

Operational and Financial Performance of Public Sector DISCOMs in Karnataka: A Comparative Analysis

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Publication Date: 2026/10/17

Abstract: This study evaluates the operational and financial performance of five public sector electricity distribution companies in Karnataka-BESCOM, CHESCOM, GESCOM, HESCOM, and MESCOM from 2016-17 to 2024-25. Operational indicators include billing, collection, and AT&C efficiency; financial indicators comprise average cost of supply, average revenue realised, and the ACS-ARR gap. Secondary data were obtained from Power Finance Corporation reports and the India Climate and Energy Dashboard. MESCOM recorded the highest mean billing and AT&C efficiency, lowest supply cost, and narrowest ACS-ARR gap. BESCOM achieved the highest collection efficiency and revenue realisation. Overall, MESCOM ranked first, followed by BESCOM, CHESCOM, GESCOM, and HESCOM. The Two-Way ANOVA revealed significant differences among DISCOMs and across financial years on the performance indicators. The findings highlight the need for loss reduction, cost control, and improved billing, collection, and revenue realisation to strengthen the operational efficiency and financial sustainability of Karnataka's distribution sector.

Keywords: Karnataka DISCOMs, Operational Performance, Financial Performance, Mean, Rank, ANOVA.

How to Cite: Parashuram Mohansing Devi; Dr. Mallikarjun M. Maradi (2026) Operational and Financial Performance of Public Sector DISCOMs in Karnataka: A Comparative Analysis. *International Journal of Innovative Science and Research Technology*, 11(10), 814-821. <https://doi.org/10.38124/ijisrt/26oct653>

I. INTRODUCTION

Economic growth and societal well-being are closely linked to the availability of efficient infrastructure, with electricity playing a critical role in supporting economic and social development (Patyal et al., 2023). Within the power sector, distribution utilities constitute the final interface between the electricity supply system and consumers and play a crucial role in the overall performance of the electricity value chain. Consequently, their operational efficiency and financial viability are essential for reducing distribution losses, ensuring reliable electricity supply, and maintaining the sustainability of the power sector (Patyal et al., 2023; Sarangi et al., 2021).

Karnataka's power sector has undergone a series of reforms aimed at strengthening the operational and financial performance of electricity distribution utilities. The state joined the Ujwal DISCOM Assurance Yojana (UDAY) in 2016, which focused on the operational and financial turnaround of state-owned DISCOMs (Ministry of Power, 2016). Distribution-sector improvements were further supported through the Integrated Power Development Scheme (IPDS), which emphasised strengthening sub-

transmission and distribution networks, metering, and IT-enabled distribution systems. More recently, the Revamped Distribution Sector Scheme (RDSS), launched in 2021, has focused on improving the operational efficiency and financial sustainability of DISCOMs through reduction of AT&C losses and the ACS-ARR gap, infrastructure modernisation, and smart metering (Ministry of Power, 2021). Alongside these distribution reforms, Karnataka has strengthened renewable-energy integration through amendments to the Karnataka Solar Policy 2014-2021 and the Karnataka Renewable Energy Policy 2022-2027 (Government of Karnataka, 2015, 2022)

The present study evaluates the operational and financial performance of electricity distribution utilities (DISCOMs) in Karnataka. The study has four broad objectives: to assess the operational and financial performance of BESCOM, CHESCOM, GESCOM, HESCOM, and MESCOM during 2016-17 to 2024-25; to compare their overall performance using key operational indicators Billing Efficiency, Collection Efficiency, and AT&C Efficiency and financial indicators-Average Cost of Supply (ACS), Average Revenue Realised (ARR), and the ACS-ARR Gap; to examine whether performance varies

significantly across DISCOMs and financial years; and to suggest measures for improving their operational efficiency and financial performance. The study is based on secondary data obtained primarily from the Power Finance Corporation (PFC) reports on the performance of power utilities, supplemented by relevant government and regulatory sources.

