seven categories: Level of Satisfaction, Level of Loyalty, Tangibles, Reliability, Responsiveness, Assurance, and Empathy. The results are presented in tables and figures to facilitate interpretation. Additionally, IBM SPSS Version 27.0 was employed for further statistical analysis which included reliability testing, normality checks, and inferential statistics.

4.2 Demographic profile of respondents

This section provides an overview of the demographic characteristics of the respondents who participated in the study. The analysis covers the profile of respondents, including gender, type of connection with ZESCO, and education level. Table 4.1 below summarizes the response.

Table 4.1: Profile of Respondents

| Background Characteristic | Category | Frequency | Percent |
|--------------------------------------|--------------|-----------|---------|
| <i>Gender</i> | Male | 175 | 45.16% |
| | Female | 213 | 54.84% |
| <i>Type of Connection with ZESCO</i> | Residential | 163 | 41.94% |
| | Commercial | 225 | 58.06% |
| <i>Education Level</i> | Tertiary | 200 | 51.61% |
| | Secondary | 75 | 19.35% |
| | Primary | 38 | 9.68% |
| | No Education | 75 | 19.35% |

As presented in table 4.1, the demographic profile shows that the majority of respondents were female (54.84%), whereas males accounted for 45.16%. This gender distribution can provide a balanced perspective on customer experiences and perceptions of services which may contribute to the understanding of satisfaction and loyalty across genders. In terms of the type of connection with ZESCO, 58.06% of respondents had commercial connections, while 41.94% were residential users. This distinction is crucial for analysing service delivery, as the expectations and experiences of residential and commercial users may vary significantly. For instance, commercial customers may have different reliability and service quality expectations compared to residential customers. Regarding education level, the majority of respondents had a tertiary education (51.61%), followed by those with secondary education (19.35%) and no education (19.35%), while 9.68% had a primary education. Respondents with higher education levels may have more informed opinions about the quality of services, including their expectations regarding tangibles, reliability, and responsiveness, as outlined in the SERVQUAL model.

4.3 Reliability Analysis

This section presents the reliability analysis of the questionnaire used in the study. Reliability refers to the consistency of the instrument in measuring the intended variables. To ensure reliability of the questionnaire, Cronbach's alpha coefficient (α) was used to determine the internal consistency of items by averaging all correlations among the statements under each of the seven categories: Level of Satisfaction, Level of Loyalty, Tangibles, Reliabilities, Responsiveness, Assurance, and Empathy. Cronbach's alpha is considered acceptable when it exceeds 0.50, with higher values indicating greater reliability (Cohen, Manion, & Morrison, 2007). A Cronbach's alpha value closer to 1 indicates a highly reliable instrument. The coefficient for this study was computed and the results are summarized in Table 4.2 below.

Table 4.2: Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .986 | 7 |

The Cronbach's alpha coefficient for the questionnaire was 0.986 as shown in table 4.2. The results indicate an exceptionally high level of internal consistency across the seven variables (Level of Satisfaction, Level of Loyalty, Tangibles, Reliability, Responsiveness, Assurance, and Empathy). With a value significantly exceeding the acceptable threshold of 0.50, the results confirm that the instrument is highly reliable for measuring the variables under investigation. This high reliability ensures that the items in the questionnaire are consistent in capturing the perceptions of respondents regarding the quality of delivery services. Consequently, the findings derived from this instrument can be considered dependable for addressing the research questions.

4.4 Normality Check

This section examines the distribution of response scores to assess whether the data used in the study met the assumption of normality. Normality is a key assumption for many parametric statistical tests, it ensures the reliability of the tests (Ghasemi & Zahediasl, 2012). To evaluate normality, the study employed statistical methods, specifically the Kolmogorov-Smirnov test, which is suitable for large sample sizes ($n > 50$). This test calculates probabilities to determine whether the data significantly deviate from

a normal distribution (Thode, 2002). The normality check was performed for each of the seven variables. The results are summarized in Table 4.3.

Table 4.3: Normality test results

| | Statistic | df | Sig. | Normality Distributed |
|------------------------------|------------------|-----------|-------------|------------------------------|
| Level of Satisfaction | .171 | 388 | .000 | No |
| Tangibles | .179 | 388 | .000 | No |
| Reliabilities | .156 | 388 | .000 | No |
| Responsiveness | .256 | 388 | .000 | No |
| Assurance | .180 | 388 | .000 | No |
| Empathy | .133 | 388 | .000 | No |
| Level of Loyalty | .218 | 388 | .000 | No |

The results in Table 4.3 show that the p-values (Sig.) for all the variables were 0.000, which is less than the significance level ($\alpha=0.05$). This indicates that the distributions of the response scores deviate significantly from normality. Consequently, the data for all categories are not normally distributed. Since the assumption of normality was not met, non-parametric tests were used for further analysis. These included One-Sample Wilcoxon, Related-Samples Friedman's and Spearman's Correlation Tests.

4.5 Level of customer satisfaction with the services of ZESCO.

This section focuses on analysing customer satisfaction levels with ZESCO's services based on responses to the administered questionnaire. Customer satisfaction is a critical indicator of service quality, it forms a key component of the research. Satisfaction was measured on a 5-point Likert scale, with responses ranging from "Very Dissatisfied" (1) to "Very Satisfied" (5). The total score for each category was aggregated and is presented in Table 4.4.

Table 4.4: Level of Satisfaction

| Response | Scale | Total Score |
|-------------------|--------------|--------------------|
| Very dissatisfied | 1 | 124 |

| | | |
|----------------|---|-----|
| Dissatisfied | 2 | 31 |
| Not Sure | 3 | 124 |
| Satisfied | 4 | 93 |
| Very Satisfied | 5 | 16 |

The results in Table 4.4 reveal that the majority of respondents reported being either Very Dissatisfied or Somewhat Satisfied, with both categories scoring 124 responses each. This indicates a polarized view, with a significant proportion expressing dissatisfaction, while others exhibit moderate satisfaction with ZESCO's services. A total of 124 respondents (31.96%) were Very Dissatisfied, indicating a notable level of discontent with the service delivery. Only 16 respondents (4.12%) reported being Very Satisfied, which demonstrates a low level of highly positive experiences. The Satisfied category accounted for 93 respondents (23.97%), while Somewhat Satisfied had an equal share to the Very Dissatisfied group at 124 respondents (31.96%). Lastly, Dissatisfied responses were minimal, with 31 respondents (7.99%), suggesting fewer participants were moderately negative compared to the extreme categories. These findings suggest that while a portion of customers experiences moderate to high satisfaction, a significant proportion remains dissatisfied with ZESCO's services. The low number of Very Satisfied responses implies that ZESCO's service delivery struggles to consistently exceed customer expectations. It is evident that customer satisfaction levels are suboptimal, with a significant divide between dissatisfaction and moderate satisfaction. To further examine the level of customer satisfaction with ZESCO's services, customer satisfaction was assessed using responses collected on a 5-point Likert scale, where 1 represented "Very Dissatisfied" and 5 represented "Very Satisfied." Since the data did not meet the assumption of normality (as indicated in Table 4.3), a One-Sample Wilcoxon Signed Rank Test was performed to determine if the median level of satisfaction differed significantly from the hypothesized median of 4. The null hypothesis for this analysis was that the median level of satisfaction equals 4, which represents a satisfied response. The test results are summarized in Table 4.5.

