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Service Quality and Consumer Satisfaction of Electricity Services Provided by Zanzibar Electricity Corporation

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Abstract:
The study assessed the service quality of electricity services provided by Zanzibar Electricity Corporation towards customer satisfaction. Specifically, the study examines the continuity dimensions of quality electricity services. The study used a case study research design for a sample of 299 households who were randomly carefully chosen from the population of households in Maindi, Kikwajuni, and Mwembeladu. Descriptive statistics were used to analyse data. The results indicated the level of satisfaction with the continuity dimensions of the quality of electricity services offered among customers. Data showed that more than 55% of customers were dissatisfied with the electricity price, responsiveness, and empathy of the Zanzibar Electricity Corporation, whereas on the factors contributing to the dissatisfaction of customers, data revealed that the majority of respondents 20% were not satisfied with frequency blackouts happening in their areas. Based on the findings, the study concluded that consumer loyalty and value resistance have discovered a positive relationship between changes in consumer loyalty and value resilience. Finally, the study recommended re-evaluating the evaluating technique keeping in mind the end goal to align it with the consumer satisfaction objective and guarantee appropriate comprehension of clients' worries and needs with a specific end goal to serve them legitimately.

Keywords: *Service quality, consumer satisfaction, continuity dimensions*

1. Introduction

Historically, the development of the electricity sector in Zanzibar started at the beginning of the 20th century. In the year 1908, coal-fired generators were first installed to provide Electricity on Unguja Island. In 1954, the coal technology was abandoned, and diesel Generators were introduced and used until 1980, when Unguja Island was connected to the Tanzania National Grid, through a 132kV 45MW sub-marine cable, in 2013 new Submarine was connected with a capacity of 132kV 100MW, which is still in use to date (ZECO, 2016).

Public electricity supply in Pemba Island was installed in 1958, with the Commissioning of the Tibirinzi power station. Over the years, additional small generating units were installed by the Revolutionary Government of Zanzibar in response to the growing demand. In 1985, the Government commissioned Wesha power station to replace Tibirinzi power station with three diesel generator sets of 1.5MW each. To date, Pemba Island is connected with the national grid by Submarine cable from Pangani via Majani Mapana Tanga to Ras Mkumbuu Pemba, with a capacity of 20MW, 33kV (ZECO, 2016). Therefore, from that time to date, in Zanzibar, there has been no large-scale power production. All the power distributed in the public grid is generated from mainland Tanzania. The power in the public grid is bought from TANESCO and delivered to Zanzibar via submarine cables and distributed to the local by Zanzibar Electricity Corporation (ZECO, 2016).

Zanzibar's power supply is unreliable, and blackouts are frequently occurring and sometimes long-lasting. Blackouts occur mainly for two reasons; one is the so-called rolling blackout. This is when the electricity company purposely disconnects a certain area from the grid. This is done when demand is higher than supply to stop the frequency in the grid from dropping under a predetermined value. The electric grid is sensitive to changes in frequency, and small differences can harm valuable and expensive components in power plants and in the grid. The other main reason for blackouts is a technical failure in the grid. These kinds of failures in Zanzibar are especially common during the rainy seasons when equipment gets wet or flooded, and poles are being washed away (ZECO, 2020).

In 2009 Unguja, for example, suffered from a three-month-long electricity blackout (ÅF Green advisor report, 2010). The reason was a failure in the 45 MW submarine cables that connect Unguja to the mainland. The extended duration was because there were not any spare parts available. Blackouts of this magnitude are uncommon but have a grave impact on society. Most blackouts are much shorter than the one in 2009, but frequently occurring blackouts also have big impacts on consumer satisfaction (Zhong & Sun, 2010). These situations and the frequent blackouts make consumers unsatisfied with the services provided by ZECO.

Sector reform under the Act No.3 of 2006 transferred electricity regulatory issues from the State Fuel and Power Corporation (SFPC), which was established in 1964 under the parent ministry, the then Ministry of Water, Construction,

Land, and Environment, by the Presidential Decree No. 12 of 1964. The SFPC was made responsible for managing the power stations and providing services on both islands and established the Zanzibar Electricity Corporation (ZECO), thereby replacing ZSFPC to facilitate the generation, transmission, transformation, distribution, supply and use of electricity in the Islands of Zanzibar.

ZECO is 100% owned by the Government through the current Ministry of Water and Energy, which assumes a supervisory role to the Corporation. ZECO relies on hydroelectric power from Tanzania Mainland through submarine cables to grant electricity services to households. Long-lasting periods of droughts and submarine cables wear out, often severely trimming down electricity generation capacity.