II. REVIEW OF LITERATURE

Kannan & Pillai, (2001) linked the financial deficits of India's State Electricity Boards to rising costs, operational inefficiency, excessive staffing and inadequate tariffs, recommending greater autonomy, rational pricing and timely government compensation. Panda, (2003) found that reforms in Orissa improved billing and accountability, but persistent losses and financial constraints required stronger management and financial support. Thakur et al., (2005) highlighted the Electricity Act, 2003's potential to promote competition and regulatory reform, while identifying challenges in network pricing, cross-subsidies and transmission capacity. Jayalakshamma, (2013) reported improved revenue collections and collection efficiency in BESCOM, recommending stronger collections and reduced liabilities. Ramaswamy, (2013) identified rising electricity demand, shortages and T&D losses in India, advocating supply improvements, loss reduction and renewable energy expansion. Mohanty & Mohanty, (2014) attributed Odisha's high AT&C losses largely to poor billing efficiency and recommended improved metering, energy audits and network upgrades.

Gupta & Nath, (2015) found substantial AT&C loss reductions in Delhi's DISCOMs after restructuring, but continuing revenue deficits and high power purchase costs made a 50% tariff reduction financially unviable. Fukumi, (2016) observed improvements in electricity consumption and AT&C losses across Indian states, although weak utility finances and interstate disparities persisted. Rajkumari & Gayithri, (2018) reported improved technical and financial performance in Karnataka, with its performance ranking rising from eighth to third, despite continuing shortages and uneven cost recovery. Bhambra & Dessai, (2018) found that the Goa Electricity Department performed relatively well operationally but remained financially weak, recommending improved collections, infrastructure and cost control. Jamasb et al., (2018) estimated average cost efficiency of 52 Indian distribution utilities at 69.3% and highlighted the importance of institutional quality and stronger regulation. Sharma et al., (2019) found improved post-reform performance in PSPCL through lower energy deficits, T&D losses and staffing intensity, alongside better cost recovery.

Maurya, (2020) found that Uttar Pradesh's utilities continued to face high losses and cost–revenue gaps despite improvements after 2012-13. Singh & Vashishtha, (2020) reported reduced AT&C losses and improved finances in Haryana under UDAY, while unpaid domestic bills required stronger billing and collection. Halli & Kadakol, (2021) observed declining T&D losses in HESCOM and Torrent Power, although HESCOM's losses remained higher. Dr.

Geeta. R. Nandur, (2021) identified power cuts and inadequate interruption notices as major concerns among GESCOM consumers, recommending better reliability, complaint handling and communication. Pravinbhai & Kshatriya, (2022) found significant differences in net profit margins between NTPC and GUVNL, but no significant differences in return on assets or current ratios. Mr.N.Vishnumayi Singh & Dr.S.Robita, (2022) reported satisfactory liquidity and low receivable days in Gujarat's DISCOMs, while recommending improvements in weak profit margins.

Kumbar, (2023) reported improved peak-demand adequacy in Karnataka, although rising supply costs, subsidy obligations and short-term power purchases strained utility finances. Jain & Sharma, (2025) found that Gujarat's DISCOMs were generally profitable, while Rajasthan's incurred losses, emphasising subsidy reimbursement, electricity monitoring and smart metering. Biswas et al., (2025) found that UDAY's debt restructuring reduced borrowing costs and improved financial stability, particularly among older and larger DISCOMs, while persistent billing and operational inefficiencies required further reforms.

➤ Research Gap

Existing studies on electricity distribution utilities have largely focused on individual DISCOMs, specific states, or selected aspects of operational and financial performance. Limited attention has been given to an integrated comparison of all five public sector DISCOMs in Karnataka using a common set of indicators over a recent, extended period. In particular, comparative evidence on their operational efficiency, cost recovery, and overall performance remains limited. The present study addresses this gap by examining billing, collection, and AT&C efficiency alongside average cost of supply, average revenue realised, and the ACS-ARR gap during 2016-17 to 2024-25. It combines composite performance rankings with statistical tests to assess differences among DISCOMs and across financial years on the selected operational and financial performance indicators.

➤ Objectives of the Study

The present study aims to:

- Assess the operational and financial performance of public sector DISCOMs in Karnataka from 2016-17 to 2024-25.
- To comparatively evaluate the performance of DISCOMs by examining variations in performance indicators across DISCOMs and across the study period.

III. RESEARCH METHODOLOGY

- Research Design: The study adopts a quantitative, descriptive and comparative research design to evaluate the operational and financial performance of Karnataka DISCOMs.
- Period of Study: The study covers nine financial years, from 2016-17 to 2024-25.

