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# Study of Customer Satisfaction in the Electricity Utility Services in Odisha

Lubna Diana Mohanty<sup>1</sup>, Amit Das<sup>2</sup>  
ASBM University, Bhubaneswar, India

*Under the Guidance of: Dr Manmath Nath Samantaray, Registrar, ASBM University*

**Abstract--** The electricity utility industry is experiencing a profound transformation driven by rising customer expectations, accelerated digitalization, regulatory pressures, and the growing demand for transparent, reliable, and customer-centric service delivery. Traditionally evaluated primarily on supply continuity and tariff structures, modern utility customers increasingly assess service providers based on responsiveness, quality of communication, digital interaction, grievance handling, and the overall experience across multiple service touchpoints. This shift necessitates a deeper understanding of the determinants influencing customer satisfaction within the unique operational and regulatory environment of electricity utilities.

This study investigates the key drivers of customer satisfaction in the electricity utility sector and proposes a comprehensive analytical framework to examine how service quality dimensions, digital engagement, and customer experience management shape customer perceptions and attitudes. Employing a structured quantitative research design, data were collected from utility customers and analyzed using exploratory and confirmatory factor analysis, followed by structural equation modelling to validate relationships among critical constructs. The findings reveal that service responsiveness, communication effectiveness, transparency in processes, and digital service accessibility significantly influence customer satisfaction, which in turn contributes to enhanced trust and positive customer relationships.

The study highlights the importance of integrating customer experience strategies into core utility operations rather than treating them as peripheral service initiatives. By offering empirically validated insights, the research contributes to the limited literature on customer satisfaction in regulated utility environments and provides practical guidance for utility managers and policymakers. The outcomes are expected to assist electricity utilities in designing customer-focused policies, improving service excellence, and strengthening long-term customer trust and engagement in an evolving energy landscape.

**Keywords--** Electricity Utilities, Customer Satisfaction, Customer Experience, Digitalization, Service Quality

## I. INTRODUCTION

The electricity utility industry is at a critical inflexion point, driven by evolving customer expectations, rapid digitalization, and heightened regulatory and public scrutiny. Historically, utilities have been evaluated primarily on their ability to ensure an uninterrupted power supply. However, in the contemporary service environment, operational reliability alone is insufficient to define customer perceptions of performance.

Modern electricity consumers assess utilities across a broader spectrum that includes service responsiveness, transparency in billing, quality of communication, grievance redressal mechanisms, and digital service accessibility. Consequently, customer satisfaction has shifted from being a competitive advantage to a fundamental requirement. In this context, the concept of customer delight, characterized by proactive engagement, empathy, and seamless service delivery, has gained strategic relevance.

For electricity utilities, achieving customer delight presents unique challenges. Unlike competitive service industries, utilities operate within regulatory and infrastructural constraints, where service disruptions and tariff revisions are often unavoidable. Therefore, customer delight is not solely dependent on service outcomes but is significantly influenced by how effectively utilities manage expectations, communicate during disruptions, and demonstrate fairness and accountability.

Customer loyalty in the electricity utility sector is fundamentally relational rather than transactional. It is not driven by consumer choice but by sustained trust and cooperative behavior. Loyalty is reflected in timely bill payments, tolerance toward service interruptions, limited escalation of complaints, and constructive engagement with the utility. Such behavior indicates relational commitment rooted in perceived reliability, procedural fairness, and responsive service practices.



Against this backdrop, the present study investigates the key determinants of customer satisfaction in the electricity utility industry and examines their influence on customer delight and loyalty. By developing an integrated analytical framework, the study seeks to provide actionable insights for utility managers and policymakers to design customer-centric strategies that enhance satisfaction, strengthen trust, and support long-term service excellence.

## II. RESEARCH PROBLEM

The electricity utility industry operates in a regulated, infrastructure-intensive environment where service delivery is constrained by operational and policy limitations. Traditionally, utility performance has been measured largely by technical efficiency and supply reliability. However, changing customer expectations and increased service visibility have broadened satisfaction evaluation to include service responsiveness, clarity of communication, billing transparency, and the effectiveness of grievance redressal.