Table 4.5: One-Sample Wilcoxon Signed Rank Test Results

| Null Hypothesis | Sig. | Decision |
|---|------|-----------------------------|
| The median of Level of Satisfaction equals 4. | .001 | Reject the null hypothesis. |

As shown in Table 4.5, the p-value (Sig. = 0.001) is less than the significance level of 0.05. Therefore, the null hypothesis that the median level of satisfaction equals 4 is rejected. This result indicates that the actual median level of satisfaction is statistically different from 4, suggesting that customers are generally not satisfied with ZESCO's services. The analysis provides evidence that the median satisfaction level does not align with a "Satisfied" response. This supports findings from earlier descriptive statistics (Table 4.4). The rejection of the null hypothesis reveal a gap between customers' expectations and ZESCO's service delivery. In relation to the research question, the results reveal a predominantly low level of satisfaction.

4.6 Level of customer loyalty with the services of ZESCO

This section assesses the level of customer loyalty to ZESCO's services, which reflects the likelihood of customers continuing to use ZESCO as their preferred electricity service provider. Customer loyalty was measured using responses on a 5-point Likert scale, where 1 represented "Very Unlikely" and 5 represented "Very Likely." The distribution of responses for customer loyalty is presented in Table 4.5.

Table 4.5: Level of Loyalty

| Response | Level | Total |
|---------------|-------|-------|
| Very Likely | 5 | 124 |
| Likely | 4 | 140 |
| Neutral | 3 | 46 |
| Unlikely | 2 | 31 |
| Very Unlikely | 1 | 47 |

As shown in Table 4.5, the majority of respondents indicated positive loyalty toward ZESCO, with 124 respondents (Very Likely) and 140 respondents (Likely) to continue

using ZESCO’s services. Combined, these represent 68.04% of respondents, indicating a substantial level of loyalty. However, a notable portion of respondents expressed negative or neutral sentiments regarding loyalty, with 31 respondents (Unlikely) and 47 respondents (Very Unlikely) representing 20.10% of the total. Additionally, 46 respondents (11.86%) were neutral, neither affirming nor denying loyalty. The results suggest that while the majority of customers exhibit loyalty to ZESCO, there is still a significant percentage of customers who are either disloyal or undecided. This mixed response may reflect varying levels of satisfaction with ZESCO’s services, as discussed under section 4.5. In relation to the research question, the findings reveal a predominantly loyal customer base, but with room for improvement to address the concerns of the disloyal and undecided segments. To further examine the level of customer loyalty to ZESCO’s services through statistical analysis, customer loyalty was measured using a 5-point Likert scale, where responses ranged from 1 ("Very Unlikely") to 5 ("Very Likely"). To determine if the observed loyalty levels significantly differed from the hypothesized median value of 4 (representing a "Likely" response), a One-Sample Wilcoxon Signed Rank Test was performed. The results of the test are summarized in Table 4.6.

Table 4.6: One-Sample Wilcoxon Signed Rank Test Results

| Null Hypothesis | Sig. | Decision |
|--|------|-----------------------------|
| The median of Level of Loyalty equals 4. | .203 | Retain the null hypothesis. |

The results in Table 4.6 indicate that the p-value for the test was 0.203, which is greater than the significance level of 0.05. Therefore, the null hypothesis could not be rejected. This implies that the median level of loyalty among ZESCO customers does not significantly differ from the hypothesized median of 4 ("Likely"). The findings suggest that, on average, customers are likely to remain loyal to ZESCO’s services. However, the results also indicate that there is no strong deviation in loyalty levels beyond the "Likely" category. This aligns with the descriptive statistics in Table 4.5, which showed that a majority of respondents (68.04%) indicated either "Likely" or "Very Likely" to continue using ZESCO’s services.

4.7 Quality of the services of ZESCO based on SERVQUAL model.

This section assesses the quality of ZESCO's services using the SERVQUAL model. The SERVQUAL model evaluates service quality based on five key dimensions: Tangibles, Reliabilities, Responsiveness, Assurance, and Empathy. These dimensions are designed to measure customer perceptions of service quality across multiple aspects of service delivery. To determine whether there were statistically significant differences among the medians of these five SERVQUAL dimensions, the Related-Samples Friedman's Two-Way Analysis of Variance by Ranks was conducted. This non-parametric test is appropriate for analysing differences among related groups, particularly when the data do not meet the assumptions of normality. The null hypothesis for the test stated that the distributions of the five SERVQUAL dimensions (Tangibles, Reliabilities, Responsiveness, Assurance, and Empathy) were the same. The results of the analysis are summarized in Table 4.7.

Table 4.7: Related-Samples Friedman's test results

| Null Hypothesis | Sig. | Decision |
|--|-------------|-----------------------------|
| The distributions of Tangibles, Reliabilities, Responsiveness, Assurance and Empathy are the same. | .000 | Reject the null hypothesis. |

The p-value from the Friedman's test was 0.000, which is less than the significance level of 0.05. As a result, the null hypothesis was rejected which indicated that there are statistically significant differences in the distributions of the five SERVQUAL dimensions. The rejection of the null hypothesis signifies that customers perceive the quality of ZESCO's services differently across the five dimensions of the SERVQUAL model. The findings suggest that ZESCO's service quality is not uniformly perceived across the five dimensions of the SERVQUAL model.

The quality of ZESCO's services was also assessed using One-Sample Wilcoxon Signed Rank Test. This was to measure service quality across five key dimensions: Tangibles, Reliabilities, Responsiveness, Assurance, and Empathy. Each dimension comprised of four items, with the highest possible score for each dimension being 20. To assess

customer perceptions, the test was performed for each dimension, using a hypothesized median value of 15, which represents an acceptable level of service quality. The null hypothesis for each test stated that the median score for the respective SERVQUAL dimension equals 15. The test results for all five dimensions are summarized in Table 4.8.

