



## **Service Quality and Customer Satisfaction of Electricity Distribution Company: A Study of Olumo Business Hub, Abeokuta, Ogun State**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author ASO designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors OOJ and OJS managed the analyses of the study. Author TAA managed the literature searches. All authors read and approved the final manuscript.*

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### **ABSTRACT**

This study examines the relationship between service quality and customer satisfaction in Ibadan Electricity Distribution Company. To achieve this, IBEDC customers residing in Ogun State were sampled to seek their opinion on their level of satisfaction with IBEDC's services. Survey research was employed which involved the distribution of questionnaires to customers. The questionnaire sought information based on the five SERVQUAL dimension of reliability, empathy, responsiveness, tangibles and assurance which were measured on a 7-point Likert scale. A total of 397 customers were surveyed with 19 SERVQUAL survey items and 3 customer satisfaction survey items. Data collected were analysed with the use of the arithmetic mean, standard deviation and Partial Least Squares Structural Equation Model (PLS-SEM) for testing the five hypotheses theorised in the study. From the study, it was established that the reliability of IBEDC does not have a significant

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effect on customer satisfaction in Olumo business hub, Abeokuta which implied that IBEDC's ability to perform the promised service dependably and accurately or delivering on its promises is very poor. The study established that the empathy of IBEDC does not have a significant effect on customer satisfaction in Olumo business hub, Abeokuta which implied that IBEDC's caring and provision of individualised attention to customers by their staff are very poor. It established that the responsiveness of IBEDC does not have a significant effect on customer satisfaction in Olumo business hub, Abeokuta which implied that IBEDC's willingness or readiness of staff to provide service is very poor. The study also established that the tangibles of IBEDC do not have a significant effect on customer satisfaction in Olumo business hub, Abeokuta which implied that IBEDC physical facilities (offices), staff appearance, materials associated to the service (transformers, wires etc. and equipment used to provide electricity are very old and obsolete. The finding from the study shows that the assurance of IBEDC does not have a significant effect on customer satisfaction in Olumo business hub, Abeokuta which implied that IBEDC's staff knowledge and courtesy to convey trust and confidence is very poor.

*Keywords: Service quality; customer satisfaction; Ibadan electricity distribution company; service provider; electricity distribution companies.*

## 1. INTRODUCTION

Electricity Distribution Companies (DisCos) are saddled with the responsibility of supplying electricity to electricity consumers in Nigeria. They connect consumers with the electricity grid, transform and step-down electricity from the high voltage of 132 kV at the transmission level to the lower voltage levels of 33kV/11kV/0.415kV depending on the group of customers and distribute energy to the final consumer either as industrial or domestic users. DisCos are also responsible for the marketing and sale of electricity to customers which are an important function in the electricity value chain. All the revenue needed to sustain the electricity industry is earned through the distribution sector [1].

Ibadan Electricity Distribution Company (IBEDC), one of the eleven electricity distribution companies came into existence on 1<sup>st</sup> November 2013 as part of the privatisation effort of the electricity sector. The Discos cover the largest franchise area in Nigeria, made up of Oyo, Ogun, Osun, Kwara and parts of Niger, Ekiti and Kogi states. To ensure efficient and effective management of such a large network, the company is divided into five regions, namely Oyo, Ibadan, Osun, Ogun and Kwara regions which are made up of Business Hubs (BH) that is manned by a Regional Commercial Manager and Regional Technical Manager in order to improve the quality of service delivered to their customers [2].

Service quality has widely been deliberated on since the 20th century and its idea is still relevant

to help today organisations in product differentiation and gaining competitive advantage in an era of globalisation [3,4]. According to Agyapong [5], the concept of quality, efficiency, productivity, growth and survival pose a great challenge for the survival and growth of all organisations. These growth and survival demands are further deepened by the need to attract new customers and retain existing ones, as they are the main focus of any successful business.

In quality management literature, service quality is often seen as a multi-dimensional construct. For example, the Nordic school of thought suggests that service quality should have two important dimensions, namely technical quality (that is, what customers' received from services provided by an organization) and functional quality (that is, how an organization delivers services to customers) [6,7]. Later, the service quality construct is modified and simplified by United States of America school of thought where it proposes that effective service quality should have five specific dimensions, namely tangible (physical facilities, equipment, and appearance of workers), reliability (ability to perform the promised service dependably and accurately), responsiveness (willingness to help customer and provide prompt service), assurance (knowledge and courtesy of workers and their abilities to inspire trust and confidence), and empathy (caring, individualized attention the organization provides its customers [8,9,10,11] .

However, the quality school of thoughts have different ideas which are developed based on

individual attitudes and perceptions [12]. This view believes that service quality is an important outcome of a comparison between customer expectations and their experience of the service [13]. If customers view that their expectations for service performance conform with their perceptions of the service, this situation may induce the notion of service quality [13,14].

Customer's assessment of service quality is critical information for service providers whose aim is to improve business performance, strengthen core competencies and position themselves more strategically in the marketplace [15,16]. Organisations that provide superior service quality do experience higher economic returns and also have a more satisfied customer base [17,18]. Therefore, it has become ubiquitous for service providers to seek out competitive advantages by providing superior service [19].

Zeithaml and Bitner [20] Opine that satisfaction is the customer's evaluation of a product or service regarding whether it meets their needs and expectations. Customer satisfaction is derived largely from the quality and reliability of products and services [21] and represents the assessment of the performance of a product or service by customers, making it important for successful business performance measurement. Customers are always aiming to get maximum satisfaction from the products or services they buy, therefore, for any organisation to succeed in today's marketplace; they must build customer relationship and not just building their products. Building customer relationships mean delivering superior value over competitors to the target customers [22]. Whether an organisation provides quality services or not depends on customers' feedback on the satisfaction they get from consuming the products, since higher levels of quality lead to higher levels of customer satisfaction [23].