1.1. Statement of the Problem

For a long time, the energy sector in Zanzibar and other African countries has encountered persistent challenges that hinder consumer satisfaction with the services. The problems facing the sector include the following:

- Over-reliance on hydropower sources,
- Unreliable power supply,
- Little access to modern power services, and
- Inadequate skilled human resources

Furthermore, low tariffs charged on electricity have resulted in inadequate and delayed maintenance activities, which result in increased power outages.

Zanzibar relies on hydroelectric power from Tanzania Mainland through submarine cables with a capacity of 100 WM in Unguja and 25 MW in Pemba. The demand for electricity in Zanzibar is approaching its maximum, and the cables are also approaching the end of their technological life and started to experience dependability and maintenance challenges on the one hand, and the hydroelectric plants in Mainland also experience drought during low rainfall seasons that drying many of the hydroelectric dams on the other.

In 2009 and 2010, for example, Unguja experienced wide blackouts lasting 3-4 months due to faults in submarine cables, which took time to repair due to the absence of specialized maintenance contractors in the region (Burlando, 2010). The long blackouts have a huge negative impact on the island economic development. The risk of extended supply outages remains a reality due to faults that may occur on submarine cables and drought in hydroelectric dams on Mainland.

Currently, Zanzibar Electricity Corporation (ZECO) dominates the electricity sector in Zanzibar, which is a monopoly public organization responsible for the distribution and transmission of electricity in the country. Together with other tasks, the distribution business units distribute and sell electricity to all consumers and are also responsible for reducing distribution losses and power outages.

Despite the fact that ZECO has endeavoured to put a few actions to handle the issue by furnishing clients with call numbers to the crisis work area, sending a versatile group of crisis professionals, crisis bolster vehicles, and circuit testers to conquer any test, clients' whines are altogether normal. Thus, this study assesses the level of consumer satisfaction on the continuity dimensions of the quality of electricity services provided by ZECO.

2. Theoretical Literature Review

2.1. The Servqual Theory

The word 'service' origins from the Latin word 'Servetum', which carries the meaning served by slaves. Service is defined as an activity or a series of activities in an intangible form which usually takes place in the interaction between customers and service providers. Some researchers further explained that service is an intangible benefit whose ownership could not be claimed, provided from one party to another. Generally, services are deeds, processes, and performances (Salifuetal, 2010). Quality is defined as the consumer's overall impression of the relative inferiority or superiority of the companies and their services (Siddique et al., 2011). Besides that, quality could also be defined as a measure of the extent to which the service delivered fulfills the customers' expectations.

3. Empirical Literature Review

Miguel et al. (2022) examined the impact of commercial quality on electricity consumer satisfaction in Spain. The study showed that quality of supply has been one of the main aspects covered by the European Energy Policy in the last decades, together with competitiveness and sustainability. Several regulatory actions have been taken in this regard and have been applied at European level. Most of the Energy National Regulatory Agencies have implemented electricity distribution network retribution mechanisms based on the quality of supply provided by the companies responsible for that. The study concluded that the measures were mainly based on the technical quality: number and length of service interruptions.

Joseph and Gerry (2022), in their study, aimed to assess the effect of service quality dimensions on customer satisfaction in Tanzania Energy Industry. Data were collected from 186 residential customers of TANESCO in Nyamagana district, who were selected using a stratified sampling technique. The study used a questionnaire and documentary review to gather information concerning the topic. Quantitative data were analyzed using descriptive statistics and inferential statistics, including Pearson correlation and regression analysis, to determine the effect of each service quality dimension on customer satisfaction. Regression analysis results indicated that service quality dimensions, including reliability, assurance, tangibility, empathy, and responsiveness, have a significant positive influence on customer satisfaction. The

findings also indicated that customer expectations of TANESCO services in accordance with service quality dimensions are bigger than their perceptions of services they receive from the company.

A study by Agenor et al. (2022) measured customer satisfaction in residential electricity distribution services with the main objective of applying structural equation modelling with partial least squares and based on covariance to assess the satisfaction of residential electricity consumers. The methodology used compares the results of both structural equation models to indicate the model that best fits the problem of measuring the satisfaction of residential consumers with electricity concessionaires and licensees. The sample used in the survey contained questionnaire responses from 86,175 individuals, considering the period from 2014 to 2018. The constructs evaluated were satisfaction, quality, value, loyalty, and trust. A confidence interval analysis shows that all weights are significant, demonstrating the importance of all the indicators that represent the constructs. The trust, quality, and value constructs can explain 74.4% of the satisfaction constructs variability, so this relationship's explanatory capacity is considered substantial.