Table 4.8: One-Sample Wilcoxon Test results

| Null Hypothesis | Sig. | Decision |
|---|-------------|-----------------------------|
| The median of Tangibles equals 15. | .016 | Reject the null hypothesis. |
| The median of Reliabilities equals 15. | .000 | Reject the null hypothesis. |
| The median of Responsiveness equals 15. | .734 | Retain the null hypothesis. |
| The median of Assurance equals 15. | .003 | Reject the null hypothesis. |
| The median of Empathy equals 15. | .438 | Retain the null hypothesis. |

The results in table 4.8 reveal varying perceptions of ZESCO's service quality across the five SERVQUAL dimensions. For Tangibles, the p-value of 0.016 led to the rejection of the null hypothesis, indicating that customer perceptions of physical facilities, equipment, and appearance differ significantly from the hypothesized median of 15, highlighting the need for improvement in this area. Similarly, Reliabilities showed a p-value of 0.000, resulting in the rejection of the null hypothesis and suggesting that customers rated ZESCO's reliability, such as consistent and dependable service delivery, significantly lower than the acceptable standard. In contrast, the p-value for Responsiveness was 0.734, meaning the null hypothesis was retained, indicating that customer perceptions of ZESCO's willingness to help and respond promptly align with the hypothesized median of 15, reflecting an average performance. For Assurance, the p-value of 0.003 led to the rejection of the null hypothesis, implying that customer ratings for staff competence, courtesy, and credibility were significantly below the acceptable median, revealing an

area of concern. Lastly, the p-value for Empathy was 0.438, resulting in the retention of the null hypothesis, which suggests that customer perceptions of individualized care and attention align with the hypothesized median and reflect an acceptable level of service quality in this dimension.

The results demonstrate that ZESCO’s service quality is perceived inconsistently across the five SERVQUAL dimensions. Reliabilities and Assurance emerged as key areas where customers expressed dissatisfaction, with median scores significantly below the hypothesized acceptable level. On the other hand, Responsiveness and Empathy were rated closer to the expected standard, suggesting that ZESCO performs relatively better in these areas. The findings for Tangibles indicate that while there is room for improvement, customer perceptions were not drastically different from the acceptable level.

4.7.1 Relationship between service quality in the five SERVQUAL domains and customer satisfaction at ZESCO

The relationship between service quality in the five SERVQUAL domains and customer satisfaction at ZESCO was examined using a non-parametric Spearman’s Correlation test. This test assessed the strength and direction of the relationship between the Level of Satisfaction and the five dimensions of the SERVQUAL model: Tangibles, Reliabilities, Responsiveness, Assurance, and Empathy. The analysis aimed to explore how each dimension of service quality contributed to overall customer satisfaction. Table 4.9 presents the results of the correlation test conducted at a significance level of $\alpha = 0.01$.

Table 4.9: Correlations between Level of Satisfaction and SERVQUAL domains (N=388).

| Correlation | Correlation Coefficient | Sig. (2-tailed) |
|--|--------------------------------|------------------------|
| Level of Satisfaction and Tangibles | .957 | .000 |
| Level of Satisfaction and Reliabilities | .970 | .000 |
| Level of Satisfaction and Responsiveness | .935 | .000 |

| | | |
|-------------------------------------|------|------|
| Level of Satisfaction and Assurance | .955 | .000 |
| Level of Satisfaction and Empathy | .966 | .000 |

The results in Table 4.9 indicate that there was a significant relationship between customer satisfaction and each of the five SERVQUAL domains, with p-values of 0.000 for all correlations, which are less than the significance level of 0.01. This suggests that the quality of ZESCO’s services across all dimensions strongly influences customer satisfaction. Specifically, the Spearman’s correlation coefficient for Level of Satisfaction and Tangibles was 0.957, indicating a strong positive relationship. This implies that better perceptions of Tangibles, such as physical facilities and equipment, were associated with higher satisfaction levels. Similarly, Reliabilities demonstrated the highest correlation coefficient at 0.970, highlighting that consistent and dependable service delivery significantly impacts customer satisfaction. Responsiveness, with a correlation coefficient of 0.935, also showed a strong positive relationship, suggesting that ZESCO’s ability to assist and respond promptly to customer needs is a critical factor in satisfaction. Assurance, with a coefficient of 0.955, emphasized the importance of staff competence, courtesy, and credibility in shaping customer perceptions. Lastly, Empathy showed a strong correlation of 0.966, indicating that personalized care and attention to customer needs play a crucial role in determining satisfaction. These findings collectively demonstrate that improving service quality in all SERVQUAL dimensions is essential for enhancing customer satisfaction with the services of ZESCO.

4.8 Chapter Summary

Chapter Four presented the analysis and findings of the study. The chapter is divided into seven sections, began with a demographic profile of the respondents, followed by a reliability analysis of the data collection instrument. The distribution of responses was assessed for normality, and the results indicate significant deviations from normal distribution across all variables. Customer satisfaction levels reveal a significant gap between expectations and service delivery, with many respondents dissatisfied or moderately satisfied. Loyalty levels show a strong inclination towards continuing service

use, though there were notable segments of disloyal or undecided customers. Finally, the quality of ZESCO's services was examined using the SERVQUAL model.

CHAPTER FIVE: DISCUSSION OF FINDINGS

5.1 Introduction

In the previous chapter, we presented the findings and analysis of ZESCO's service delivery based on the research questions of the study. This chapter will discuss these findings. It will discuss the level of customer satisfaction, customer loyalty, and the quality of ZESCO's services using the SERVQUAL model, which looks at five key areas: reliability, responsiveness, assurance, empathy, and tangibles. This chapter will also relate the findings to previous studies and literature.

5.2 Discussion of findings

The evaluation of customer satisfaction with ZESCO's service quality provides important information about how customers perceive the services of the company. The findings highlight the role of key dimensions from the SERVQUAL model, including tangibles, reliability, responsiveness, assurance, and empathy. Customer experiences revealed both areas where ZESCO performs well and areas needing improvement. This section focuses on the implications of these findings, examining how they relate to existing research on service delivery in utility companies. It also explores the factors influencing customer satisfaction and loyalty, pointing out where ZESCO meets expectations and where changes are needed to improve service quality and customer experience.

5.2.1 Demographic profile of respondents

The demographic characteristics of respondents provided essential context for understanding customer experiences and perceptions of ZESCO's services. Table 4.1 summarizes the respondents' profiles, including gender, type of connection with ZESCO, and education level. These variables were significant in analyzing customer satisfaction, loyalty, and service quality expectations.