Providing a good service quality is a major issue for all business especially for service providing companies like Electricity Distribution Companies in Nigeria (DisCos). Customer satisfaction may determine the success or failure of a business. To be competitive in the marketplace, service provider companies need to satisfy their customer. Best service quality provided would ensure a high market share and a substantial return.

A couple of years back after the conclusion of the privatisation process of the power sector in Nigeria, Discos customers are still not satisfied with the quality of service provided by the company. Customers still experience erratic power supply which has forced many electricity consumers to seek an alternative source of power in form investing in generator set, inverter, solar energy etc.

Furthermore, electricity consumers are not satisfied with the billing system adopted by Disco. Some of them argued that they had been overcharged every month while some argued that they have not been given prepaid metres even after paying money to DisCos officials.

In addition, electricity consumers have also complained of the nonchalant attitude of DisCos officials in handling the issue of replacing spoilt transformers. Some communities have been left out without electricity supply for years due to spoilt transformers and there is no hope as regards replacing these transformers. The irony of the matter is that DisCos still serve them their monthly bill and expect them to pay for the service they did not enjoy.

However, several writers that have presented their argument on service quality and customer satisfaction such as [24,25,26] have focused their attention on the telecommunication and banking industry while little or no attention has been given to the electricity distribution companies in Nigeria. This means that there is a major gap in the relevant literature which need to be filled. Therefore, this research attempts to fill this gap by examining the impact of service quality on customer satisfaction in IBEDC, Olumo service hub to know whether customers are satisfied with the service provided by this company.

In this article we explore the relationship between service quality and customer satisfaction in Ibadan Electricity Distribution Company, Olumo Business Hub; evaluating the effect of service quality on customer satisfaction in Ibadan Electricity Distribution Company, Olumo business Hub. This study started with the introduction of the term service quality and customer satisfaction in Ibadan Electricity Distribution Company, Olumo business Hub which was then followed by the Literature

review, research method, analyses of data and consequently the conclusion and recommendation.

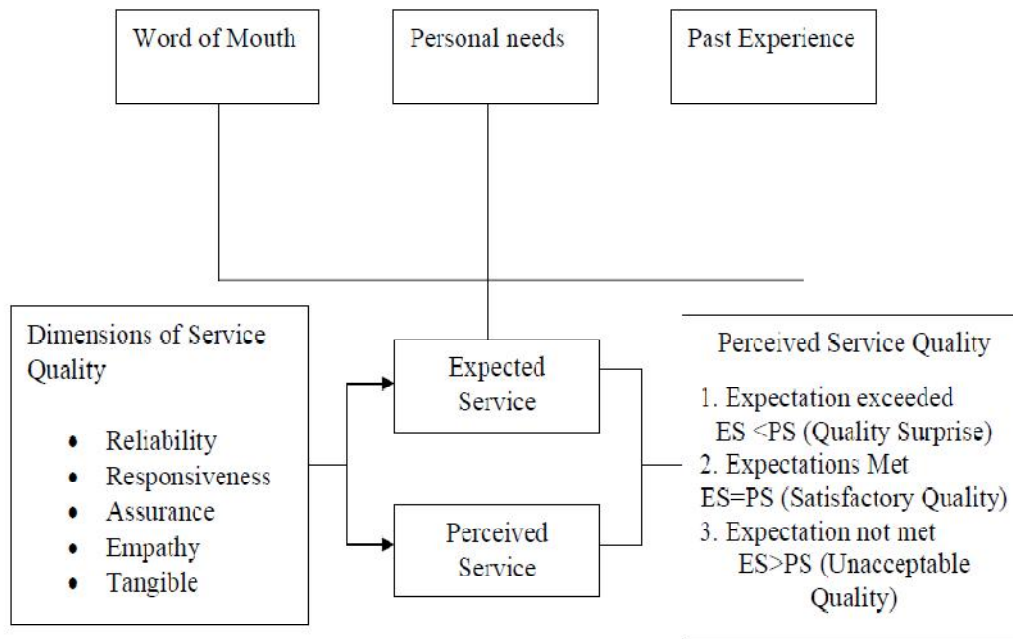
**2. LITERATURE REVIEW**

**2.1 Service Quality**

Service quality is considered as a critical dimension of competitiveness (Lewis, 1989). Providing excellent service quality and high customer satisfaction is an important issue and challenge facing organisations [27]. Service quality is an important subject in both the public and private sectors, in the business and service industries [28]. It is the extent to which a service meets or exceeds customer needs and expectations [29,30,31,32,33,28]. During the past two decades, service quality has become a major area of attention to practitioners, managers and researchers because of its strong impact on business performance, lower costs, return on investment, customer satisfaction, customer loyalty and gaining higher profit [34,15,35,36,37,38,39,40,41,42].

The rapid development and competition of service quality, in both developed and developing countries, has made it important for companies to measure and evaluate the quality of service encounters [43]. Several conceptual models have been developed by different researchers for measuring service quality. It is envisaged that conceptual models in service quality enable management to identify quality problems and thus help in planning for the launch of a quality improvement program, thereby improving the efficiency, profitability and overall performance [42]. There are two main aspects that describe and affect both service quality; the actual service customers expected (expected service) and services perceived (perceived service). Fitzsimmons and Fitzsimmons [44] explain that the creation of customer satisfaction for a service can be identified through a comparison between service perceptions with service expectation, see Fig. 1.

Although the definitions of service quality vary, the definitions are all formulated from the customer perspective: That is, what customers perceive are important dimensions of quality [29]. [45] and [46] were the pioneers in the



**Fig. 1. Perceived service quality model**  
 Source: Fitzsimmons and Fitzsimmons (2001)

conceptualisation of the service quality construct, these authors maintained that the overall perception of quality was a disconfirmation of a customer's expectation and his/her evaluation of a service. The dimensions of service quality have also been debated in the literature. For example, [45] proposed technical (the tangible aspects of service delivery) and functional (the expressive performance of the service) qualities as two critical dimensions of service quality. Alternatively, Parasuraman et al. [66] proposed five service quality dimensions, namely, tangibles, reliability, responsiveness, assurance and empathy. Rust and Oliver [47] developed a three-component dimensional model and concluded that the service product (i.e. technical quality), the service delivery (i.e. functional quality), and the service environment were critical dimensions of service quality. Dabholkar and Thorpe [48] tested a hierarchical conceptualisation of retail service quality that proposed three levels: (1) customers' overall perceptions of service quality; (2) primary dimensions; and (3) sub-dimensions.