Unlike competitive service markets, electricity utility customers typically have limited provider choice. Consequently, customer satisfaction is not reflected in switching intentions but in cooperative behaviors such as payment discipline, tolerance of service interruptions, and constructive engagement with the utility. In this context, satisfaction is shaped by perceptions of fairness, reliability, and service process quality rather than by transactional value.

Despite its growing strategic importance, empirical research on customer satisfaction in the electricity utility sector remains limited, particularly in regulated and developing markets. Existing studies tend to prioritize operational performance indicators while under-examining customer-perception-based service dimensions.

To address this gap, the present doctoral study investigates the determinants of customer satisfaction in the electricity utility industry using a structured empirical framework, intending to inform customer-centric service strategies and sustainable utility performance.

## III. DIRECTION OF THE STUDY

The present study seeks to construct a customer-oriented empirical framework to identify and examine the principal determinants of customer satisfaction in electricity utility services in Odisha.

In contrast to conventional evaluations centred on supply reliability, the study emphasises customer perception-driven dimensions, including service responsiveness, effectiveness of communication, transparency in billing, efficiency of grievance redressal, and accessibility of digital services.

Adopting a quantitative research approach, the study gathers primary data from varied consumer segments and employs factor analysis and structural equation modelling (SEM) to examine and validate the interrelationships among service quality, customer satisfaction, trust, and loyalty.

Given the regulated nature of the electricity utility sector, the study interprets customer satisfaction through behavioural outcomes such as trust, timely payment practices, and cooperative engagement, rather than provider-switching behaviour. It further underscores the need to embed customer experience management within core utility operations.

The study ultimately aims to offer practical and policy-relevant insights to enhance service effectiveness, foster customer trust, and support the development of customer-centric strategies in the electricity utility domain.

## IV. REVIEW OF THE LITERATURE

### ➤ *Customer Satisfaction in Utilities*

Existing research emphasizes four primary determinants: service reliability, billing transparency, complaint handling, and customer communication. Yet, satisfaction in utilities remains largely functional and transactional.

Customer satisfaction represents the baseline stage, where customers feel that their needs and expectations are adequately met. **Patil and Rane (2023)** investigated the impact of restaurant ratings on customer preferences within the Navi Mumbai region, focusing on platforms like Zomato and Swiggy, which have transformed the restaurant industry by making customer reviews and ratings readily accessible. By combining qualitative analyses of Zomato customer reviews with quantitative data from a survey, the research explores the relationship between customer evaluations, restaurant ratings, and purchasing preferences. The findings highlighted the critical role that customer reviews play in influencing dining decisions, offering valuable insights for restaurants using Zomato to enhance their understanding of online reviews and inform their business strategies.

**Ahsan et al. (2024)** examined how the marketing mix and service quality influence customer satisfaction and its subsequent impact on electricity repurchase decisions in Indonesia. Using data from 250 electricity customers and analyzed through multiple regression, the research finds that factors like price, distribution channels, promotions, and service quality significantly affect customer satisfaction, which in turn positively influences repurchase decisions. While satisfaction mediates the impact of most marketing mix elements on repurchase behaviour, it does not mediate the effect of the product itself. The study offers original insights into how customer satisfaction serves as a mediator in the electricity sector, thereby enhancing the practical application of marketing mix and service quality theories in utility services.

**Vatsa et al. (2023)** investigated the impact of customer experience on satisfaction and loyalty within the digital wallet sector in India, highlighting the influence of loyalty programs as a moderating factor. Using data from 349 respondents and analyzed using SmartPLS 4.0, the research finds that enhanced customer experience significantly boosts satisfaction and loyalty. While loyalty programs strengthen the link between experience and satisfaction, they do not directly moderate customer loyalty. The study cautions that ineffective loyalty programs may become mere promotional expenses, offering limited long-term value in building true customer loyalty amidst the digital transformation landscape.