The study by Coney et al. (2022) was conducted under the title 'Impact of Power Quality on Industry in Africa'. The study reveals that Poor power quality raises the charge of usage of electricity and gives rise to unsuitability amongst clientele. However, customers' satisfaction with voltage fluctuations of electricity in industries where there is a need for voltage control and circuit faults, control of power interruption has a negative impact on industrial production that may result in low production levels.

The study carried out by Basharat (2021) is based on an analysis of the quality of the IESCO service in the power sector. The SERVQUAL model attempts to show the relationship between silent variables and a simplified description of the real situation. The instrument is tested by adjusting the SERVQUAL model and modified using five dimensions of service quality with the moderated effect of quality leadership to meet consumer expectations. This research gets some answers concerning the execution of IESCO system service quality in control dispersion top-notch transporter to its consumers, which is presently not in a situation to live up to their desires. In five dimensions of the SERVQUAL model and moderated effect of quality leadership with consumer satisfaction, it found that there is a (major disappointment) negative gap between system administration quality and consumer satisfaction.

Ehigie (2018) conducted a study to analyze how service quality affects customer satisfaction. An inductive qualitative research method was employed in this study. The study found that the most influential service quality dimensions on customer satisfaction are responsiveness, empathy, and assurance, which are influential to customer satisfaction. Price of service is the most influential variable on customer satisfaction. The digitalization of taxation services fosters the likelihood of taxpayers paying their taxes on time and consistently.

4. Methodology

The study employed a quantitative approach, the researcher used quantitative research because the researcher wanted to explore attitudes, perspectives, and meanings and understand customers' satisfaction with the provision of quality electricity services in the household. The study was conducted in Zanzibar with the main focus on ZECO and three areas, namely Malindi, Kikwajuni, and Mwembeladu, in Urban district in Urban West region in Zanzibar. These areas were involved in collecting data for this study that provided a high number of domestic customers from those areas based on electricity services. The population of the study was covered by households that dwell in three areas in Urban district, which are Malindi, Kikwajuni, and Mwembeladu, which is estimated as 1179 households. A total of 299 were considered as a sample size of the study, and simple random sampling techniques were used to select a respondent for this study. The study used a structured questionnaire with closed-ended questions to collect data from the survey subjects. The questionnaires were structured short and simple to address the limitations of the study. The analysis included descriptive statistics such as the use of frequencies and tables. Presentation and discussion of those data are based on outputs of findings analyzed and discussed according to what transpired to the results obtained.

5. Finding of the Study

5.1. Demographic Information

The study opted to present the demographic profile of respondents to enable the audience to know their profile during data collection and how the demographic profile of respondents influences the quality of the information on customer satisfaction on service quality of electricity services provided by ZECO. This part provides basic information about the respondents' characteristics; such information includes their gender, sex, education level, and age. All these characteristics have been explained and presented below.

Variables	Category	Frequency	Percentage
Gender	Male	182	60.9
	Female	117	39.1
Age	18-35	63	21.1
	36-45	160	53.5
	46 and above	76	25.4
Education level	Certificate	88	29.4
	Diploma	118	39.5
	Degree	81	27.1
	No formal education	12	4.0

Table 1: Demographic Information

The table1 shows that 60.9% of respondents were male, and 39.1% of respondents were female. The findings showed that the majority of respondents were male compared to female. Both males and females were involved in the study, avoiding bias based on gender to enrich the findings. Also, the findings of the study in table 2 show that:

- 21.1% of the respondents were aged 18-35 years,
- 53.5% of the respondents were aged 36-45 years, and
- 25.4% of the respondents were aged 45 years and above

These findings show that most of the respondents were young people. Moreover, the above table shows that:

- 39.5% of the respondents were having diploma-level education,
- 29.4% of the respondents were having a certificate,
- 27.1% were having degree level, and
- Only 4% of the respondents were having a formal education

Table 3 indicates that the education level of most respondents (39.5%) had a diploma-level education. This implies that the majority of the respondents in the area of study were educated people.

5.2. To Assess the Level of Consumer Satisfaction on the Continuity Dimensions of the Quality Electricity Services Provided by ZECO

Several statements were mentioned where respondents wanted to respond. By using descriptive statistical techniques, different indicators of consumer satisfaction on the continuity dimensions of the quality electricity services provided by ZECO were described, and the results are shown below.

