Impact of Digital Technology on Customer Satisfaction in Power Distribution Companies

Triveni Sanjay Dhus

Research Scholar

Professor (Dr) V. B. Bairagi

Research Guide
S.M.B.S.T. College, Sangamner

Abstract

In the present era of globalization and rapid technological advancement, power distribution companies are facing several new challenges. The increasing adoption of digital technology has emerged as a significant transformation in the power distribution sector, directly influencing customer service and customer satisfaction. Facilities such as online electricity bill payment, mobile applications, smart meters, digital platforms for grievance redressal, and e-governance have enabled customers to receive services that are more convenient, transparent, and timely.

The primary objective of this study is to examine the impact of digital technology used by power distribution companies on customer satisfaction. The study adopts a descriptive and analytical research methodology and utilizes both primary and secondary data. The findings reveal that digital technology has improved service quality and reduced customers' time and cost. However, technical difficulties, lack of digital literacy, and inadequate infrastructure in rural areas continue to pose significant challenges. The study concludes that effective policies and management strategies can further enhance customer satisfaction through the efficient use of digital technology.

Keywords

Digital Technology, Power Distribution Companies, Customer Satisfaction, E-Governance, Customer Service, Digital Transformation

Introduction

In the current era of globalization, competitive environments, and rapid technological advancement, fundamental changes are taking place in the service sector. Particularly in the power distribution sector, the increasing use of digital technology is considered a significant phase of transformation. The availability of facilities such as online electricity bill payment, mobile applications, smart meters, digital grievance redressal systems, and e-governance has led to the development of a customer-centric service system, replacing traditional service methods. As electricity is a basic necessity, the responsibility of power distribution companies has expanded beyond mere electricity supply to providing high-quality and satisfactory services. Increasing customer expectations, demand for service quality, transparency, and the efficiency of grievance redressal mechanisms play a vital role in determining customer satisfaction. In this context, the effective use of digital technology has become an essential strategic component for power distribution companies.

However, along with the benefits of digital transformation, several challenges have also emerged. Factors such as lack of digital literacy, technical difficulties, inadequate infrastructure in rural areas, and issues related to cybersecurity affect customer satisfaction. Therefore, it becomes necessary to conduct an in-depth study of the actual impact of digital technology on customer satisfaction in power distribution companies.

The objective of this research is to analyze the impact of digital technology used in power distribution companies on customer satisfaction. This study aligns with the broader theme of Emerging Global Challenges and attempts to present useful findings and suggestions for improving service quality in the power distribution sector.

Objectives of the Study

1. To examine the impact of digital technology used in power distribution companies on customer satisfaction.

2. To analyze the improvements in customer service achieved through digital services such as online bill payment, grievance redressal systems, and mobile applications.

3. To identify the major problems and challenges faced by customers during the implementation of digital technology.

Research Methodology

The study follows a descriptive and analytical research design. Both primary and secondary data were used. Primary data were collected through structured questionnaires from electricity consumers, while secondary data were collected from journals, reports, books, and official publications. Data were analyzed using percentages and simple statistical tools.

Sampling Design

Simple Random Sampling was adopted without any demographic classification.

Sample Size

The sample consists of 44 electricity consumers of Mahavitaran.

Justification of Sampling Method

Simple Random Sampling minimizes selection bias and is suitable for studies with a limited sample size.

Digital Technologies Used in Power Distribution Companies

In the present technology-driven era, significant changes have taken place in the operational systems of power distribution companies. The adoption of digital technology in place of traditional methods has made customer service, billing systems, grievance redressal processes, and administrative functions more efficient, faster, and more transparent. Due to rising customer expectations, increasing demand for service quality, and the need to improve operational efficiency, power distribution companies are increasingly using various digital tools. These digital technologies enable timely and convenient services for customers and contribute to enhanced customer satisfaction.