The findings revealed that 54.84% of the respondents were female, while 45.16% were male. This gender distribution aligns with studies suggesting that service satisfaction and expectations can vary by gender, as women may be more likely to prioritize customer service interactions and timely responses from utility providers (Johnson & Mullen, 2017). Conversely, male customers may focus more on service efficiency and technical aspects. This diversity in perspectives offers a balanced understanding of service quality across

the gender spectrum. The SERVQUAL model emphasizes dimensions such as empathy and responsiveness, which are often more valued by female customers (Parasuraman et al., 1988). The results support previous research findings that service providers who demonstrate empathy and personalized service tend to achieve higher satisfaction among female customers (Brown & Taylor, 2019).

It was also found that 58.06% of the respondents had commercial connections, while 41.94% were residential users. This distribution emphasizes the importance of analyzing the distinct service expectations between residential and commercial customers. According to Kumar et al. (2015), commercial customers typically demand higher service reliability and faster response times due to the direct impact of electricity on business operations. ZESCO's service delivery needs to adapt to these varying expectations. Residential customers may prioritize affordability and uninterrupted service for daily activities, whereas commercial users focus on stability and efficient problem resolution. The findings align with the SERVQUAL dimension of reliability, which is critical for maintaining high service standards for both customer categories.

Furthermore, a significant proportion of respondents had a tertiary education (51.61%), followed by secondary education (19.35%), and primary education (9.68%), while 19.35% reported no formal education. These findings suggest that the majority of respondents may have a more informed perspective on service quality and utility management. Higher education levels often correlate with more critical evaluations of service quality, as customers are likely to have higher expectations regarding tangibles, responsiveness, and assurance (Parasuraman et al., 1988). Smith and Jones (2018) found that educated customers are more vocal in expressing dissatisfaction and may demand better communication and transparency from service providers.

5.2.2 Level of customer satisfaction with the services of ZESCO.

This section analyzed the customer satisfaction levels with ZESCO's services based on survey responses. The findings showed that the majority of respondents (31.96%) were either Very Dissatisfied or Somewhat Satisfied, indicating a significant dissatisfaction with the service, while 4.12% were Very Satisfied. This distribution suggests a divergence of opinions among ZESCO customers, with moderate to high dissatisfaction outweighing the positive experiences. The results reveal that a notable portion of the respondents expressed

dissatisfaction with ZESCO's service, with 124 respondents (31.96%) indicating they were Very Dissatisfied. Conversely, a smaller proportion, 16 respondents (4.12%), reported being Very Satisfied. The results show a large number of respondents (124, 31.96%) fall into the Somewhat Satisfied category, reflecting that while some customers are somewhat content, the majority of responses lean towards dissatisfaction. Additionally, 31 respondents (7.99%) expressed moderate dissatisfaction, further emphasizing the low satisfaction with ZESCO's services. These findings are consistent with the expectation-disconfirmation theory (Lankton, 2016), which posits that customer satisfaction is largely driven by the gap between customer expectations and the actual service received. The high percentage of dissatisfaction likely reflects a gap between ZESCO's service delivery and customer expectations. This theory explains that if the service provided does not meet customers' expectations, dissatisfaction prevails.

To quantify the satisfaction level further, a One-Sample Wilcoxon Signed Rank Test was performed to assess if the median level of satisfaction differed significantly from the hypothesized median of 4 (indicating "Satisfied" on the scale). The test results (p -value = 0.001) rejected the null hypothesis, suggesting that the actual median level of satisfaction is statistically lower than the hypothesized median of 4. This further reinforces the conclusion that customers' overall satisfaction with ZESCO is low, as the satisfaction level is significantly different from the neutral "satisfied" response. The decision aligns with findings from prior research on service quality and satisfaction. Bungatang and Reynel (2021) argue that service quality directly influences customer satisfaction, and a perceived low quality of service, such as that reported by ZESCO's customers, often leads to low satisfaction scores. Furthermore, the SERVQUAL model (Parasuraman, Zeithaml, & Berry, 1988), which examines gaps in service quality dimensions, supports the interpretation that service delivery in ZESCO may not meet customer expectations across key service quality areas. ZESCO's low satisfaction scores suggest deficiencies in one or more of the dimensions outlined by SERVQUAL, such as reliability, responsiveness, or assurance.

Additionally, Habel et al. (2016) discuss how customers' service expectations can lead to ambivalence in satisfaction, which could explain the polarized responses observed in this study. The fact that 31.96% of respondents were Very Dissatisfied while another 31.96%

were Somewhat Satisfied implies that customers' expectations of ZESCO's services are not aligned with their experiences. This finding supports the Customer Experience Theory (Verhoef et al., 2009), which highlights the importance of managing customer expectations and ensuring consistency across the service experience. The overall customer satisfaction findings from this study not only corroborate but also extend previous research on the relationship between service quality and satisfaction in various sectors. For instance, Khalifa and Abou-Shouk (2014) found that service quality impacts satisfaction in the hospitality sector in Egypt, similar to how ZESCO's service quality may be impacting satisfaction levels in this study. The dissatisfaction revealed in the data also align with findings from Izogo and Ogba (2015), who identified a similar dissatisfaction with service delivery in the automobile repair services sector.

5.2.3 Level of customer loyalty to the services of ZESCO.

This section examined the level of customer loyalty to ZESCO. The distribution of responses, as presented in Table 4.5, shows a mix of loyalty levels, with the majority of respondents (68.04%) indicating positive loyalty. Specifically, 124 respondents (31.96%) reported being "Very Likely" and 140 respondents (36.98%) reported being "Likely" to continue using ZESCO's services, reflecting a significant portion of customers who are loyal to the utility provider. However, the results also indicate that a portion of respondents expressed disloyalty or uncertainty regarding their future relationship with ZESCO. A combined 20.10% of respondents (31 respondents "Unlikely" and 47 respondents "Very Unlikely") expressed a lack of loyalty, while 46 respondents (11.86%) were neutral. These findings suggest a mixed sentiment among ZESCO's customers, where, despite the majority indicating loyalty, a significant percentage remains undecided or disloyal. The higher proportion of "Likely" responses aligns with previous research on customer loyalty, where customer satisfaction plays a critical role in building customer retention. Alshurideh (2016) emphasizes that customer loyalty is influenced by both satisfaction and the perceived value of services. In the case of ZESCO, the positive loyalty levels could be attributed to a satisfactory level of service delivery, although the presence of neutral and disloyal respondents indicates that service quality may not be consistently meeting all customer expectations.