- **Sample and Sampling Technique:** The study includes all five state-owned DISCOMs in Karnataka—BESCOM, CHESCOM, GESCOM, HESCOM and MESCOM. Accordingly, a census approach is adopted rather than a sampling technique. The dataset comprises 45 DISCOM-year observations for each indicator.
- **Sources of Data:** The study relies on secondary data obtained from the Power Finance Corporation's Reports on Performance of Power Utilities and the India Climate and Energy Dashboard.
- **Performance Indicators:** Following the Dashboard's classification, operational performance is assessed through Billing Efficiency, Collection Efficiency and AT&C Efficiency. Financial performance is evaluated through Average Cost of Supply (ACS), Average Revenue Realised (ARR) and the ACS-ARR Gap.
- **Tools and Techniques of Analysis:** The simple arithmetic mean is used to calculate the nine-year average of each indicator for each DISCOM. Indicator-wise ranks are assigned, with higher values preferred for Billing Efficiency, Collection Efficiency, AT&C Efficiency and ARR, and lower values preferred for ACS and the ACS-ARR Gap. The ranks within each category are averaged to obtain composite operational and financial scores. These category scores are then averaged to derive an overall performance score and rank, with a lower score indicating better relative performance. Two-factor ANOVA without replication is applied separately to each indicator to test differences among DISCOMs and across financial years.

• *Performance Indicators of DISCOMs.*

The performance of Karnataka DISCOMs is assessed using six indicators classified into operational and financial dimensions. Billing Efficiency, Collection Efficiency, and AT&C Efficiency represent operational performance, while Average Cost of Supply (ACoS), Average Revenue Realised (ARR), and the ACS-ARR Gap represent financial performance.

- ✓ **Billing Efficiency (%)** measures the proportion of energy input into the distribution system that is successfully billed to consumers. It reflects the ability of a DISCOM to control distribution losses and accurately account for electricity supplied. A higher billing efficiency indicates better operational performance.
- ✓ **Collection Efficiency (%)** represents the proportion of the amount billed to consumers that is actually realised

by the DISCOM. It reflects the effectiveness of revenue collection and recovery mechanisms. Higher collection efficiency indicates stronger revenue realisation and cash-flow management.

- ✓ **AT&C Efficiency (%)** represents the proportion of energy and associated revenue effectively realised after accounting for aggregate technical and commercial losses. In this study, it is expressed as 100 minus AT&C Loss (%). A higher AT&C efficiency indicates better overall operational performance in energy accounting, billing, and collection.
- ✓ **Average Cost of Supply (ACoS) (₹/kWh)** represents the average cost incurred by a DISCOM in supplying one unit of electricity to consumers. It captures the cost burden associated with electricity procurement and distribution. Lower ACoS, subject to maintaining service quality, generally reflects greater cost efficiency.
- ✓ **Average Revenue Realised (ARR) (₹/kWh)** measures the average revenue realised by a DISCOM for each unit of electricity sold. It reflects the utility's ability to recover revenue from electricity supplied to consumers. A higher ARR indicates greater revenue realisation per unit of electricity sold.
- ✓ **ACS-ARR Gap (₹/kWh)** represents the difference between the average cost of supplying electricity and the average revenue realised per unit. It is an important indicator of the financial sustainability of a DISCOM. A positive gap indicates that the cost of supply exceeds revenue realisation, whereas a zero or negative gap indicates improved cost recovery and financial performance.

• *Hypotheses of the Study*

The null hypotheses were tested separately for six operational and financial performance indicators: Billing Efficiency, Collection Efficiency, AT&C Efficiency, Average Cost of Supply (ACS), Average Revenue Realised (ARR), and the ACS-ARR Gap. Two null hypotheses were formulated for each indicator: the first assumed no significant difference in mean performance among BESCOM, CHESCOM, GESCOM, HESCOM, and MESCOM, while the second assumed no significant difference across the financial years 2016-17 to 2024-25. Accordingly, 12 hypothesis tests were conducted using two-factor ANOVA at 5% significance level. These tests assesses whether the observed variations across DISCOMs and over time were statistically significant or not.