5.2.1. Price – The Value of the Service

The respondents were supposed to demonstrate their level of satisfaction by considering the price of electricity quality services provided by ZECO. The results are shown in table 2 below.

		Frequency	Percent
Valid	Highly Satisfied	20	6.7
	Satisfied	28	9.4
	Moderate	21	7.0
	Dissatisfied	65	21.7
	Highly not satisfied	165	55.2
	Total	299	100.0

Table 2: Price
Source: Survey Data, (2022)

Findings from table 2 above on the responses of the level of satisfaction on the price of electricity quality services revealed that 55.2% of all respondents were highly not satisfied, followed by 21.7% of them who were dissatisfied, 7% of them reported to be moderate. On the other hand, 9.4% of the respondents were satisfied, while the remaining 6.7% were highly satisfied. From these findings, there is an implication that most of the respondents were highly not satisfied with the price of electricity quality services provided by ZECO. These outcomes are in accordance with Ross (2014), who brought up that setting a correct cost and keeping clients cheerful can be difficult to accomplish. However, such a capacity to set a correct cost can prompt enhanced consumer loyalty and a noteworthy increment in income. In this unique circumstance, if price affects consumer loyalty, ZECO ought to inquire whether they are charging the right cost to improve high consumer loyalty. Moreover, Herrmann et al. (2017) presumed that consumer loyalty is straightforwardly impacted by value discernments, albeit by implication, through the impression of value decency. The value of decency itself and the way it is settled and offered greatly affect saw quality and satisfaction.

5.2.2. Timeliness – Ability to Deliver Service Timely

In this part, the respondents were asked to indicate their level of satisfaction with regard to the timeliness of ZECO quality services in relation to customer satisfaction. The results are shown in table 3 below.

	Frequency	Percent
Highly Satisfied	45	15.0
Satisfied	70	23.4
Moderate	29	9.7
Dissatisfied	75	25.1
Highly not satisfied	80	26.8
Total	299	100.0

Table 3: Timeliness
Source: Survey data, (2022)

Findings from table 3 above on the responses of the level of satisfaction with the timeliness of electricity quality services revealed that:

- 26.8% of all respondents were highly not satisfied,

- 25.1% of them were dissatisfied,
- 9.7% of them reported being moderate

On the other hand, 23.4% of the respondents were satisfied, while the remaining 15% were highly satisfied. These findings imply that most of the respondents were highly dissatisfied with the timeliness of the electricity quality services provided by ZECO.

5.2.3. Service Reliability – Provision of Promised Services Dependently and Accurately

The respondents were also requested to show their level of satisfaction with service reliability as an indicator of ZECO electricity service quality and client gratification. The results are shown in table 4 below.

	Frequency	Percent
Highly Satisfied	105	35.1
Satisfied	35	11.7
Moderate	4	1.3
Dissatisfied	40	13.4
Highly not satisfied	115	38.5
Total	299	100.0

Table 4: Service Reliability
Source: Survey Data, (2022)

Findings from table 4 above on the responses of the level of satisfaction on the service reliability of electricity quality services revealed that:

- 38.5% of all respondents were highly not satisfied,
- 35.1% of them were highly satisfied,
- 1.3% of them reported being moderate

On the other hand, 13.4% of the respondents were dissatisfied, while the remaining 11.7% were satisfied. From these findings, there is an implication that most of the respondents were highly not satisfied with the service reliability of electricity quality services provided by ZECO. The findings supported by the study conducted by Agness (2017) assessing the customer satisfaction with the provision of electricity quality services among households in Dar-es-salaam found that 83% of the respondents demonstrated that they were disappointed with the TANESCO benefit unwavering quality based on operational factors, for example, lacking supply of power, breakdown of offices, control interferences and temperamental system are a portion of the issues contributing into untrustworthy administrations. Visiting control interferences experienced by clients without earlier notice has been a noteworthy reason for client disappointment among TANESCO benefit clients.