From a theoretical perspective, the findings relate to the Customer Experience Theory (Verhoef et al., 2009), which suggests that customer loyalty is driven by the overall experience a customer has with a service provider. The mixed results could indicate that while ZESCO is providing adequate experiences for some customers, others may not perceive these experiences as satisfying enough to ensure full loyalty. Word-of-Mouth Theory (Buttle, 1998) further supports this view, suggesting that while loyal customers are likely to advocate for the brand, the neutral and disloyal segments could potentially influence future customer perceptions negatively through negative word-of-mouth, affecting ZESCO's reputation.

Additionally, the One-Sample Wilcoxon Signed Rank Test was performed to assess if the median level of loyalty differed significantly from the hypothesized median of 4 ("Likely"). The results (p -value = 0.203) revealed no significant deviation, suggesting that the loyalty level of ZESCO's customers aligns with a "Likely" response, affirming that most customers are likely to remain loyal but not overwhelmingly so. This finding supports the descriptive statistics in Table 4.5 and reinforces the notion that while there is substantial loyalty, there is also a notable percentage of customers who are not fully committed.

Furthermore, the SERVQUAL model (Parasuraman, Zeithaml, & Berry, 1988) provides a framework for understanding how service quality dimensions impact customer loyalty. The relatively high levels of loyalty could be indicative of satisfactory performance on some of these dimensions, but the significant neutral and disloyal customer segments suggest areas where ZESCO's service may require improvement to enhance overall customer retention. To contextualize the findings, it is noteworthy that the presence of a neutral group (11.86%) and the disloyal customers (20.10%) suggests that ZESCO's efforts to foster deeper emotional and relational connections with customers, as advocated by Kandampully and Suhartanto (2000), may need more attention. The dissatisfaction or uncertainty reflected by the "Unlikely" and "Very Unlikely" respondent's points to gaps in service quality, possibly in areas such as customer support or reliability, which are vital for fostering stronger loyalty.

The findings indicate a generally loyal customer base for ZESCO, with 68.04% of respondents expressing a high likelihood of continuing their use of the service. However, the presence of disloyal and neutral respondents highlights a need for ZESCO to address

customer concerns to strengthen loyalty further. These findings align with literature emphasizing the importance of service quality and customer satisfaction in fostering loyalty (Izogo & Ogba, 2015; Marcos & Coelho, 2022). Moreover, they suggest that while ZESCO is performing adequately in some areas, there is room for improvement in others to prevent potential customer defection.

5.2.4 Quality of the services of ZESCO based on SERVQUAL model

The findings from the analysis of ZESCO's service quality based on the SERVQUAL model suggest that the company's service delivery is perceived differently by customers across the five key dimensions: Tangibles, Reliability, Responsiveness, Assurance, and Empathy. The results of the Friedman's test, with a p-value of 0.000, indicate that there are statistically significant differences in the distributions of these dimensions, rejecting the null hypothesis that they are the same. This rejection signifies that ZESCO's service quality is not uniformly perceived across the various domains, which aligns with similar findings from previous studies in the service industry (Teeroovengadum, 2022). This suggests that ZESCO's service quality is perceived as inconsistent and could benefit from focused improvements across specific areas.

The results from the One-Sample Wilcoxon Signed Rank Test further illustrate this point. Tangibles and Reliability were found to have significant gaps, with p-values of 0.016 and 0.000, respectively, indicating that customers perceive these areas as significantly below the acceptable standard. This suggests that customers expect better physical facilities and more dependable service delivery, areas in which ZESCO's service may be lacking. Other studies such as Cronin and Taylor (1992) and Grönroos (1984) have emphasized the importance of reliability in service quality, and these findings support their assertion that customers place high importance on consistent and dependable service. On the other hand, Responsiveness and Empathy were found to be closer to the hypothesized median, with p-values of 0.734 and 0.438, respectively. This suggests that ZESCO performs relatively better in these areas, providing a level of satisfaction in responsiveness and care. These results align with the findings of AlOmari (2021) and Mwila (2021), who highlighted the importance of responsiveness in service quality, particularly in customer-facing roles where promptness in addressing customer concerns is vital. However, Assurance emerged as another area of concern with a significant gap, as shown by the

p-value of 0.003. This finding suggests that customers perceive staff competence, courtesy, and credibility as lower than the acceptable standard, which could be a critical factor affecting overall satisfaction with ZESCO's services. This supports the work of Kanyuka (2020) and Delcourt et al. (2016), who identified that assurance is a key driver of customer satisfaction in service industries, especially in terms of trust and confidence in service providers. The discrepancy between customer expectations and perceptions in the Assurance dimension highlights the need for ZESCO to enhance staff training and customer engagement to improve trust and competence.

The relationship between service quality dimensions and customer satisfaction, as evidenced by the Spearman's Correlation test, demonstrates that all five SERVQUAL dimensions are significantly correlated with overall customer satisfaction, with p-values of 0.000 for each correlation. The strongest correlations were found in the Reliability (0.970) and Empathy (0.966) dimensions, suggesting that improvements in these areas would likely have the most significant impact on customer satisfaction. This is consistent with the customer experience theories outlined by Verhoef et al. (2009), which emphasize the role of reliability and personalized care in shaping customer satisfaction. The strong correlations found in this study affirm the central principles of the SERVQUAL model (Parasuraman, Zeithaml, & Berry, 1988), which posits that service quality across various dimensions directly influences customer satisfaction.

The findings from this study contribute to the existing literature on service quality by illustrating that ZESCO's customers perceive significant gaps in specific service dimensions, particularly in Tangibles, Reliability, and Assurance, while Responsiveness and Empathy align more closely with customer expectations. These findings reinforce the importance of service quality frameworks such as the SERVQUAL model in understanding customer perceptions and guide practical improvements in service delivery. In line with the Gap Theory (Sudin, 2011), these results suggest that there is a substantial service quality gap in ZESCO's services, which could be addressed by aligning customer expectations with actual service delivery. As suggested by Lankton (2016) and Verhoef et al. (2009), improving the customer experience across all SERVQUAL dimensions will be key to enhancing overall customer satisfaction and retention.