IV. RESULTS AND DISCUSSIONS

Table 1 Operational Performance of the Public Sector DISCOMs in Karnataka

Billing Efficiency (BE)											
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Mean	Rank
BESCOM	86.81	86.83	87.73	88.01	88.27	88.77	90.79	90.87	91.48	88.84	2
CHESCOM	86.9	86.8	87.96	88.88	87.25	88.68	89.78	90.62	91.24	88.68	3
GESCOM	82.67	83.61	85.59	88.78	88.28	89.46	89.51	90.44	89.58	87.55	4
HESCOM	84.45	85.24	85.38	85.9	86.75	86.18	84.28	85.19	87.86	85.69	5
MESCOM	87.09	88.68	89.48	89.93	90.14	90.98	91.58	91.37	91.66	90.10	1
Collection Efficiency (CE)											

BESCOM	98.03	100	95.99	94.92	95.24	100	96.07	98.79	95.64	97.19	1
CHESCOM	92.91	100	91.06	88.15	91.38	100	100	100	100	95.94	4
GESCOM	99.36	100	84.85	93.22	93.2	100	90.21	100	96.58	95.27	5
HESCOM	96.76	90.53	87.98	98.59	98.95	100	97.15	96.34	100	96.26	2
MESCOM	92.5	96.71	91.51	94.16	97.32	100	99.15	95.79	98.17	96.15	3
AT&C Efficiency (ATCE)											
BESCOM	85.09	86.83	84.21	83.55	84.07	88.77	87.22	89.77	87.5	86.33	2
CHESCOM	80.73	86.8	80.09	78.35	79.73	88.68	89.78	90.62	91.24	85.11	3
GESCOM	82.14	83.61	72.62	82.76	82.27	89.46	80.75	90.44	86.52	83.40	4
HESCOM	81.71	77.16	75.12	84.69	85.84	86.18	81.88	82.08	87.86	82.50	5
MESCOM	80.56	85.77	81.88	84.67	87.72	90.98	90.8	87.52	89.98	86.65	1
Composite Operational Performance											
	BE	CE	ATCE	Group Mean	Rank						
BESCOM	2	1	2	1.6667	1						
CHESCOM	3	4	3	3.3333	3						
GESCOM	4	5	4	4.3333	5						
HESCOM	5	2	5	4	4						
MESCOM	1	3	1	1.6667	1						

Source: Computed from PFC Reports

Table 1 presents the operational performance of five public sector DISCOMs in Karnataka from 2016-17 to 2024-25, measured by billing efficiency (BE), collection efficiency (CE), and AT&C efficiency (ATCE). MESCOM recorded the highest nine-year mean BE (90.10%), followed by BESCOM, CHESCOM, GESCOM, and HESCOM. BESCOM ranked first in CE (97.19%), followed by HESCOM, MESCOM, CHESCOM, and GESCOM. For

ATCE, MESCOM led with a mean of 86.65%, followed by BESCOM, CHESCOM, GESCOM, and HESCOM.

Based on the average of their ranks across the three indicators, BESCOM and MESCOM jointly occupied first place, each with a mean rank of 1.67. CHESCOM ranked third (3.33), followed by HESCOM (4.00), while GESCOM ranked fifth (4.33).