The major digital technologies used in power distribution companies are as follows:

- Online electricity bill payment systems (websites and mobile applications)
- Customer service facilities through mobile applications
- Digital and e-billing systems
- Bill and notification services via SMS and e-mail
- Smart meters and automated meter reading systems
- Digital grievance redressal systems
- Call centers and Interactive Voice Response (IVR) systems

- E-governance and online service portals

- Digital management of customer data (CRM systems)

- Digital payment modes (UPI, net banking, debit/credit cards)

Digital Technologies in Power Distribution Companies

In the contemporary technology-oriented environment, the functioning of power distribution companies has undergone substantial transformation. The shift from conventional practices to digital technologies has improved customer service, billing mechanisms, grievance redressal procedures, and administrative operations, making them simpler, faster, and more transparent. Increasing customer expectations, demand for service quality, and the need for greater efficiency have encouraged power distribution companies to adopt various digital tools. These technologies ensure timely and convenient service delivery and help in enhancing customer satisfaction.

An overview of the benefits of digital technologies used in power distribution companies is presented below:

- Availability of online electricity bill payment facilities

- Reduced need to visit offices for bill payment

- Increased transparency through digital and e-billing systems

- Online facilities for grievance registration

- Faster and more efficient grievance redressal processes

- Digital updates on grievance status

- 24×7 services through mobile applications

- Savings in customers' time and cost

- Improvement in service quality

- Increase in the level of customer satisfaction

Major Problems and Challenges Affecting Customer Satisfaction During the Implementation of Digital Technology

Although digital technology has brought several positive changes to customer service systems in power distribution companies, certain problems and challenges have emerged

during its effective implementation. Differences in digital literacy among customers, technical limitations, and lack of infrastructure prevent the expected benefits of digital services from reaching all sections of consumers. As a result, customer dissatisfaction may arise in some cases.
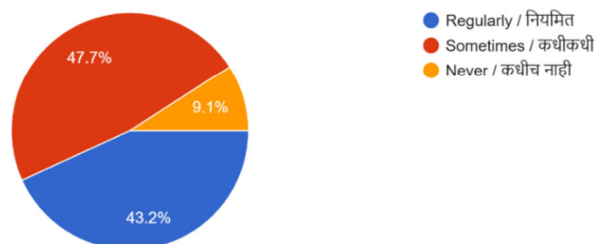
To maintain customer satisfaction, it is essential to analyze these challenges faced during the implementation of digital technologies. The major problems and challenges encountered by customers while using digital services in power distribution companies are outlined below:

- Lack of digital literacy, especially in rural areas
- Internet connectivity and network-related issues
- Technical failures and system errors
- Difficulties in using mobile applications and online portals
- Challenges faced by senior citizens in using digital services
- Fear related to cybersecurity issues
- Concerns regarding the safety of personal information
- Possible delays in digital grievance redressal
- Difficulty in ensuring equal access to digital services for all customers
- Lack of coordination between traditional and digital service systems

Information Analysis and Finding -

Do you use mobile apps or website for electricity services? (आपण मोबाईल ॲप / वेबसाइटचा वापर करता का?)

44 responses

- Regularly / नियमित
- Sometimes / कधीकधी
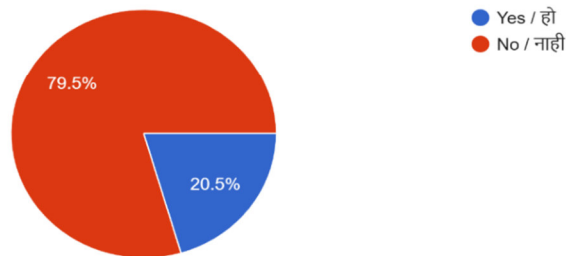- Never / कधीच नाही

47.7%
43.2%
9.1%

Explanation:

According to the above pie chart, consumers' opinions regarding the use of mobile applications or websites for electricity services are found to be varied. Out of the total respondents, 47.7 percent of consumers use mobile applications or websites sometimes, while 43.2 percent of consumers use digital platforms regularly. However, 9.1 percent of consumers never use mobile applications or websites for electricity services.