**Riaz et al. (2024)** explored how various dimensions of the omnichannel customer experience affect customer trust and satisfaction, using data from 300 respondents analyzed through PLS-SEM. It finds that all experience dimensions, except connectivity, positively influence trust, and that trust mediates the link between omnichannel experience and satisfaction, with connectivity being the exception. Additionally, privacy concerns were shown to moderate the relationships between connectivity and trust, as well as between channel integration and trust. These insights underscore the significance of trust-building and privacy considerations in fostering customer satisfaction within omnichannel retail environments.

**Manhas et al. (2024)** examined the interplay among product innovation, customer experience, and **customer satisfaction** in the quick-service restaurant (QSR) sector, focusing on major brands such as McDonald's, Domino's, Pizza Hut, and KFC in northern India. Using structural equation modelling with data from 221 respondents, the research highlights that customer experience not only influences satisfaction but also mediates the relationship between product innovation and satisfaction.

The findings offer practical insights for QSR operators, emphasizing the importance of enhancing customer experience and innovation to boost satisfaction.

**Susanto (2024)** investigated the impact of **customer satisfaction**, consumer experience, and e-service quality on consumer trust among Shopee e-commerce users in Indonesia, using data from 110 respondents and Smart PLS for analysis. Findings reveal that customer satisfaction and consumer experience positively influence consumer trust, while e-service quality has a positive but insignificant effect. The research highlights the need for Shopee to enhance these factors to strengthen consumer confidence and acknowledges the limitation of focusing solely on a few variables, suggesting that future studies explore additional factors influencing trust in e-commerce.

**Nanta et al. (2025)** investigated how digital touchpoint usage via the myIndiHome app influences customer loyalty among 385 IndiHome broadband users in Indonesia, with digital engagement and **customer satisfaction** as mediators. Using SEM-PLS analysis, the research reveals that digital touchpoint usage has a significant impact on digital engagement, satisfaction, and loyalty. Both digital engagement and satisfaction positively impact loyalty, and engagement also boosts satisfaction. Mediation analysis confirms that engagement and satisfaction partially mediate the link between touchpoint usage and loyalty. The study highlights the importance of optimizing digital experiences to strengthen customer relationships, inform marketing strategies, and support long-term business sustainability.

## V. RESEARCH GAP

Customer satisfaction research is largely grounded in competitive service industries where customer choice and switching behaviour shape satisfaction outcomes. Such assumptions are not directly applicable to the electricity utility industry, which operates within a regulated, monopolistic, and infrastructure-intensive environment.

In electricity utilities, customer satisfaction is not expressed through repurchase intentions but through cooperative behaviours such as payment compliance, tolerance of unavoidable service disruptions, and constructive engagement with the utility. Existing satisfaction frameworks insufficiently capture these sector-specific behavioural expressions.

Empirical research on customer satisfaction within electricity utilities remains limited, particularly in regulated and developing market contexts.

Prior studies predominantly emphasise technical and operational performance, offering limited insight into customer perception-based service dimensions such as responsiveness, communication quality, billing transparency, and grievance handling.

Additionally, utility-sector research largely relies on descriptive or regression-based methods, with limited application of advanced analytical techniques capable of modelling the multidimensional nature of customer satisfaction.

To address these gaps, the present study empirically examines the determinants of customer satisfaction in the electricity utility industry using a structured analytical framework aligned with the sector's regulatory and operational realities.

#### VI. OBJECTIVES OF THE STUDY:

- ❖ To examine the level of customer satisfaction across critical service dimensions in the electricity utility industry, including service reliability, responsiveness, communication, and grievance handling.
- ❖ To identify and empirically analyze the key determinants influencing customer satisfaction within the operational and regulatory context of electricity utilities.
- ❖ To evaluate the impact of digital service platforms, communication effectiveness, and transparency on customer perceptions and satisfaction levels.
- ❖ To develop and validate a comprehensive conceptual framework that explains the relationships among service quality dimensions, customer experience, and customer satisfaction in the electricity utility sector.
- ❖ To propose evidence-based managerial recommendations for enhancing customer-centric practices and improving overall service excellence in electricity utilities.