Brady and Cronin [6] adopted the view that service quality perceptions were multi-dimensional and identified the primary dimensions of their model based on [47] findings. More recent work by Brady and Cronin [6] has provided a new and integrated conceptualisation of service quality. They argued convincingly that customers form service quality perceptions on the basis of their evaluations of three primary dimensions: Outcome quality, interaction quality, and environmental quality; these three primary dimensions are composed of multiple sub-dimensions. The aggregate evaluations of the sub-dimensions form their perceptions of an organisation's performance on each of the three primary dimensions, and those perceptions then lead to an overall service quality perception. The debate on service quality dimensions is still ambiguous, but it is generally accepted that perceptions of service quality are multidimensional and the dimensions are industry-specific.

## 2.2 Customer Satisfaction

Recent interpretations in the consumer domain now couch satisfaction as a fulfilment response. Fulfilment implies that a consumption goal is known, as in basic motives of hunger, thirst, and safety. However, observers of human behaviour understand that these and other goals can be and frequently are modified and updated in

various ways. Thus, consumer researchers have moved away from the literal meaning of satisfaction and now pursue this concept as the consumer experiences and describe it. In [49], satisfaction is the consumer's fulfilment response. It is a judgment that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfilment, including levels of under or over-fulfilment. Hence, Satisfaction is an overall customer attitude towards a service provider while [50] concluded that [51] regard it an emotional reaction to the difference between what customers anticipate and what they receive. When customers are satisfied, they are more likely to return, while dissatisfied customers are more likely to go elsewhere [52,53,54].

Since, customer satisfaction is strongly influenced by the interaction between customers and employees [55], examining employee behaviour is critical. Employee behaviour, though, is strongly influenced by the operating organizational culture [56,57,58,59] "a system of shared values and beliefs that produces norms of behaviour and establishes an organizational way of life" [60]. Where the existing literature relates organisational culture and customer satisfaction, those links are either theoretical or indirect [61,62]. Quality of service is the focus of the assessment that reflects the customer's perception of the five specific dimensions of service. Conversely, satisfaction is more inclusive, that is, satisfaction is determined by the perception of service quality, product quality, price, situation factors, and personal factors [63], see Fig. 2.

Customer satisfaction has become a key intermediary objective in service operations due to the benefits it brings to organisations [64]. The importance of customer satisfaction is derived from the generally accepted philosophy that for a business to be successful and profitable, it must satisfy customers [65]. Previous research has demonstrated that satisfaction is strongly associated with re-purchase intentions [66,67]. Customer satisfaction also serves as an exit barrier, helping a firm to retain its customers [67,68]. Several studies have concluded that it costs more to gain a new customer than it does to retain an existing one [69,70]. In addition, customer satisfaction also leads to favourable word-of-mouth publicity that provides valuable indirect advertising for an organisation [68; 67]. In many industries, having satisfied customers also means that the organisation receives fewer

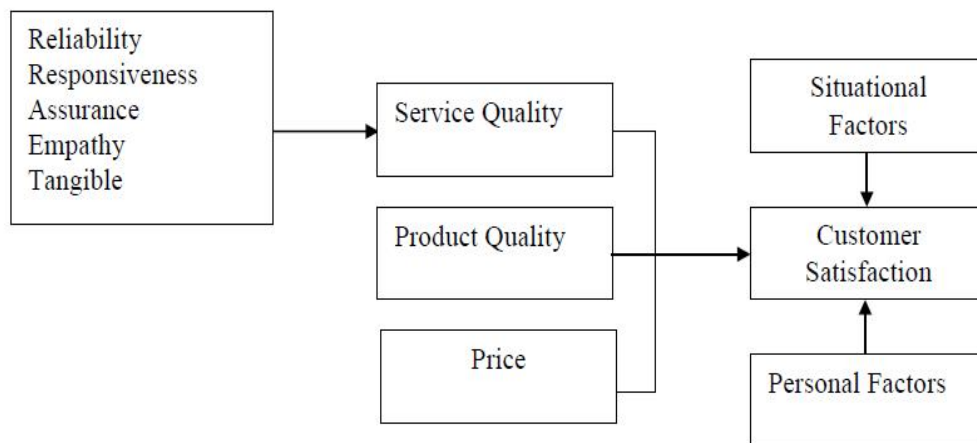
complaints [71,72], hence reducing costs in handling service failures. Researchers also maintain that satisfied customers are willing to pay more for the benefits they receive and are more likely to be tolerant of an increase in price [Fornell et al. 71,73]. Shin and Elliot [65] Concluded that, through satisfying customers, organisations could improve profitability by expanding their business and gaining a higher market share as well as repeat and referral business.

### 2.3 Relationship between Service Quality and Customer Satisfaction

To achieve a high level of customer satisfaction, most researchers suggest that a high level of service quality should be delivered by the service provider as service quality is normally considered an antecedent of customer satisfaction [66; 73; 15]. However, the exact relationship between satisfaction and service quality has been described as a complex issue, characterised by debate regarding the distinction between the two constructs and the casual direction of their relationship [74]. Parasuraman et al. [46] Concluded that the confusion surrounding the distinction between the two constructs was partly attributed to practitioners and the popular press using the terms interchangeably, which make theoretical distinctions difficult. Interpretations of the role of service quality and satisfaction have varied considerably [74,15,46], they confined satisfaction to relate to a specific transaction as service quality was defined as an attitude. This meant that perceived service quality was a global judgment, or attitude, relating to the superiority of the service.