Table 2 Financial Performance of the Public Sector DISCOMs in Karnataka

Average Cost of Supply on Energy Sold Basis (ACS)											
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Mean	Rank
BESCOM	6.19	6.82	7.89	8.29	8.62	8.69	9.71	9.86	10.39	8.50	5
CHESCOM	6.65	6.85	6.66	6.81	8.14	8.3	9.28	9.71	10.67	8.12	2
GESCOM	7.06	7.3	6.89	8.08	8.33	8.33	9.61	10.49	9.87	8.44	3
HESCOM	6.89	7.41	7.19	6.99	8.66	9.26	10.1	9.88	9.89	8.47	4
MESCOM	7.09	6.66	6.24	7.28	8.12	7.15	7.77	10.31	9.44	7.78	1
Average Revenue Realized on Energy Sold basis (ARR)											
BESCOM	6.13	7.07	7.26	7.78	7.97	8.58	9.14	8.75	8.85	7.95	1
CHESCOM	5.89	6.51	6.73	7.03	7.29	7.73	8.84	9.31	9.45	7.64	4
GESCOM	6.09	6.76	6.92	7.18	7.47	8.48	9.2	8.92	9.2	7.80	2
HESCOM	5.97	6.5	6.68	7.13	7.43	7.53	9.42	8.43	8.86	7.55	5
MESCOM	6.15	6.71	6.92	7.31	7.5	7.89	7.86	10.01	9.29	7.74	3
Gap on Energy sold basis (GESB)											
BESCOM	0.06	-0.25	0.63	0.51	0.65	0.11	0.57	1.11	1.54	0.55	3
CHESCOM	0.76	0.34	-0.07	-0.22	0.85	0.57	0.44	0.4	1.22	0.48	2
GESCOM	0.97	0.54	-0.03	0.9	0.86	-0.15	0.41	1.57	0.67	0.64	4
HESCOM	0.92	0.91	0.51	-0.14	1.23	1.73	0.68	1.45	1.03	0.92	5
MESCOM	0.94	-0.05	-0.68	-0.03	0.62	-0.74	-0.09	0.3	0.15	0.05	1
Composite Financial Performance											
	ACS	ARR	GESB	Group Mean	Rank						
BESCOM	5	1	3	3	3						
CHESCOM	2	4	2	2.6667	2						
GESCOM	3	2	4	3	3						
HESCOM	4	5	5	4.6667	5						
MESCOM	1	3	1	1.6667	1						

Source: Computed from PFC Reports

Table 2 presents the financial performance of five public sector DISCOMs in Karnataka from 2016-17 to 2024-25. Performance was assessed using average cost of supply (ACS), average revenue realised (ARR), and the ACS-ARR gap, all measured on an energy sold basis. For ACS, where a lower value received a better rank, MESCOM had the lowest nine-year mean (₹7.78/kWh), followed by CHESCOM, GESCOM, HESCOM, and BESCOM. BESCOM had the highest mean ARR (₹7.95/kWh), followed by GESCOM, MESCOM, CHESCOM, and

HESCOM. MESCOM also recorded the lowest mean ACS-ARR gap (₹0.05/kWh), followed by CHESCOM, BESCOM, GESCOM, and HESCOM.

Based on the average ranks of the three indicators, MESCOM ranked first with a group mean rank of 1.67, followed by CHESCOM at 2.67. BESCOM and GESCOM jointly ranked third, each with a mean rank of 3.00, while HESCOM ranked fifth at 4.67.

Table 3 Overall Performance of the Public Sector DISCOMs in Karnataka

	Group Mean of Composite Operational Performance	Group Mean of Composite Financial Performance	Mean	Rank
BESCOM	1.6667	3	2.33335	2
CHESCOM	3.3333	2.6667	3	3
GESCOM	4.3333	3	3.66665	4
HESCOM	4	4.6667	4.33335	5
MESCOM	1.6667	1.6667	1.6667	1

Source: Computed from PFC Reports

For the assessment of overall performance, the mean ranks for operational and financial performance were combined and are presented in Table 3. MESCOM ranked

first with an overall mean rank of 1.67, followed by BESCOM (2.33), CHESCOM (3.00), GESCOM (3.67), and HESCOM (4.33).