5.2.4. Responsiveness – Reaction in Terms of Emergency

Respondents were asked to indicate their level of satisfaction with the dimension of responsiveness of electricity service quality provided by ZECO. The results are shown in table 5 below:

	Frequency	Percent
Highly Satisfied	20	6.7
Satisfied	10	3.3
Moderate	9	3.0
Dissatisfied	115	38.5
Highly not satisfied	145	48.5
Total	299	100.0

Table 5: Responsiveness
Source: Survey Data, (2022)

Findings from table 5 above on the responses of the level of satisfaction on the responsiveness of electricity quality services provided by ZECO revealed that:

- 48.5% of all respondents were highly not satisfied,
- 38.5% of them were dissatisfied,
- 3% of them reported being moderate

On the other hand, 6.7% of the respondents were highly satisfied, while the remaining 3.3% were satisfied. These findings imply that most of the respondents were highly dissatisfied with the responsiveness of the electricity quality services provided by ZECO. Matt (2010) noticed that in the present-day world, where frameworks are an important piece of client benefit, conveyance in times of crisis cannot be ignored. Numerous clients have been griping that emergency administrations have not been reacting quickly, and some ZECO staff utilize harsh language to concerned clients. Citing an occurrence detailed in the Daily Newspaper on 3 May 2016, the Minister requested TANESCO to take punitive actions against three haughty staff from Kimara and Ubungo for asserting carelessness and absence of reaction to the crisis. This is a case of absence of responsiveness which had been specified by the respondents to the examination.

5.2.5: Empathy – Capacity of the Staff Understanding the Customer's Condition from Their Perspective

The respondents were also asked to indicate their level of satisfaction with regard to empathy as an indicator of ZECO service quality and customer satisfaction. The results are indicated in table 6 below:

	Frequency	Percent
Highly Satisfied	20	6.7
Satisfied	28	9.4
Moderate	21	7.0
Dissatisfied	65	21.7
Highly not satisfied	165	55.2
Total	299	100.0

Table 6: Empathy
Source: Survey data, (2022)

Findings from table 6 above on the responses of the level of satisfaction on the dimension of empathy of electricity quality services revealed that 55.2% of all respondents were highly not satisfied, followed by 21.7% of them who were dissatisfied, 7% of them reported to be moderate. On the other hand, 9.4% of the respondents were satisfied, while the remaining 6.7% were highly satisfied. From these findings, there is an implication that most of the respondents were highly not satisfied with the price of electricity quality services provided by ZECO. Compassion is one of the fundamental focuses in guaranteeing that associations are passed on to clients sympathetically to update the relationship with the associations. With a specific extreme goal to impel sensitivity, it is important that clients depict the association in a vague path from the ace affiliation. Jeff (2014) portrayed the scrambling point about affectability as the path by which clear the issue appears to the general population who can identify with the circumstance. Workers who have had commensurate encounters are routinely truly arranged to relate to their clients in a way that particular specialists cannot. Susan (2014) depicted that Customer Service from the heart is an advantage passed on with mind, affectability, and even worship. This sort of association impacts the fundamental stress of the affiliations that model, prepare, and draw in their authorities to the advantage of the heart. Affiliations that genuinely regulate their clients are, by and large, more gainful than those which do not. Occasions of poor client management and associations identified with ZECO incorporate that the affiliation ought to consider the criticalness affectability in guaranteeing client advantage satisfaction.

6. Conclusion

The significant findings of the study showed the low nature of quality electricity services, which led to customer dissatisfaction. In conclusion, consumer loyalty and value resistance have discovered a positive relationship between changes in consumer loyalty and changes in value resilience. As indicated by Anderson, 2016 who revealed, expanding consumer loyalty is probably going to diminish the value versatility of interest. This reveals to us that, after some time, consumer loyalty influences value resistance. It implies that as a client turns out to be happier with the level of services conveyed by an organization, cost turns out to be less of a factor. The study additionally found that ZECO benefit quality has guided a positive relationship to consumer loyalty as the lower the nature of services offered prompt lower consumer loyalty and the other way around. Subsequently, ZECO's capacity to give benefits that address clients' issues is an essential factor that could impact consumer loyalty with respect to ZECO benefits.

7. Recommendations

According to the findings of this study, it is recommended that ZECO should reduce the organization's costs and proportionately distribute more assets to make astonishing knowledge that shocked the clients. This will prompt more grounded fulfilment and cheerful clients who view the organization's costs as reasonable. To guarantee appropriate comprehension of clients' worries and needs with a specific end goal to serve them legitimately. The significant data can be assembled through client discussions and reviews and additionally through the associations that happen amid the ordinary course of exchanges. Utilization of remarks and worries to decide ways the business can accomplish a superior reaction can likewise be received. A social affair of thoughts from different people inside the business to understand how the potential changes will affect the client and the organization is additionally urgent.

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