Cronin and Taylor [15] argued against Parasuraman et al.'s [46] categorisation, finding empirical support for the idea that perceived service quality led to satisfaction and therefore argued that service quality was actually an antecedent of consumer satisfaction. Cronin and Taylor [15] asserted that consumer satisfaction appeared to exert a stronger influence on purchase intention than service quality, and concluded that the strategic emphasis of service organisations should focus on total customer satisfaction programs. The authors reasoned that consumers may not buy the highest quality service because of factors such as convenience, price, or availability and that these constructs may enhance satisfaction while not affecting consumers' perceptions of service quality. Cronin and Taylor [15] suggested that restricting the domain of service quality to long-term attitudes and consumer satisfaction to transaction-specific judgments.

However, [75] determined that service encounter satisfaction was quite distinct from overall satisfaction and perceived quality. Adding to the debate about the distinction between service quality and satisfaction, customer satisfaction has also been operationalised as a multidimensional construct along the same dimensions that constitute service quality [41]. Despite strong correlations between service quality and customer satisfaction, the authors determined that the two constructs exhibited independence and concluded that they were, in fact, different constructs, at least from the customer's point of view. Brady and Cronin [6], endeavoured to clarify the specification and nature of the service quality and satisfaction



**Fig. 2. Customer satisfaction model**

Source: [63]

constructs and found empirical support for the conceptualisation that service quality was an antecedent of the super ordinate satisfaction construct. In addition, the authors found that satisfaction explained a greater portion of the variance in consumers' purchase intentions than service quality. A reverse causal relationship has also been hypothesised between the two constructs. Rust and Oliver [47] maintained that while quality was only one of many dimensions on which satisfaction was based, satisfaction was also one potential influence on future quality perceptions. In recent years, organisations are obliged to render more services in addition to their offers. The quality of service has become an aspect of customer satisfaction. It has been proven by some researchers that service quality is related to customer satisfaction. In relating customer satisfaction and service quality, researchers have been more precise about the meaning and measurements of both satisfaction and service quality. Satisfaction and service quality have certain things in common, but satisfaction generally is a broader concept, whereas service quality focuses specifically on dimensions of service. Amidst these debates, it is clear that there is a strong relationship between service quality and customer satisfaction, it can be concluded that service quality had significant impacts on customer satisfaction. Sureshchandear et al. [41] found that service quality and customer satisfaction were highly related.

### 3. METHODOLOGY

#### 3.1 Research Design

This study adopted a survey research design on a population of 54,000 consumers of Ibadan Electricity Distribution Company (IBEDC) Olumo Business Hub with 11 Service Hubs (Table 1).

#### 3.2 Sample Size and Sampling Technique

Using [76] sample size determination approach, a total of 397 respondents were selected proportionally (Table 2) to maintain the distribution in the population as presented below;

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

Where;

N = Population size  
 e = Level of significance (0.05)  
 1 = Constant

Substituting the figures into the formula gave

$$n = \frac{54,000}{1 + 54,000(0.05)^2}$$

$$n = \frac{54,000}{1 + 135}$$

$$n = \frac{54,000}{136}$$

$$n = 397$$

#### 3.3 Measurement

For this study, a well-structured questionnaire which was divided into three sections was used for data collection. These are:

##### 3.3.1 Socio-demographic characteristics

Demographic information on customers' gender, age, marital status, occupation and highest educational qualification was collected for socio-demographic characteristics in this study.

##### 3.3.2 Service quality scale (SERVQUAL)

The SERVQUAL five dimensions suggested by [46; 77; 78,79] which was further modified to suit the service provider company was adopted with a 5-point Likert scale. The scale consisted of five SERVQUAL dimensions of reliability, responsiveness, assurance, empathy and tangibles which has 19 items with Cronbach's Alpha values for reliability (0.773), responsiveness (0.729), assurance (0.838), empathy (0.831) and tangibility (0.769).

##### 3.3.3 Customer satisfaction scale

For this study, a multi-item scale for measuring product/service satisfaction suggested was adopted with a 5-point Likert scale with Cronbach's Alpha value of 0.88 [80].

### 3.4 Reliability of the Instrument

Reliability is the “extent to which a measurement is free of variable errors” [81]. The most popular measure of reliability is the Cronbach’s coefficient alpha. In this study, Cronbach’s alpha reliability test was used to assess the reliability of

measurement scales with multi-point items relating to the components of service quality and customer satisfaction. Based on this, the Cronbach’s alpha test with the value of 0.7 per cent was considered acceptable to ensure reliability [82].

**Table 1. List of all service hubs under OLUMO business hub and their total number of customers**

S/N	Service hub	Location	Population of consumers
1	Adigbe	Adigbe	3,930
2	Ayetoro	Ayetoro	8,614
3	Iberekodo	Iberokodo	6,504
4	Ita-Oshin	Ita-Oshin	5,391
5	Itori	Itori	3,047
6	Itori 2	Itori	2,320
7	Kolobo	Kolobo	5,090
8	Lafenwa	Lafenwa	7,381
9	Obada	Obada	3,335
10	Rounder	Rounder	3,720
11	Sapon	Sapon	4,668
	TOTAL		54,000