Have you used digital complaint redressal systems?(आपण डिजिटल तक्रार निवारण प्रणाली वापरली आहे का?)
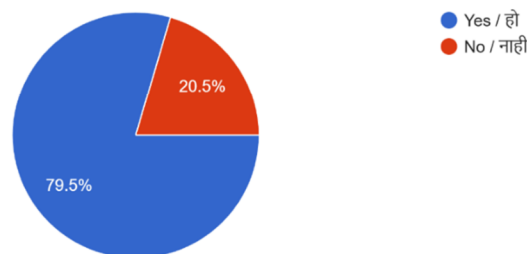44 responses

- Yes / हो
- No / नाही

79.5%
20.5%

Explanation:

According to the above pie chart, consumers' opinions regarding the use of the digital complaint redressal system are clearly varied. Out of the total respondents, 79.5 percent of consumers have not used (No) the digital complaint redressal system, whereas only 20.5 percent of consumers have used (Yes) this system.

Do you pay your electricity bill online? (आपण ऑनलाइन वीज बिल भरणा करता का?)
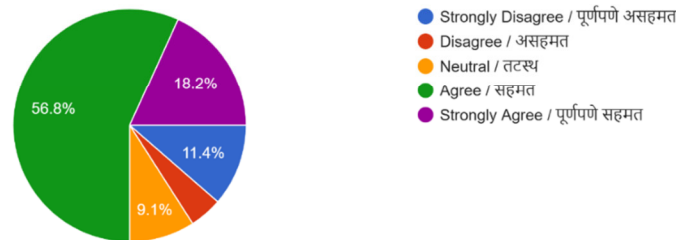44 responses

- Yes / हो
- No / नाही

20.5%
79.5%

Explanation:

According to the pie chart, the majority of respondents find the online bill payment system convenient. 58.8% of people agree and 18.2% strongly agree, showing a high level of positive response. However, 11.4% strongly disagree, indicating that some users do not find the system convenient at all. Additionally, 9.1% remain neutral, meaning they neither have a positive nor a negative opinion. Only around 2–3% disagree, which shows that the number of negative responses is very low. Overall, the results clearly indicate that most people have a positive perception of the online bill payment system.

Online bill payment system is convenient. (ऑनलाइन बिल भरणा सुविधा सोयीस्कर आहे.)
44 responses

Legend:
- Strongly Disagree / पूर्णपणे असहमत
- Disagree / असहमत
- Neutral / तटस्थ
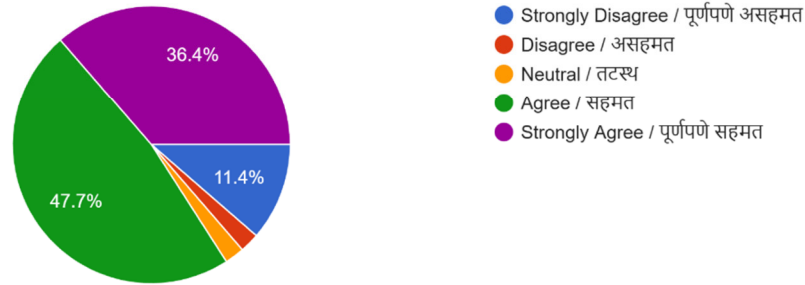- Agree / सहमत
- Strongly Agree / पूर्णपणे सहमत

Explanation:

According to the pie chart, the majority of respondents find the online bill payment system convenient. 56.8% of people agree and 18.2% strongly agree, showing a high level of positive response. However, 11.4% strongly disagree, indicating that some users do not find the system convenient at all. Additionally, 9.1% remain neutral, meaning they neither have a positive nor a negative opinion. Only around 2–3% disagree, which shows that the number of negative responses is very low. Overall, the results clearly indicate that most people have a positive perception of the online bill payment system.