Table 4 Testing of Hypothesis using Two-Way ANOVA at 5% Significance Level

Billing Efficiency (BE)						
H₀₁: There is no significant difference in mean billing efficiency among the five DISCOMs. H₀₂: There is no significant difference in mean billing efficiency across the financial years 2016-17 to 2024-25.						
Source of Variation	SS	df	MS	F	P-value	F crit
Among DISCOMs	98.68472444	4	24.671181	19.59983	0.000000031	2.668437
Across Financial Years	99.73989778	8	12.467487	9.904698	0.000000828	2.244396
Residual Variation	40.27983556	32	1.2587449			
Total	238.7044578	44				
Decision: Both null hypotheses are rejected, as the p-values for differences among DISCOMs and across years are below 0.05. This indicates that mean billing efficiency differs significantly among the five DISCOMs and across the financial years 2016-17 to 2024-25.						
Collection Efficiency (CE)						
H₀₃: There is no significant difference in mean collection efficiency among the five DISCOMs. H₀₄: There is no significant difference in mean collection efficiency across the financial years 2016-17 to 2024-25.						
Among DISCOMs	17.13534222	4	4.2838356	0.399761	0.807317562	2.668437
Across Financial Years	326.9263778	8	40.865797	3.813536	0.003028169	2.244396
Residual Variation	342.9115778	32	10.715987			
Total	686.9732978	44				
Decision: The null hypothesis of no significant difference in collection efficiency among DISCOMs is not rejected (p = 0.81), while the null hypothesis of no significant mean difference across years is rejected (p = 0.003). Thus, it is inferred that there is no significant mean in collection efficiency among the five DISCOMs, but there is a significant mean difference across the financial years.						
AT&C Efficiency (ATCE)						
H₀₅: There is no significant difference in mean AT&C efficiency among the five DISCOMs. H₀₆: There is no significant difference in mean AT&C efficiency across the financial years 2016-17 to 2024-25.						
Among DISCOMs	118.2300222	4	29.557506	3.3713	0.020685289	2.668437
Across Financial Years	461.33804	8	57.667255	6.57747	0.000045436	2.244396
Residual Variation	280.5565378	32	8.7673918			
Total	860.1246	44				
Decision: Both null hypotheses of no significant difference in AT&C efficiency among DISCOMs (p = 0.02) and across years (p < 0.001) are rejected. This indicates that mean AT&C efficiency differs significantly among the five DISCOMs and across the						

financial years.

Average Cost of Supply on Energy Sold Basis (ACS)

- **H₀₇**: There is no significant difference in mean ACS among the five DISCOMs.
- **H₀₈**: There is no significant difference in mean ACS across the financial years 2016-17 to 2024-25.

Among DISCOMs	3.419124444	4	0.8547811	3.375815	0.020570312	2.668437
Across Financial Years	67.60652	8	8.450815	33.37508	0.000000000	2.244396
Residual Variation	8.102635556	32	0.2532074			
Total	79.12828	44				

Decision: Both null hypotheses of no significant mean difference in Average Cost of Supply (ACoS) among DISCOMs ($p = 0.0206$) and across years ($p < 0.001$) are rejected. This indicates that mean ACoS differs significantly among the five DISCOMs and across the financial.

Average Revenue Realized on Energy Sold basis (ARR)

- **H₀₉**: There is no significant difference in mean ARR among the five DISCOMs.
- **H₁₀**: There is no significant difference in mean ARR across the financial years 2016-17 to 2024-25.

Among DISCOMs	0.833657778	4	0.2084144	1.523629	0.218785871	2.668437
Across Financial Years	50.1938	8	6.274225	45.86818	0.000000000	2.244396
Residual Variation	4.377222222	32	0.1367882			
Total	55.40468	44				

Decision: The null hypothesis of no significant difference in Average Revenue Realised (ARR) among DISCOMs is not rejected ($p = 0.21879$), while the null hypothesis of no significant difference across years is rejected ($p < 0.001$). Thus, there is no significant mean difference in ARR among the five DISCOMs, but it significantly differs across the financial years.

Gap on Energy sold basis (GSB)

- **H₀₁₁**: There is no significant difference in the mean ACS-ARR gap among the five DISCOMs.
- **H₀₁₂**: There is no significant difference in the mean ACS-ARR gap across the financial years 2016-17 to 2024-25.

Among DISCOMs	3.635266667	4	0.9088167	4.552268	0.005041526	2.668437
Across Financial Years	4.59164	8	0.573955	2.874944	0.015717677	2.244396
Residual Variation	6.388493333	32	0.1996404			
Total	14.6154	44				

Decision: Both null hypotheses of no significant difference in the ACS-ARR gap among DISCOMs ($p = 0.00504$) and across years ($p = 0.01572$) are rejected. This indicates that the mean ACS-ARR gap differs significantly among the five DISCOMs and across the financial years.

Source: Computed by the Authors

Table 4 reports the two-factor ANOVA results for six operational and financial indicators of Karnataka's public sector DISCOMs from 2016-17 to 2024-25. For each indicator, the DISCOM test examines whether the five companies have equal mean values, while the year test examines whether mean values are equal across the nine financial years. The decisions use a 5% significance level.