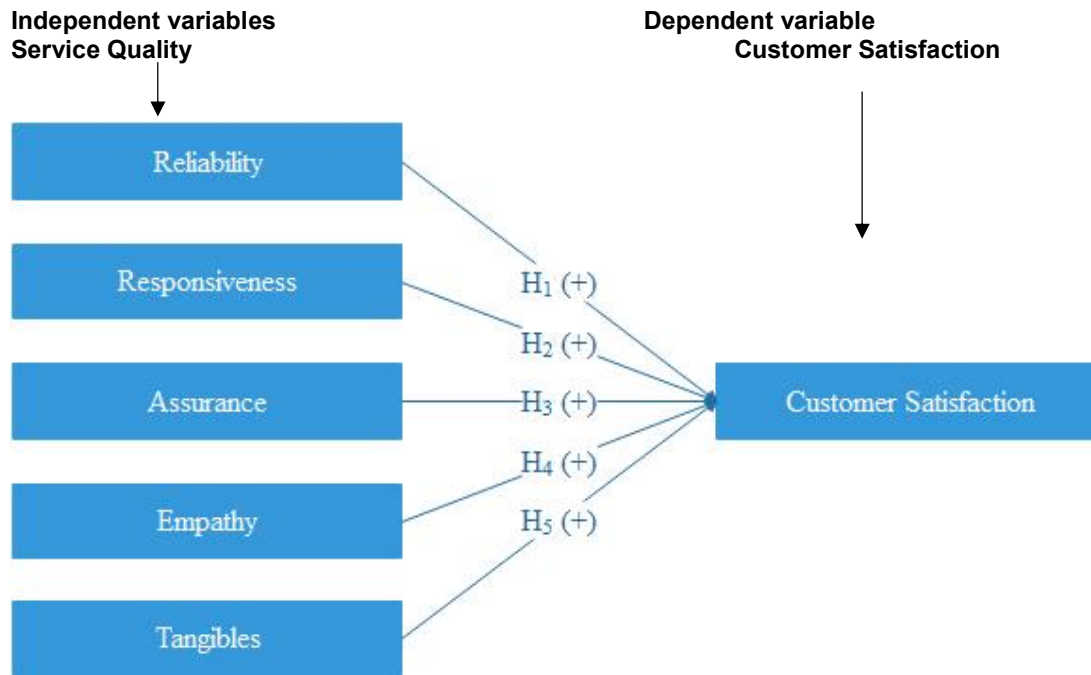
Source: Ibadan Electricity Distribution Companies (IBEDC), 2018.

**Table 2. Sample selected in each service hub using non-proportional sampling technique**

S/N	Service hub	Population	Sample size
1	Adigbe	3930	$\frac{3,930}{54,000} \times \frac{397}{1} = 29$
2	Ayetoro	8614	$\frac{8,614}{54,000} \times \frac{397}{1} = 63$
3	Iberekodo	6504	$\frac{6,504}{54,000} \times \frac{397}{1} = 48$
4	Ita-Oshin	5391	$\frac{5,391}{54,000} \times \frac{397}{1} = 40$
5	Itori 1	3047	$\frac{3,047}{54,000} \times \frac{397}{1} = 22$
6	Itori 2	2320	$\frac{2,320}{54,000} \times \frac{397}{1} = 17$
7	Kolobo	5090	$\frac{5,090}{54,000} \times \frac{397}{1} = 37$
8	Lafenwa	7381	$\frac{7,381}{54,000} \times \frac{397}{1} = 54$
9	Obada	3335	$\frac{3,335}{54,000} \times \frac{397}{1} = 25$
10	Rounder	3720	$\frac{3,720}{54,000} \times \frac{397}{1} = 27$
11	Sapon	4662	$\frac{4,662}{54,000} \times \frac{397}{1} = 35$
		54,000	397

Source: Researcher’s computation, 2018





**Fig. 3. IBEDC Service Quality and Customer Satisfaction Model**

Source: Researcher's computation, 2018.

### 3.5 Data Analysis

The data analysis was performed using structural equation modelling (SEM). In particular, the research model was analysed using partial least squares (PLS). PLS is an SEM technique that is used in predicting a set of dependent variables from a set of independent variables [83]. The data analysis was conducted in two phases: first, we established the psychometric validity of the scales used, through construct reliability and discriminant validity; and second, we investigated the hypothesised relationships among constructs using PLS.

The sample was chosen because it represented 50 per cent of the sample size considered for the study. The reliability of measurement items for each construct was assessed using Cronbach's alpha, convergent and discriminant validity was assessed using principal components analysis. Both assessments yielded acceptable results in all circumstances.

## 4. RESULTS AND DISCUSSION

### 4.2 Response Rate

All the questionnaires administered were duly completed and used for the analysis after data cleaning as presented in Table 3.

### 4.1 Pre-test

To validate the psychometric properties of the instruments used in the study, we pre-tested by carrying out a survey of 199 IBEDC customers.

### 4.3 Socio-Demographic Characteristics of Respondents

Demographic characteristics were considered to greatly influence some human decisions or decision-making process; hence, they were obtained from the sampled respondents and

**Table 3. Response rate**

S/N	Population	Sample size	Response			
			Returned	Completed	Not completed	Response rate (%)
1	Customers	397	397	397	0	100.0
<b>Total</b>		<b>397</b>	<b>397</b>	<b>397</b>	<b>0</b>	<b>100.0</b>

Source: Field Survey, 2018

depicted in Figures 4 to 7. From the study, 61.7 per cent were males while 38.3 per cent were female (Figure 4). Of the sampled respondents, the majority (82.8%) were married (Fig. 5). Also, the majority (34.3%) were between the age group of 25-34 years (Fig. 6) which indicates that respondents are still young and vibrant and are more likely to evaluate the service quality emanating from IBEDC. From the study, all the respondents have one form of education or

another and can, therefore, demonstrate an understanding of what attributes they want and how well these attributes have been satisfied (Fig. 7).

#### 4.4 Instrument Validity

The psychometric validity of the scales used was established through construct reliability and discriminant validity.