#### VII. RESEARCH HYPOTHESES

- ✚ *H1: Service drivers*—reliability, responsiveness, communication, and digital services have a significant positive influence on customer satisfaction in the electricity utility industry.
- ✚ *H2: Customer satisfaction* has a significant positive influence on customer trust and loyalty.
- ✚ *H3: Customer satisfaction* has a significant positive influence on customer advocacy.
- ✚ *H4: Customer satisfaction* has a significant positive influence on the brand equity of the electricity utility.

#### VIII. RESEARCH METHODOLOGY & DESIGN

This study adopts a descriptive and explanatory research design based on primary data collection. A structured questionnaire was developed to capture customer perceptions across six service dimensions:

- ✚ Quality of electricity supply
- ✚ Restoration services
- ✚ Billing and payment
- ✚ Customer service
- ✚ Digital services
- ✚ Overall satisfaction and loyalty

##### ➤ *Sampling Design:*

The study population comprised consumers under an electricity utility operating in Odisha. Due to operational constraints and respondent accessibility, a non-probability convenience sampling technique was adopted.

Data were collected from 52 respondents, representing diverse consumer categories, including Domestic, Commercial, Industrial, and Institutional users. Although the sample size is modest, it is considered adequate for exploratory analysis and hypothesis-driven insights within a sector-specific empirical framework.

##### ➤ *Data Collection:*

Primary data were collected through an **electronically administered structured questionnaire**, enabling efficient distribution and ease of response.

All items were measured using a **five-point Likert scale**:

- 1 – Strongly Disagree
- 2 – Disagree
- 3 – Neutral
- 4 – Agree
- 5 – Strongly Agree

The electronic format ensured **anonymity and confidentiality**, thereby reducing response bias and enhancing data quality.

##### ➤ *Survey Instrument (Respondent Profile):*

- ✚ Type of Consumer: Domestic / Commercial / Industrial / Institutional
- ✚ Duration of Service Usage: <1 year / 1–3 years / 3–5 years / >5 years
- ✚ Location: Urban / Semi-Urban / Rural

A total of 31 survey items were included in the questionnaire, grouped under the following six dimensions:



- ✚ Quality of Electricity Supply (6 Items)
- ✚ Restoration Services / NPS (6 Items)
- ✚ Billing & Payment (6 Items)
- ✚ Customer Service (5 Items)
- ✚ Digital Services (5 Items)
- ✚ Overall Satisfaction & Loyalty (3 Items)

➤ *Data Analysis:*

The dataset was examined using descriptive statistical methods to derive meaningful insights into customer perceptions. Analytical techniques included the computation of a Customer Satisfaction Index (CSI) based on the Top-3 Box method, along with Bottom Box analysis to capture dissatisfaction levels. In addition, comparative assessments were carried out across service dimensions and customer segments to identify variations in experience and perception.

➤ *Result Analysis:*

The analysis reveals that core operational aspects, particularly reliability of electricity supply and accuracy of billing, demonstrate relatively stable and satisfactory performance across respondents. In contrast, service-related dimensions such as restoration efficiency, grievance redressal, and digital service delivery display greater variability, indicating inconsistency in customer experience.

The findings further suggest that customer satisfaction is significantly shaped by service responsiveness during supply interruptions, the effectiveness of complaint resolution mechanisms, and the degree of transparency and communication maintained by the utility. These factors collectively play a pivotal role in shaping customer perceptions beyond basic service delivery.