Mean billing efficiency, AT&C efficiency, average cost of supply (ACS), and the ACS-ARR gap differed significantly among DISCOMs because their p-values were below 0.05. Mean collection efficiency ($p=0.8073$) and average revenue realised ($p=0.2188$) did not show statistically significant differences among DISCOMs. The null hypothesis of equal DISCOM means is therefore rejected for four indicators and not rejected for two.

The year null hypothesis was rejected for all six indicators because every year p-value was below 0.05. This indicates that, for each indicator, at least one financial year differed from the others.

V. FINDINGS AND SUGGESTIONS**➤ Findings**

- **Operational Performance**

- ✓ BESCOM and MESCOM jointly ranked first in operational performance, each with an average indicator rank of 1.67. BESCOM recorded the highest mean Collection Efficiency (97.19%), while MESCOM recorded the highest mean Billing Efficiency (90.10%) and the lowest mean AT&C Losses (13.35%).
- ✓ CHESCOM ranked third, with an average operational rank of 3.33. Its mean Billing Efficiency was 88.68%, but its lower Collection Efficiency (95.94%) reduced its composite position.
- ✓ HESCOM ranked fourth, with an average operational rank of 4.00. Although it ranked second in Collection Efficiency, it had the lowest Billing Efficiency (85.69%) and the highest AT&C Losses (17.50%).
- ✓ GESCOM ranked fifth, with an average operational rank of 4.33. It ranked last in Collection Efficiency and fourth in both Billing Efficiency and AT&C performance.

• Financial Performance

- ✓ MESCOM ranked first in financial performance, with an average indicator rank of 1.67. It had the lowest mean Average Cost of Supply (₹7.78/kWh) and the smallest mean ACS-ARR Gap (₹0.05/kWh).
- ✓ CHESCOM ranked second, with an average financial rank of 2.67, followed by BESCOM and GESCOM jointly in third place, each with an average rank of 3.00. BESCOM recorded the highest mean Average Revenue Realised (₹7.95/kWh), but it also had the highest mean Average Cost of Supply (₹8.50/kWh).
- ✓ HESCOM ranked fifth in financial performance, with an average rank of 4.67. It recorded the lowest mean Average Revenue Realised (₹7.55/kWh) and the largest mean ACS-ARR Gap (₹0.92/kWh).

• Overall Performance

- ✓ MESCOM ranked first overall, with an average composite score of 1.67, followed by BESCOM (2.33), CHESCOM (3.00), GESCOM (3.67) and HESCOM (4.33). Lower composite scores indicate better ranks.
- ✓ MESCOM's first position reflects its joint lead in operational performance and first position in financial performance. BESCOM placed second overall because its joint lead in operational performance offset its third-place financial ranking.

➤ Suggestions

To improve operational and financial performance, the following measures are suggested:

- BESCOM should focus on reducing its Average Cost of Supply, which was the highest among the five DISCOMs, while maintaining its strong Collection Efficiency. This could help narrow its ACS-ARR Gap.
- CHESCOM should improve Collection Efficiency through timely billing, follow-up on overdue payments and easier payment options. It should also continue efforts to reduce AT&C Losses.
- GESCOM should give priority to Collection Efficiency, in which it ranked last, and strengthen measures to reduce AT&C Losses. These improvements could help its overall operational ranking.
- HESCOM should focus on improving Billing Efficiency and reducing AT&C Losses, the two operational indicators on which it ranked last. It should also examine ways to narrow its relatively large ACS-ARR Gap through cost control and improved revenue realisation.
- MESCOM, despite ranking first overall, should work to improve Collection Efficiency while maintaining its relatively low Average Cost of Supply and narrow ACS-ARR Gap.

VI. CONCLUSION

It can be concluded that periodic assessment of operational and financial performance enables Karnataka's DISCOMs to identify weaknesses in billing, collection, loss reduction and cost recovery. Such assessment can help utility

management and regulators take timely corrective measures and support the long-term financial sustainability of the electricity distribution sector in the state.

FUTURE SCOPE FOR THE STUDY

The present study covers five Karnataka DISCOMs over nine financial years, from 2016-17 to 2024-25. Future research could extend the study period and include DISCOMs from other states to examine regional differences. The analysis could also incorporate indicators of reliability, consumer service, debt and subsidy dependence alongside the operational and financial measures used in this study. A comparative study of public and private DISCOMs could provide further insight into differences in performance.

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