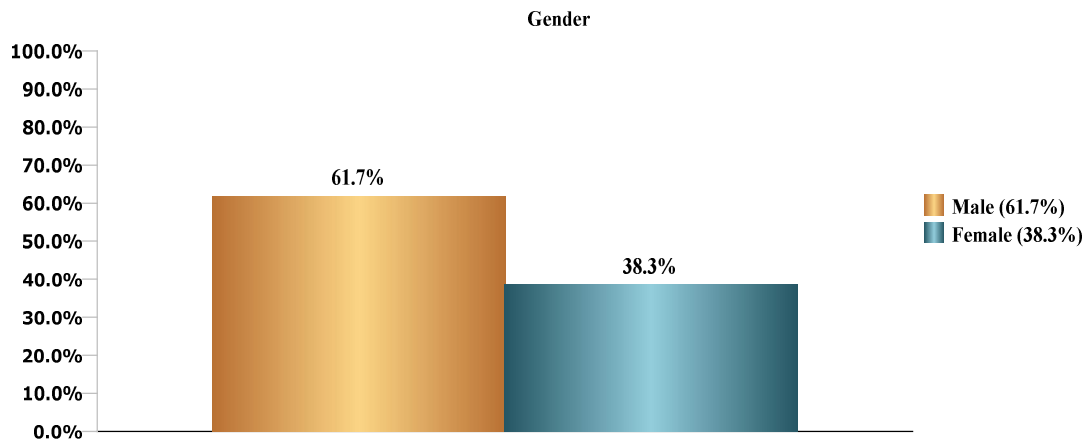


Fig. 4. Bar chart showing the distribution of customers according to gender

Table 4. Descriptive statistics and analysis of construct validity

	Indicator	Mean	Std. deviation	Loadings	P-Value
Customer Satisfaction (CUS)	CUS1 <- CUS	3.84	1.11	0.88	0.01
	CUS2 <- CUS	3.00	1.12	0.83	0.01
	CUS3 <- CUS	4.13	1.12	0.81	0.01
Reliability (REL)	REL1 <- REL	3.63	1.19	0.89	0.01
	REL2 <- REL	4.54	1.28	0.79	0.01
	REL3 <- REL	4.46	1.17	0.90	0.01
	REL4 <- REL	3.01	1.23	0.73	0.01
Empathy (EMP)	EMP1 <- EMP	4.18	1.09	0.85	0.01
	EMP2 <- EMP	3.38	1.12	0.88	0.01
	EMP3 <- EMP	3.16	1.21	0.77	0.01
	EMP4 <- EMP	4.05	1.37	0.91	0.01
Responsiveness (RESP)	RESP1 <- RESP	3.39	1.11	0.89	0.01
	RESP2 <- RESP	3.13	1.31	0.76	0.01
	RESP3 <- RESP	3.26	1.22	0.86	0.01
	RESP4 <- RESP	4.02	1.10	0.86	0.01
Tangibles (TAN)	TAN1 <- TAN	4.67	1.01	0.84	0.01
	TAN2 <- TAN	4.03	1.14	0.79	0.01
	TAN3 <- TAN	3.18	1.21	0.81	0.01
Assurance (ASS)	ASS1 <- ASS	3.22	1.27	0.97	0.01
	ASS2 <- ASS	3.16	1.09	0.79	0.01
	ASS3 <- ASS	4.18	1.17	0.76	0.01
	ASS4 <- ASS	4.14	1.31	0.81	0.01

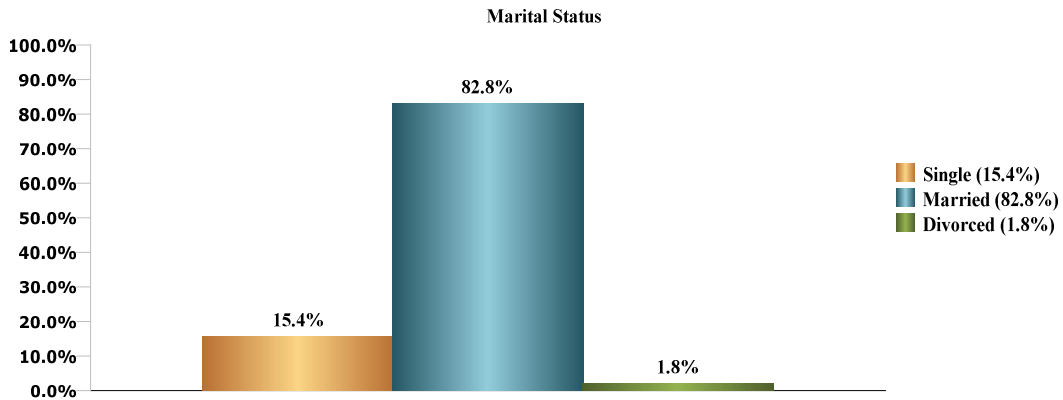


Fig. 5. Bar chart showing the distribution of customers according to marital status