Digital services save my time and cost. (डिजिटल सेवांमुळे वेळ व खर्च वाचतो.)
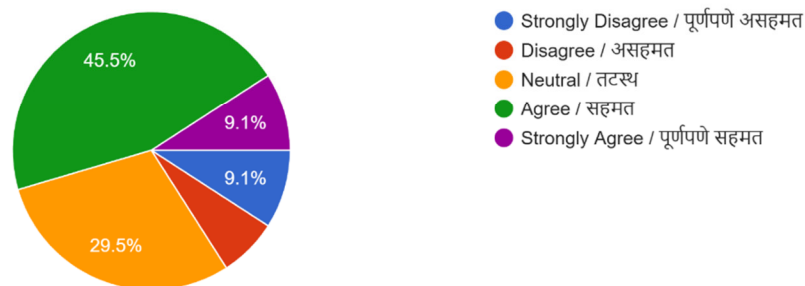44 responses

- Strongly Disagree / पूर्णपणे असहमत
- Disagree / असहमत
- Neutral / तटस्थ
- Agree / सहमत
- Strongly Agree / पूर्णपणे सहमत

Explanation:

According to the pie chart, most respondents believe that digital services help save both time and cost. 47.7% of people agree and 36.4% strongly agree, indicating a very high level of positive perception toward digital services. However, 11.4% strongly disagree, suggesting that a small group does not find these services beneficial in terms of time and cost. A very small percentage of respondents remain neutral or disagree, showing minimal uncertainty or negative opinion. Overall, the findings clearly reflect that the majority of users view digital services as efficient and cost-effective.

Digital complaint redressal system is effective. (डिजिटल तक्रार निवारण प्रणाली प्रभावी आहे.)
44 responses

- Strongly Disagree / पूर्णपणे असहमत
- Disagree / असहमत
- Neutral / तटस्थ
- Agree / सहमत
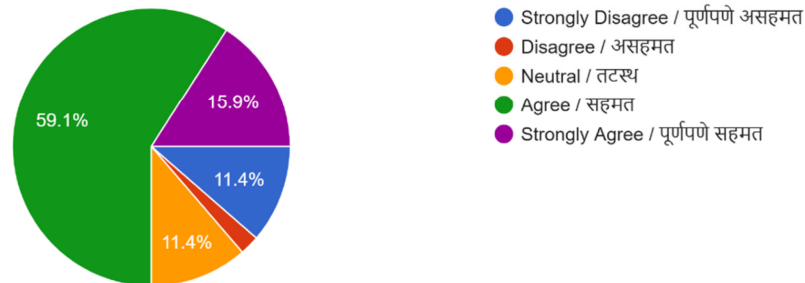- Strongly Agree / पूर्णपणे सहमत

Explanation:

According to the pie chart, a significant proportion of respondents believe that the digital complaint redressal system is effective. 45.5% of respondents agree that the system works well, while 9.1% strongly agree, showing a generally positive perception. However, 29.5% of respondents remain neutral, indicating that a considerable number of users are unsure about the system's effectiveness. On the negative side, 9.1% strongly disagree and a small percentage disagree, suggesting that some users have faced issues or are dissatisfied with the system.

Mobile apps / website are easy to use. (मोबाईल ॲप्स / वेबसाइट वापरण्यास सोपी आहे.)
44 responses

- Strongly Disagree / पूर्णपणे असहमत
- Disagree / असहमत
- Neutral / तटस्थ
- Agree / सहमत
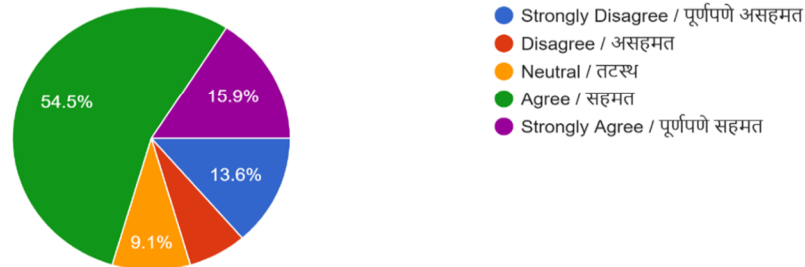- Strongly Agree / पूर्णपणे सहमत

Explanation:

According to the pie chart, the majority of respondents find mobile apps and websites easy to use. 59.1% of respondents agree and 15.9% strongly agree, showing a strong positive perception of usability. However, 11.4% remain neutral, indicating that some users are unsure about the ease of use. On the negative side, 11.4% strongly disagree and a very small percentage disagree, suggesting that a limited number of users face difficulties while using these digital platforms.