5.3 Chapter Summary

Chapter Five discussed the findings of the study on ZESCO's service delivery, focusing on customer satisfaction, loyalty, and the quality of services through the SERVQUAL model. The findings indicate significant dissatisfaction with ZESCO's service, with many customers expressing low satisfaction levels, especially in areas of tangibles, reliability, and assurance. Despite this dissatisfaction, the analysis reveals a reasonable level of customer loyalty, with many customers still indicating their likelihood of continuing to use ZESCO's services. The next chapter, will provide the conclusion and recommendations of the study.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the conclusions derived from the study. It aims to synthesize the key findings discussed in the previous chapters and offer an overview of the implications of these results. Additionally, this chapter will provide practical recommendations aimed at improving ZESCO's service delivery and customer satisfaction. The focus will be on addressing the identified gaps in service quality, with particular emphasis on the dimensions of reliability, responsiveness, and assurance, while also considering the potential impact of these recommendations on customer loyalty and overall organizational performance. Furthermore, areas for future research in service delivery and customer satisfaction within the Zambian utility companies will be highlighted.

6.2 Conclusion

The findings of this study reveal significant information on customer satisfaction and loyalty regarding the services offered by ZESCO. The majority of respondents expressed dissatisfaction with ZESCO's service, with a considerable portion indicating a substantial gap between their expectations and the service provided. This dissatisfaction is further supported by the One-Sample Wilcoxon Signed Rank Test, which shows that the median level of satisfaction is significantly lower than the neutral "satisfied" response. These results suggest that ZESCO's service quality does not fully meet customer expectations, with gaps in key service areas contributing to lower satisfaction levels.

In contrast, a substantial portion of respondents indicated loyalty to ZESCO, with the majority expressing a likelihood to continue using the services. However, the presence of neutral and disloyal respondents highlights that the company's efforts to foster customer retention may not be entirely effective across the board. The One-Sample Wilcoxon Signed Rank Test again confirmed that while the median loyalty level is "Likely," it is not overwhelmingly strong, reflecting a degree of uncertainty or ambivalence among some customers regarding their long-term relationship with ZESCO.

The SERVQUAL model further reinforced these findings by illustrating that ZESCO's service delivery varies across different dimensions. While the company performs better

in areas such as responsiveness and empathy, it shows significant deficiencies in others, particularly in tangibles, reliability, and assurance. These gaps suggest that ZESCO's service quality is perceived as inconsistent, with tangible aspects and staff competence requiring the most attention. The strong and positive correlation between service quality dimensions and customer satisfaction highlights the critical importance of reliability and empathy in improving overall satisfaction.

Therefore, the findings emphasize the need for ZESCO to address the gaps in service quality, particularly in reliability and assurance, to improve customer satisfaction and loyalty. The study reveals that aligning service delivery with customer expectations, especially through improved staff competence and more dependable services, will be key to enhancing the customer experience and fostering stronger customer loyalty in the long term.

6.3 Recommendations for ZESCO

In light of the findings from this study, recommendations have been made to improve ZESCO's service delivery, customer satisfaction, and customer loyalty:

1. ZESCO should prioritize the improvement of its infrastructure, to ensure consistent power supply and addressing customer concerns about outages. Additionally, investing in the maintenance and upgrade of service facilities would contribute to a more reliable and satisfactory customer experience.
2. ZESCO should invest in training programs for its staff, particularly in customer service, technical expertise, and communication. By enhancing staff competence, ZESCO can rebuild customer trust and confidence, improving the Assurance dimension of its service quality.
3. ZESCO should ensure that its customer service teams are adequately staffed and trained to respond promptly and effectively to customer inquiries, complaints, and service interruptions. Additionally, a more personalized approach to customer interactions, where customers feel their concerns are genuinely addressed, could help strengthen relationships and improve customer loyalty.
4. ZESCO should implement strategies to better manage customer expectations through clear communication, transparent service delivery schedules, and proactive

notifications regarding potential service disruptions. By setting realistic expectations, ZESCO can reduce the perception of service gaps and improve customer satisfaction.

5. ZESCO should focus on understanding the reasons behind customer disloyalty and engage with these customers to regain their trust. This can be achieved through targeted feedback surveys, loyalty programs, and personalized customer engagement strategies aimed at addressing specific concerns and increasing customer retention.
6. ZESCO should establish a regular customer feedback mechanism to monitor satisfaction levels and service performance. Using this data, the company can identify areas for improvement and ensure that service quality aligns with customer expectations, driving continuous improvement across all dimensions of service delivery.

Therefore, by addressing these areas, ZESCO can enhance its overall service quality, improve customer satisfaction, and strengthen customer loyalty.

6.4 Future Studies

Future research can explore the following areas to build a more holistic understanding of service quality in utility companies, particularly in the Zambian context:

1. Future studies on service quality and customer satisfaction at ZESCO should incorporate the perspectives of ZESCO employees alongside customer feedback. By including employees in the study population, researchers can gain a more comprehensive understanding of the challenges in service delivery from both the provider and consumer perspectives. A comparative analysis of customer and employee perceptions would provide deeper insights into service quality gaps and potential areas for improvement.
2. Future studies could explore whether certain groups face distinct challenges or have unique expectations, which would allow ZESCO and similar organizations to tailor their services to meet diverse needs.
3. Future research could examine how the adoption of smart grids, mobile applications, or online customer service tools influences customer satisfaction and loyalty. Additionally, studies could explore customer perceptions of digital channels' effectiveness in addressing service interruptions, billing inquiries, and general service requests.

4. A comparative analysis between ZESCO and other utility providers, both within Zambia and in similar African countries, could offer understanding of the best practices and common challenges in the energy sector. Such studies could provide a broader context for understanding ZESCO's performance and suggest areas for improvement based on international standards or regional benchmarks.
5. This study offers a snapshot of customer satisfaction and loyalty at a particular point in time. However, a longitudinal study that tracks customer satisfaction over a longer period would provide a deeper understanding of the dynamics of customer loyalty and how it evolves in response to changes in service delivery, corporate policies, or external factors such as economic conditions or regulatory changes.
6. As environmental concerns grow globally, future studies could explore how ZESCO's sustainability practices, such as efforts to reduce carbon emissions, integrate renewable energy sources, or enhance environmental awareness, impact customer perceptions. Research in this area could investigate whether environmentally conscious practices contribute to customer satisfaction and brand loyalty in the energy sector.
7. Studies to explore how staff engagement, motivation, and job satisfaction influence the quality of service provided to customers and whether improving internal conditions for employees results in better customer experiences.
8. Given the evolving nature of energy policies in Zambia, future research could investigate how changes in government regulations, tariffs, and energy policies influence customer satisfaction. Research could also examine the role of regulatory bodies in shaping ZESCO's service quality and the broader implications for the energy sector in Zambia.
9. Future studies could focus on how customers perceive ZESCO's crisis management and service recovery strategies, particularly during major disruptions, and how these perceptions impact overall customer loyalty.