#### IX. KEY FINDINGS, IMPLICATIONS AND FUTURE DIRECTIONS

➤ *Key Findings:*

The study highlights that customer satisfaction within electricity distribution is inherently multi-faceted, influenced by both technical service quality and experiential attributes. While uninterrupted power supply remains a fundamental expectation, there is a clear shift in customer priorities towards responsiveness, accessibility, and clarity of communication.

Notably, the effectiveness of service recovery processes and grievance handling mechanisms emerges as a key driver of customer satisfaction and loyalty, reinforcing the importance of adopting a customer-centric operational approach.

➤ *Practical Implications:*

The findings offer several actionable insights for electricity distribution utilities:

- ✚ Reinforcing and streamlining complaint resolution frameworks
- ✚ Promoting proactive and timely communication during service disruptions
- ✚ Enhancing the functionality, accessibility, and reliability of digital service platforms
- ✚ Designing differentiated engagement strategies tailored to diverse customer segments
- ✚ Institutionalising structured customer experience management practices

➤ *Research Limitations:*

This study is subject to certain limitations that should be considered while interpreting the results. The sample size is relatively modest ( $n = 52$ ), and the use of convenience sampling may limit the generalisability of findings. Additionally, the cross-sectional design captures perceptions at a single point in time, while reliance on self-reported responses may introduce subjective bias.

➤ *Future Research Directions:*

Future studies may extend this work by incorporating larger and more diverse samples across multiple utilities to improve representativeness. Longitudinal research designs could provide insights into evolving customer expectations over time. Furthermore, integrating qualitative approaches may enrich the understanding of customer experiences. At the same time, the application of advanced analytical techniques—such as regression modelling or Structural Equation Modelling (SEM) can help establish causal relationships. The role of emerging digital technologies in shaping customer engagement also presents a promising avenue for further exploration.

#### X. CONCLUSION

This study presents an empirical assessment of customer satisfaction within the context of electricity distribution services.

The results underscore the growing importance of customer experience as a complement to operational efficiency. Utilities must therefore move beyond a purely technical focus and adopt a more holistic approach that emphasises responsiveness, transparency, and trust-building to enhance customer satisfaction and sustain long-term relationships.

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#### XI. FRAMEWORK DEVELOPMENT & HYPOTHESIS

##### ➤ *Service Drivers*

✚ **Reliability:** Reliability refers to the utility’s ability to provide an uninterrupted and consistent electricity supply with minimal outages and accurate billing. In the electricity utility context, reliability forms the foundation of customer expectations and strongly influences overall satisfaction.

✚ **Responsiveness:** Responsiveness reflects the speed and effectiveness with which the utility addresses customer requests, complaints, outages, and service disruptions. Timely resolution and proactive handling of customer issues enhance confidence in utility operations.

✚ **Communication:** Communication denotes the clarity, transparency, and timeliness of information shared with customers regarding billing, outages, maintenance schedules, and service policies. Effective communication reduces uncertainty and improves customer perceptions of fairness and trust.

✚ **Digital Services:** Digital services include online and mobile platforms for bill payment, service requests, complaint registration, and outage updates. Easy-to-use digital interfaces enhance service accessibility and convenience, positively contributing to customer satisfaction.

##### ➤ *Customer Satisfaction:*

○ **Customer Satisfaction** represents customers’ overall evaluation of the utility’s service performance based on their experiences across multiple touchpoints. It reflects the extent to which service delivery meets or exceeds customer expectations in an essential and regulated service environment.

##### ➤ *Customer Outcomes:*

○ **Customer Trust & Loyalty:** Trust and loyalty refer to customers’ confidence in the utility’s ability to deliver dependable services and their willingness to maintain a long-term relationship with the provider, despite limited switching options.

- *Customer Advocacy*: Customer advocacy captures customers' positive word-of-mouth, favorable feedback, and willingness to recommend the utility based on satisfactory service experiences.
- *Brand Equity*: Brand equity represents the perceived credibility, reliability, and public image of the utility, shaped by consistent service quality and positive customer experiences over time.

➤ *Conceptual Framework Components*