Overall service has improved due to digital services. (डिजिटल सेवांमुळे एकूण ग्राहक सेवा सुधारली आहे.)
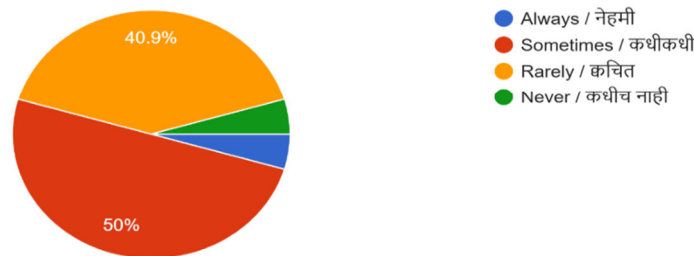44 responses

- Strongly Disagree / पूर्णपणे असहमत
- Disagree / असहमत
- Neutral / तटस्थ
- Agree / सहमत
- Strongly Agree / पूर्णपणे सहमत

Explanation:

According to the pie chart, most respondents believe that overall service has improved due to digital services. 54.5% of respondents agree and 15.9% strongly agree, indicating a strong positive perception of improvement in service quality. Meanwhile, 13.6% strongly disagree, suggesting that a noticeable group does not feel that digital services have led to better overall service. Additionally, 9.1% remain neutral, showing some uncertainty among users, and a small percentage disagree, reflecting limited dissatisfaction.

I face technical difficulties while using digital services. (डिजिटल सेवा वापरताना तांत्रिक अडचणी येतात.)
44 responses

- Always / नेहमी
- Sometimes / कधीकधी
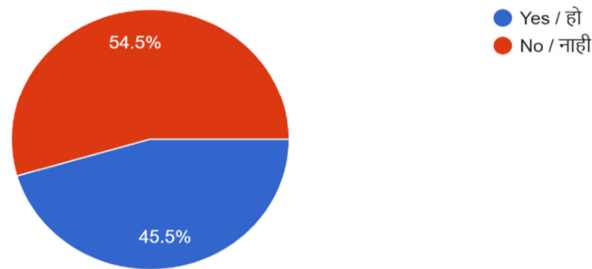- Rarely / कचित
- Never / कधीच नाही

Explanation:

According to the pie chart, a large proportion of respondents experience technical difficulties while using digital services at least occasionally. 50% of respondents report that they sometimes face technical issues, indicating that such problems are fairly common. Meanwhile, 40.9% say they rarely face difficulties, suggesting that for many users, technical

problems are infrequent. Only a small percentage report that they always face technical difficulties, while a very small group say they never encounter such issues.

Internet connectivity is a problem. (इंटरनेट कनेक्टिव्हिटी ही समस्या आहे का?)
44 responses

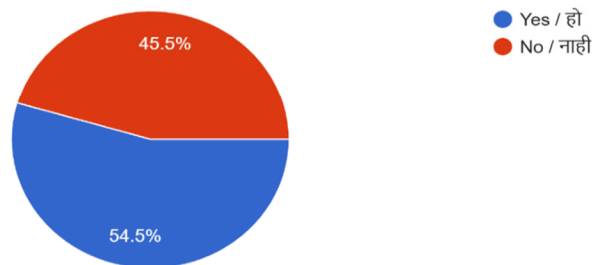
- Yes / हो
- No / नाही

54.5%
45.5%

Explanation:

According to the pie chart, opinions are fairly divided on whether internet connectivity is a problem. 54.5% of respondents say "No," indicating that more than half of the users do not consider internet connectivity to be a major issue. On the other hand, 45.5% of respondents say "Yes," showing that a significant portion of users still experience problems with internet connectivity.