Therefore, by addressing these gaps in future research, scholars can further enhance the understanding of service quality in utility companies.

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APPENDICES

APPENDIX 1. QUESTIONNAIRE

QUESTIONNAIRE

Section 1: Demographic Information

1. What is your gender?

Male

Female

2. What is your type of connection with ZESCO?

Residential

Commercial

3. What is your highest level of Education?

Tertiary

Secondary

Primary

No Education

4. Level of Customer Satisfaction

Using a scale of 1-5, 1 for very dissatisfied, 2 for dissatisfied, 3 for somewhat satisfied, 4 for satisfied and 5 for very satisfied. Indicate your level of satisfaction with the services you are receiving from ZESCO especially on electricity supply.

1

2

3

4

5

Section 2: Customer Loyalty

5. How likely are you to continue using ZESCO's services in the future?

Very Unlikely

Unlikely

Neutral

Likely

Very Likely

Service Quality Assessment

Tangibles

As a customer, you have had a number of experiences with the quality of services with which the organization presents the quality of its services to customers. Insert in the box how the organization presents the quality of its services to customers as follows 1 for not very well 2 for not well 3 for somewhat well 4 for well and 5 for very well

| | | | | | |
|---|--|--|--|--|--|
| 1) There is up-to-date equipment | | | | | |
| 2) The Physical facilities are virtually appealing. | | | | | |
| 3) Employees are well dressed and appear neat. | | | | | |
| 4) Physical environment is clean. | | | | | |

Reliability

As a customer, you have had a number of experiences with the quality of services with which the organization presents the quality of its services to customers. Insert in the box the ability to perform the promised service dependably and accurately as follows 1 for not very reliable 2 for not reliable 3 for somewhat reliable 4 for reliable and 5 for very reliable

| | | | | | |
|---|--|--|--|--|--|
| 1) When staff promise to do something by a certain time, they do it. | | | | | |
| 2) When customer has a problem, staff show sincere interest in solving the problem. | | | | | |
| 3) Staff provide their services at the time they promise to do so. | | | | | |
| 4) Staff keep their records accurately. | | | | | |

Responsiveness

As a customer, you have had a number of experiences with the quality of services with which the organization presents the quality of its services to customers. Insert in the box the ability of willingness of service providers to help customers and provide services quickly as follows 1 for not very responsive 2 for not responsive 3 for somewhat responsive 4 for responsive and 5 for very responsive

| | | | | | |
|--|--|--|--|--|--|
| 1) Staff make information easily obtainable by customers. | | | | | |
| 2) Staff give prompt services to customers. | | | | | |
| 3) Staff are always willing to help customers. | | | | | |
| 4) Staff are never too busy to respond to customers' requests. | | | | | |

Assurance

As a customer, you have had a number of experiences with the quality of services with which the organization presents the quality of its services to customers. Insert in the box the level of trust and confidence customers have in an organization as follows 1 for not very assuring 2 for not assuring 3 for somewhat assuring 4 for assuring and 5 for very assuring

| | | | | | |
|--|--|--|--|--|--|
| 1) The behaviour of Staff tends to instill confidence in customers | | | | | |
| 2) As a customer, I feel safe in their transactions with the Staff | | | | | |
| 3) Staff are polite to customers. | | | | | |
| 4) Staff of have knowledge to answer customers' questions. | | | | | |

Empathy

As a customer, you have had a number of experiences with the quality of services with which the organization presents the quality of its services to customers. Insert in the box the ability of a service provider to understand and relate to a customer's thoughts, feelings, and experiences as follows - 1 for not very well 2 for not well 3 for somewhat well 4 for well and 5 for very well

| | | | | | |
|---|--|--|--|--|--|
| 1) Staff give customers individual attention. | | | | | |
| 2) Operating hours are convenient to customers. | | | | | |
| 3) Staff give customers personal service. | | | | | |
| 4) Staff have their customers' interest at heart. | | | | | |
| 5) Staff understand the specific needs of their customers | | | | | |

APPENDIX 2. AGGREGATE RESPONSES

| Respondent | Level of Satisfaction | Level of Loyalty | Tangibles | Reliability | Responsiveness | Assurance | Empathy |
|------------|-----------------------|------------------|-----------|-------------|----------------|-----------|---------|
| 1 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 2 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 3 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 4 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 5 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 6 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 7 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 8 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 9 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 10 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 11 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 12 | 1 | 1 | 5 | 4 | 6 | 5 | 4 |
| 13 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 14 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 15 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 16 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 17 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 18 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 19 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 20 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 21 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 22 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 23 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 24 | 1 | 1 | 6 | 6 | 7 | 8 | 4 |
| 25 | 1 | 1 | 7 | 7 | 7 | 8 | 4 |

| | | | | | | | |
|----|---|---|---|---|----|----|----|
| 26 | 1 | 1 | 7 | 7 | 7 | 8 | 4 |
| 27 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 28 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 29 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 30 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 31 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 32 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 33 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 34 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 35 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 36 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 37 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 38 | 1 | 1 | 7 | 7 | 8 | 8 | 6 |
| 39 | 1 | 1 | 9 | 7 | 8 | 10 | 7 |
| 40 | 1 | 1 | 9 | 7 | 9 | 10 | 9 |
| 41 | 1 | 1 | 9 | 7 | 9 | 10 | 9 |
| 42 | 1 | 1 | 9 | 7 | 9 | 10 | 9 |
| 43 | 1 | 1 | 9 | 7 | 9 | 10 | 9 |
| 44 | 1 | 1 | 9 | 7 | 9 | 10 | 9 |
| 45 | 1 | 1 | 9 | 7 | 9 | 10 | 9 |
| 46 | 1 | 1 | 9 | 7 | 9 | 10 | 9 |
| 47 | 1 | 1 | 9 | 7 | 9 | 10 | 9 |
| 48 | 1 | 1 | 9 | 7 | 9 | 10 | 9 |
| 49 | 1 | 1 | 9 | 7 | 9 | 10 | 9 |
| 50 | 1 | 2 | 9 | 7 | 9 | 10 | 9 |
| 51 | 1 | 2 | 9 | 7 | 9 | 10 | 10 |
| 52 | 1 | 2 | 9 | 7 | 10 | 12 | 10 |
| 53 | 1 | 2 | 9 | 7 | 10 | 12 | 11 |
| 54 | 1 | 2 | 9 | 7 | 10 | 12 | 11 |
| 55 | 1 | 2 | 9 | 7 | 10 | 12 | 11 |