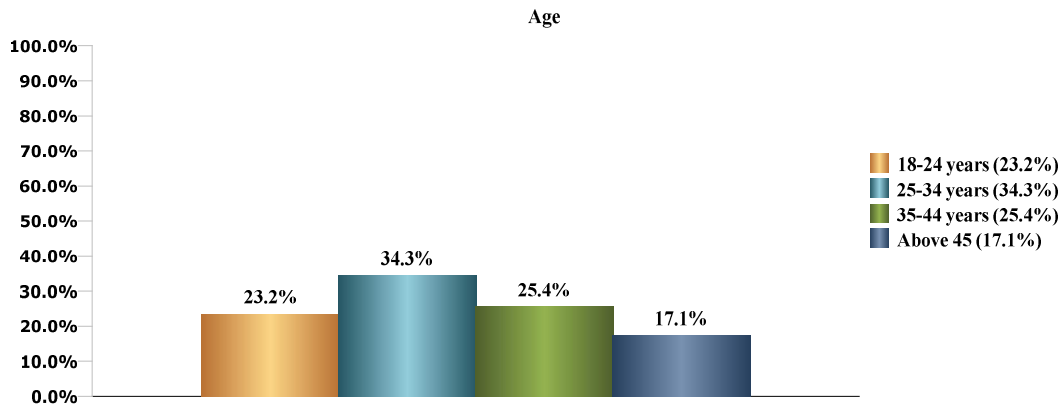


Fig. 6. Bar chart showing the distribution of customers according to age

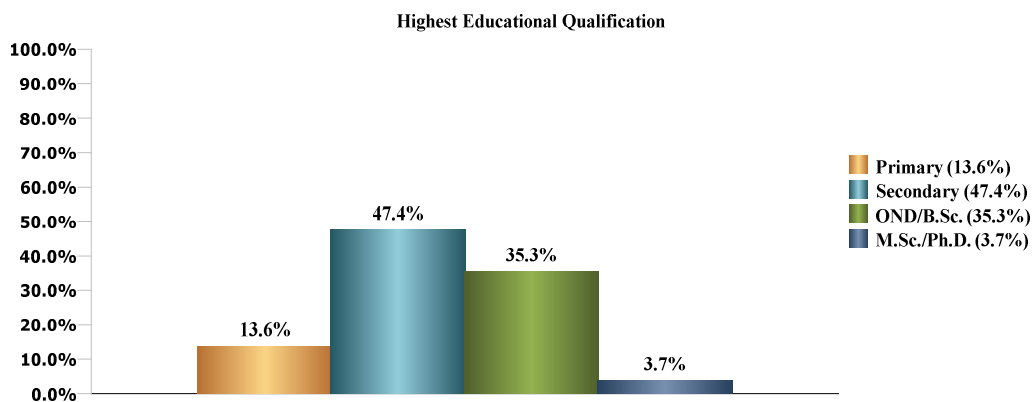


Fig. 7. Bar chart showing the distribution of customers according to educational qualification

Construct reliability was assessed using two measures of internal consistency: Cronbach's alpha and composite reliability. Both of them must assume values of above 0.70 to indicate an acceptable reliability [84]. Table 4 showed the

descriptive statistics while Table 5 showed the construct reliability.

The loadings of all items captured assumed a value above 0.70 (Table 4). Also, both

Cronbach's alpha and composite reliability were very high, revealing a high degree of internal coherence and good psychometric properties (Table 5).

To evaluate the discriminant validity, two tests were performed. First, the cross-loadings of measurement items on latent constructs were examined. In this test, discriminant validity is demonstrated when an item loads more highly on its intended construct than on any other construct. Following [85] this difference in loadings should be at least 0.10. In this test, all

items showed excellent discriminant validity (Table 6). Therefore, the model demonstrated high discriminant validity.

A second test of discriminant validity is to compare the AVE score for each construct. In the AVE test of discriminant validity, the square root of a given construct's AVE should be larger than any correlation of the given construct with any other construct in the model [84]. All of the results of this test were generally acceptable (Table 7).

**Table 5. Reliability scores**

Construct	Composite reliability	Cronbach's $\alpha$
Customer satisfaction (CUS)	0.815	0.854
Reliability (REL)	0.726	0.775
Empathy (EMP)	0.851	0.831
Responsiveness (RESP)	0.882	0.729
Tangibles (TAN)	0.876	0.769
Assurance (ASS)	0.908	0.839

**Table 6. Cross-loadings of measurement items to latent constructs**

	CUS	REL	EMP	RESP	TAN	ASS
CUS1	<b>0.8801</b>	0.6466	0.5395	0.2759	0.1201	0.1625
CUS2	<b>0.8311</b>	0.6028	0.6918	0.4516	0.1324	0.2158
CUS3	<b>0.8102</b>	0.6415	0.6975	0.4006	0.1471	0.5411
REL1	0.5071	<b>0.8987</b>	0.7272	0.3425	0.1521	0.3335
REL2	0.5199	<b>0.7941</b>	0.6211	0.3013	0.4101	0.1599
REL3	0.4058	<b>0.9010</b>	0.5247	0.3062	0.1657	0.2471
REL4	0.3090	<b>0.7320</b>	0.5059	0.2481	0.4714	0.4120
EMP1	0.4833	0.1533	<b>0.8533</b>	0.2312	0.4412	0.1368
EMP2	0.4789	0.2817	<b>0.8817</b>	0.1902	0.3942	0.1589
EMP3	0.5280	0.3714	<b>0.7714</b>	0.2339	0.2371	0.5142
EMP4	0.5807	0.2099	<b>0.9099</b>	0.4172	0.5147	0.3695
RESP1	0.623	0.4515	0.8183	<b>0.8183</b>	0.3925	0.3925
RESP2	0.5627	0.5042	0.8036	<b>0.8036</b>	0.2426	0.3312
RESP3	0.5234	0.5057	0.8082	<b>0.8082</b>	0.2187	0.2584
RESP4	0.6248	0.617	0.8015	<b>0.8015</b>	0.3333	0.1581
TAN1	0.2944	0.1521	0.2428	0.1661	<b>0.8412</b>	0.2661
TAN2	0.4093	0.1957	0.3951	0.3867	<b>0.7918</b>	0.4867
TAN3	0.4330	0.1474	0.3320	0.4867	<b>0.8907</b>	0.1867
ASS1	0.2111	0.1477	0.3511	0.1801	0.1811	<b>0.9723</b>
ASS2	0.2871	0.1899	0.1111	0.1871	0.2212	<b>0.7908</b>
ASS3	0.2689	0.2355	0.1455	0.2415	0.2330	<b>0.7609</b>
ASS4	0.3147	0.3957	0.2352	0.1456	0.2199	<b>0.8121</b>

**Table 7. Correlation of the latent variable scores with the square root of AVE in the diagonal**

Construct	CUS	REL	EMP	RESP	TAN	ASS
CUS	<b>0.8380</b>					
REL	0.4123	<b>0.8307</b>				
EMP	0.5144	0.5514	<b>0.8609</b>			
RESP	0.2314	0.3632	0.2211	<b>0.8173</b>		
TAN	0.5578	0.2228	0.3396	0.5843	<b>0.7444</b>	
ASS	0.6154	0.1478	0.4741	0.3594	0.4146	<b>0.8316</b>