Guidance is needed for using digital services. (डिजिटल सेवांसाठी मार्गदर्शनाची गरज वाटते का?)
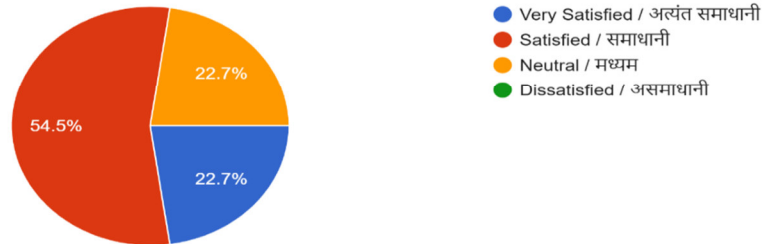44 responses

- Yes / हो
- No / नाही

45.5%
54.5%

Explanation:

According to the pie chart, respondents are almost evenly divided on whether guidance is needed for using digital services. 54.5% of respondents say "Yes," indicating that more than half of the users feel they require guidance or support while using digital platforms. On the

other hand, 45.5% say "No," suggesting that a significant number of users are comfortable using digital services without additional help.
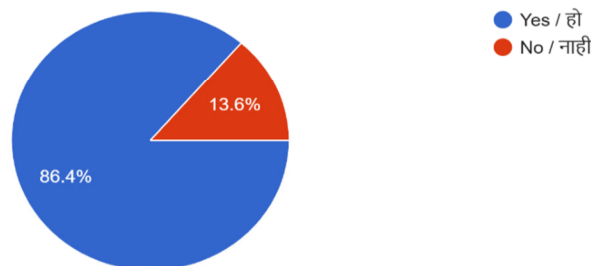
How satisfied are you with digital services? (डिजिटल सेवांमुळे आपण कितपत समाधानी आहात?)
44 responses

- Very Satisfied / अत्यंत समाधानी
- Satisfied / समाधानी
- Neutral / मध्यम
- Dissatisfied / असमाधानी

22.7%
54.5%
22.7%

Explanation:

According to the pie chart, a majority of respondents express a positive level of satisfaction with digital services. 54.5% of respondents report being satisfied, indicating that more than half of the users are happy with the overall performance of digital services. Meanwhile, 22.7% say they are very satisfied, showing a strong level of approval among a significant group of users. On the other hand, 22.7% remain neutral, suggesting that some users neither feel clearly satisfied nor dissatisfied. Notably, there is little to no representation of dissatisfaction, indicating minimal negative feedback.

Do you think digital services need improvement? (डिजिटल सेवांमध्ये सुधारणा आवश्यक आहे असे वाटते का?)
44 responses

- Yes / हो
- No / नाही

86.4%
13.6%

Explanation:

The pie chart shows that a strong majority of respondents believe digital services need improvement. 86.4% answered "Yes," indicating that most users feel there are areas where digital services can be enhanced, such as usability, accessibility, or efficiency. In contrast, 13.6% answered "No," suggesting that only a small portion of users are satisfied with the current level of service and do not see a need for further changes.

Conclusion

1. The use of digital services is increasing, but improving digital literacy and making apps/websites more user-friendly is still necessary.

2. There is a need to raise awareness about the digital complaint redressal system.

3. Most users have adopted online bill payment, though some still prefer traditional methods.

4. The majority find the online payment system convenient, showing an overall positive trend.

5. Most respondents believe digital services save time and cost.

6. The complaint redressal system is considered effective, but there is scope for improvement.

7. Most users find mobile apps and websites easy to use and navigate.

8. Digital services are seen as improving overall service quality and efficiency.

9. Technical issues occur occasionally, indicating a need for better system reliability.

10. Internet connectivity has improved, but some users still face difficulties.

11. Many users still need guidance, highlighting the importance of user support.

12. Overall satisfaction is high, though further improvement is possible.

13. In general, there is a clear demand for continuous improvement in digital services.

Suggestions:

1. Improve digital literacy programs by providing training sessions, video tutorials, and simple user guides for customers.

2. Make the app and website more user-friendly with simple language, clear menus, and fewer steps to complete services.

3. Increase awareness of the digital complaint redressal system through SMS, social media, bill notifications, and posters at service centers.

4. Strengthen customer support services by introducing helplines, live chat, and faster response systems.

5. Reduce technical issues by improving system infrastructure and performing regular maintenance.

6. Address internet connectivity challenges by offering low-data or offline service options in areas with poor network coverage.

7. Encourage online payments by offering incentives such as discounts, cashback, or reward programs.

8. Build trust in security and privacy by clearly communicating safe transaction practices and data protection measures.

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