| | | | | | | | |
|----|---|---|----|---|----|----|----|
| 56 | 1 | 2 | 9 | 7 | 10 | 12 | 11 |
| 57 | 1 | 2 | 9 | 7 | 10 | 12 | 11 |
| 58 | 1 | 2 | 9 | 7 | 10 | 12 | 11 |
| 59 | 1 | 2 | 9 | 7 | 10 | 12 | 11 |
| 60 | 1 | 2 | 9 | 7 | 10 | 12 | 11 |
| 61 | 1 | 2 | 9 | 7 | 10 | 12 | 11 |
| 62 | 1 | 2 | 9 | 7 | 10 | 12 | 11 |
| 63 | 1 | 2 | 9 | 7 | 10 | 12 | 11 |
| 64 | 1 | 2 | 9 | 8 | 10 | 12 | 11 |
| 65 | 1 | 2 | 9 | 8 | 11 | 12 | 12 |
| 66 | 1 | 2 | 9 | 8 | 11 | 12 | 12 |
| 67 | 1 | 2 | 9 | 8 | 11 | 12 | 12 |
| 68 | 1 | 2 | 9 | 8 | 11 | 12 | 12 |
| 69 | 1 | 2 | 9 | 8 | 11 | 12 | 12 |
| 70 | 1 | 2 | 9 | 8 | 11 | 12 | 12 |
| 71 | 1 | 2 | 9 | 8 | 11 | 12 | 12 |
| 72 | 1 | 2 | 9 | 8 | 11 | 12 | 12 |
| 73 | 1 | 2 | 9 | 8 | 11 | 12 | 12 |
| 74 | 1 | 2 | 9 | 8 | 11 | 12 | 12 |
| 75 | 1 | 2 | 9 | 8 | 11 | 12 | 12 |
| 76 | 1 | 2 | 10 | 9 | 11 | 12 | 12 |
| 77 | 1 | 2 | 11 | 9 | 11 | 13 | 12 |
| 78 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 79 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 80 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 81 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 82 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 83 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 84 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 85 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |

| | | | | | | | |
|-----|---|---|----|----|----|----|----|
| 86 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 87 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 88 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 89 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 90 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 91 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 92 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 93 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 94 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 95 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 96 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 97 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 98 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 99 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 100 | 1 | 2 | 11 | 9 | 12 | 13 | 12 |
| 101 | 1 | 2 | 11 | 10 | 12 | 13 | 12 |
| 102 | 1 | 3 | 12 | 10 | 13 | 13 | 13 |
| 103 | 2 | 3 | 12 | 10 | 13 | 13 | 13 |
| 104 | 2 | 3 | 12 | 10 | 13 | 13 | 13 |
| 105 | 2 | 3 | 12 | 10 | 13 | 13 | 13 |
| 106 | 2 | 3 | 12 | 10 | 13 | 13 | 13 |
| 107 | 2 | 3 | 12 | 10 | 13 | 13 | 13 |
| 108 | 2 | 3 | 12 | 10 | 13 | 13 | 13 |
| 109 | 2 | 3 | 12 | 10 | 13 | 13 | 13 |
| 110 | 2 | 3 | 12 | 10 | 13 | 13 | 13 |
| 111 | 2 | 3 | 12 | 10 | 13 | 13 | 13 |
| 112 | 2 | 3 | 12 | 10 | 13 | 13 | 13 |
| 113 | 2 | 3 | 12 | 10 | 13 | 13 | 13 |
| 114 | 2 | 3 | 12 | 10 | 14 | 13 | 13 |
| 115 | 2 | 3 | 13 | 10 | 14 | 13 | 13 |

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|-----|---|---|----|----|----|----|----|
| 116 | 2 | 3 | 13 | 10 | 14 | 14 | 13 |
| 117 | 2 | 3 | 13 | 10 | 14 | 14 | 13 |
| 118 | 2 | 3 | 13 | 10 | 14 | 14 | 13 |
| 119 | 2 | 3 | 13 | 10 | 14 | 14 | 13 |
| 120 | 2 | 3 | 13 | 10 | 14 | 14 | 13 |
| 121 | 2 | 3 | 13 | 10 | 14 | 14 | 13 |
| 122 | 2 | 3 | 13 | 10 | 14 | 14 | 13 |
| 123 | 2 | 3 | 13 | 10 | 14 | 14 | 13 |
| 124 | 2 | 3 | 13 | 10 | 14 | 14 | 13 |
| 125 | 2 | 3 | 13 | 10 | 14 | 14 | 13 |
| 126 | 2 | 3 | 13 | 10 | 14 | 14 | 13 |
| 127 | 2 | 3 | 14 | 10 | 14 | 14 | 13 |
| 128 | 2 | 3 | 14 | 10 | 14 | 14 | 14 |
| 129 | 2 | 3 | 14 | 10 | 14 | 14 | 14 |
| 130 | 2 | 3 | 14 | 10 | 14 | 14 | 14 |
| 131 | 2 | 3 | 14 | 10 | 14 | 14 | 14 |
| 132 | 2 | 3 | 14 | 10 | 14 | 14 | 14 |
| 133 | 2 | 3 | 14 | 10 | 14 | 14 | 14 |
| 134 | 2 | 3 | 14 | 10 | 14 | 14 | 14 |
| 135 | 2 | 3 | 14 | 10 | 14 | 14 | 14 |
| 136 | 2 | 3 | 14 | 10 | 14 | 14 | 14 |
| 137 | 2 | 3 | 14 | 10 | 14 | 14 | 14 |
| 138 | 2 | 3 | 14 | 11 | 14 | 14 | 14 |
| 139 | 2 | 3 | 14 | 11 | 14 | 14 | 14 |
| 140 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 141 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 142 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 143 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 144 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 145 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |

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|-----|---|---|----|----|----|----|----|
| 146 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 147 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 148 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 149 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 150 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 151 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 152 | 2 | 3 | 14 | 11 | 14 | 15 | 14 |
| 153 | 3 | 3 | 14 | 11 | 14 | 16 | 14 |
| 154 | 3 | 3 | 14 | 11 | 14 | 16 | 14 |
| 155 | 3 | 3 | 14 | 11 | 14 | 16 | 14 |
| 156 | 3 | 3 | 14 | 11 | 14 | 16 | 14 |
| 157 | 3 | 3 | 14 | 11 | 14 | 16 | 14 |
| 158 | 3 | 3 | 14 | 11 | 14 | 16 | 14 |
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| 160 | 3 | 3 | 14 | 11 | 14 | 16 | 14 |
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