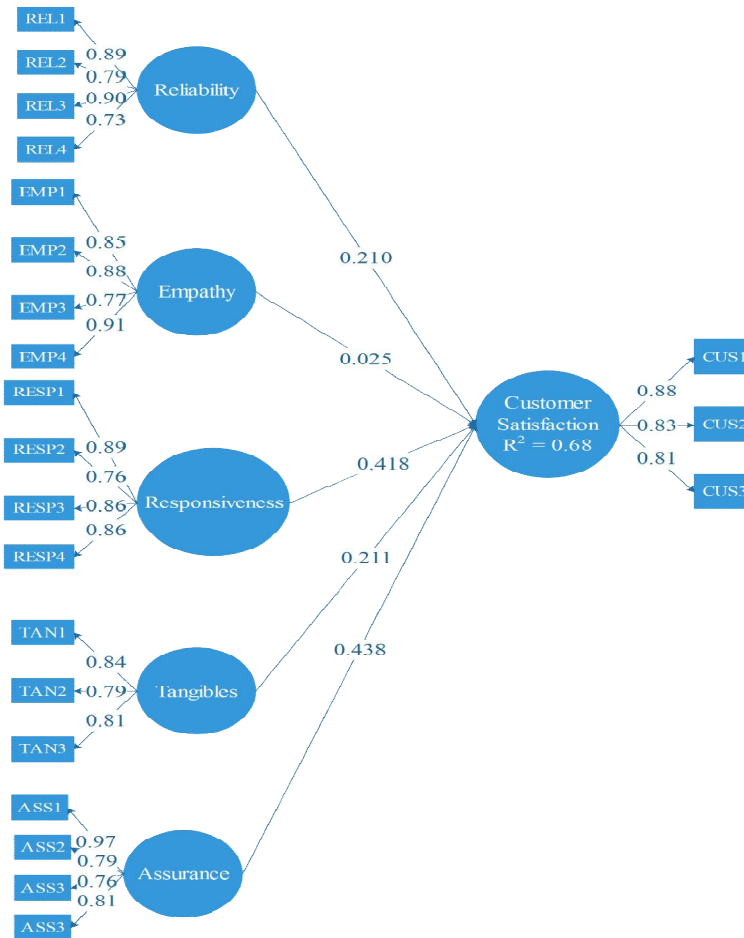


Fig. 8. Path diagram of PLS estimations

Table 8. Structural model estimates

	Original Sample	Standard Error	T Statistics	p-value
REL -> CUS	0.210	0.0311	1.1421	0.9425
EMP -> CUS	0.025	0.0541	1.1512	0.3315
RESP -> CUS	0.418	0.0112	1.0021	0.6847
TAN -> CUS	0.211	0.0547	0.5412	0.5472
ASS -> CUS	0.438	0.0314	0.9514	0.5879

#### 4.5 Structural Model Results

Table 8 revealed the results from the Structural Model that showed the contribution of the independent latent variables on the dependent latent variable. In particular, the results showed that the reliability of IBEDC had no significant effect on customer satisfaction as demonstrated by the p-value (0.210,  $p > 0.9425$ ). Therefore, the null hypothesis one was accepted. Empathy of IBEDC had no significant effect on customer satisfaction as demonstrated by the p-value (0.025,  $p > 0.3315$ ). Therefore, the null

hypothesis two was accepted. Responsiveness of IBEDC had no significant effect on customer satisfaction as demonstrated by the p-value (0.418,  $p > 0.6847$ ). Therefore, the null hypothesis three was accepted. Tangibles of IBEDC had no significant effect on customer satisfaction as demonstrated by the p-value (0.211,  $p > 0.5472$ ). Therefore, the null hypothesis four were accepted. Lastly, assurance of IBEDC had no significant effect on customer satisfaction as demonstrated by the p-value (0.438,  $p > 0.5879$ ). Therefore, the null hypothesis two was accepted. Overall, the study

revealed that service quality does not have any significant effect on customer satisfaction in IBEDC, Olumo hub, Ogun State.

## 5. CONCLUSION AND RECOMMENDATION

The broad objective of this study was to examine the effect of service quality on customer satisfaction at IBEDC since service quality has been an issue of major concern with its long-lasting impacts on customer satisfaction. The study has been successful in accomplishing its five research objectives and has been able to make contributions to the literature. Thus, based on the finding of the study the following conclusions were drawn:

First, on the part of the descriptive statistics findings, the study was able to present the opinion of customers with regard to IBEDC quality of service wherein the customers expressed that IBEDC services were not reliable. They expressed that IBEDC's provision of individualised attention to customers by its staff was very low. They also expressed that IBEDC's willingness or readiness of its staff to provide service to customers was very low. In addition, they expressed that IBEDC's physical facilities, the appearance of personnel and materials associated with the services they provide were not appealing. They expressed that IBEDC's staff's knowledge, courtesy and their ability to convey trust and confidence to customers was very low. Lastly, customers express a low level of satisfaction with IBEDC services.

Second, the study was able to analyse the variable (reliability, assurance, responsiveness, tangibles and empathy) influencing customer satisfaction. Thus, from the Partial Least Squares Structural Equation Modelling (SEM-PLS) analysis it was concluded that all the five dimensions of SERVQUAL had no significant effect on customer satisfaction.

Based on the findings from the study we, therefore, concluded that service quality does not have a significant effect on customer satisfaction in IBEDC, Olumo business hub. It was recommended that IBEDC should work hard on improving electricity supply to customers in Ogun State. IBEDC should ensure that staff are knowledgeable of customers' requests and problems. IBEDC staff should always listen to what the customer wants. IBEDC should encourage and welcome suggestions on

improving customer satisfaction. IBEDC should also fulfil promises made to customers by supplying them with transformers as well as prepaid meters to eliminate the distribution of estimated bills.

## COMPETING INTERESTS

Authors have declared that no competing interests exist. The company name used for this research is commonly and predominantly selected in our area of research and country. There is absolutely no conflict of interest between the authors and the company because we do not intend to use this company as an avenue for any litigation but the advancement of knowledge. Also, the research was not funded by the company rather it was funded by the personal efforts of the authors.

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