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Analyzing Operational Gap and its Impact on Revenue at Telecom Infrastructure Pvt. Ltd. Chennai

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Abstract

The project, 'Analyzing Operational Gap and its Impact on Revenue at Telecom Infrastructure' aims at analysing the relationship between operational efficiency and financial outcomes of the telecom infrastructure sector with a specific case study of Telecom Infrastructure Pvt. Ltd., Tamil Nadu. Operational gaps are now a strategic priority, as the identification of the gap between the targets set and what is actually achieved. The study uses descriptive research methodology with secondary data of the year FY2021 to FY2025 and compares the performance measures (KPIs) like tenancy ratio and operating margins with the TRAI benchmarks. Analysis with Excel and Power BI shows that the company has been performing above the industry profitability benchmarks in recent years with an increase to 9.04 percentage in FY25, but there is still significant leakage of revenue through high single tenant (44%). Adopting predictive maintenance, improving multi-tenancy models, and optimizing supply chain forecasting is recommended to reduce revenue loss and sustainable growth, according to the report.

Keywords: KPI Analysis, Tenancy Ratio Analysis and Operating Margin Analysis.

Introduction

As companies increasingly want to leverage digital transformation, they are turning to Business Analytics to improve their operations and boost their revenues. In industries that rely heavily on assets like telecommunications, there is a tight connection between operational efficiency and financial results. If not identified, small operational variations can result in large amounts of lost revenue over time. Operational gap is the difference between the plan and the actual outcome of the operation which can be measured.

The gaps can be caused by inefficient utilization of assets, delays in execution, process delays, incorrect billing or sub-optimal use of resources.

Operational gaps are not only inefficiencies in the processes, but they also represent measurable performance gaps which may be analyzed using data-driven methods to assess their impact on revenue, from a Business Analytics point of view.

Traditional factors that influence revenue in infrastructure based business models include asset utilization rate, service uptime, tenancy ratio, cost per unit of operation and billing accuracy. These operational indicators manifest themselves financially in terms of decreased revenue, slower realization, higher operating cost and margin erosion.

Established in the year 2002 and holding an IP-1 license from the Department of Telecommunications, Telecom Infrastructure Pvt. Ltd. is an independent telecom infrastructure company in India. The company's presence across Tamil Nadu, including its Chennai-based operations, enables it to serve the big four telecom companies with passive infrastructure solutions. The company's annual report for FY 2024-25 shows an annual revenue figure of ₹24,725 million, indicating that their revenue has been steady and growing. This study conducts an in-depth examination of its operational deficiencies and revenue costs.

Review of Literature

Murimi, Wadongo and Olielo (2021) aimed to enhance the financial performance of hotels in Kenya using the effective revenue management framework. The study used contingency theory and concluded that combining strategic revenue management and operational decision-making can be a step toward transitioning from simple management to sustainable long-term financial performance and profitability.

According to World Journal of Advanced Research and Reviews (2024), predictive analytics tools help businesses make more precise predictions about market demand, minimize inventory costs, and optimize operations. The 'operational gap', the gap between traditional planning outcomes and analytics-driven performance, translated to measurable revenue gains, giving empirical evidence that the use of analytics is a way to narrow down operational gaps.

Dada and Eniolorunda (2026) studied the influence of institutional constraints and administrative inefficiency on the effectiveness of government financial incentive programmes to SMEs. The results show that those firms that have successfully obtained financial support have reported gains in productivity, operating efficiency and employment creation.

Organizations are struggling with stockout issues, overstocking and inefficiencies in the supply chain thereby making costs higher and dissatisfaction lower (Fowowe 2026). Historical data, seasonal analysis, machine learning algorithms, ABC analysis, and EOQ models can be utilized to help organizations manage their inventory more efficiently and improve demand prediction.

Menukhin et al. (2023) proposed a framework called the Analytics Maturity Framework (AMF) that has been built on the Resource Based View (RBV) and Dynamic Capabilities theory to facilitate the establishment of alignment between organizational analytics capabilities and business strategy. The framework specifies six dimensions – organization, skills, governance, analytics processes, IT infrastructure and data technologies – as key pillars to make better decisions and make the business more competitive.

Research Gap: Most literature is available on general analytics adoption and/or sector specific financial analysis. There is little empirical studies occurring concerning operational gap analysis in telecom infrastructure companies in India especially where KPI benchmarking is connected to actual measurement of the revenue impact of the operational gap. This study fills that gap by conducting a focused secondary data analysis in Ascend Telecom.

The Purposes of this study were to:

- To leverage data-driven insights and KPIs for sound executive-level revenue growth decisions.
- To assess operational performance gaps and ensure it aligns with defined performance benchmarks and KPIs.
- To analyze the causes of operational inefficiencies with data, through the use of a diagnostic analysis.

Research Methodology

Research design adopted was descriptive research design which aims to describe the nature and extent of operational gap and its effects on the revenue. The study has been conducted by secondary data sources which are Internal records and Official documents of Telecom Infrastructure Pvt. Ltd., Chennai between the year of FY2021 and FY2025 such as Operational reports, Financial records, Inventory details, Project reports, etc. Telecom Infrastructure Pvt. Ltd., Chennai is the sample unit.

Analytical Tools and Techniques

Power BI is a visualization tool for interactive dashboards, geographical maps.
The KPIs are used to analyze the performance of deployment.
Gap Analysis: Actual operating performance compared with TRAI benchmark.
Root Cause Analysis for the impact on revenue.

Site Overview

The Site Overview analysis offers a detailed summary of the telecom tower infrastructure, by site type, by location distribution, by the presence of operators, and by the status of the sites.

Table 1 Site Infrastructure Distribution Summary

Category	Sub-Category	Percentage (%)
Site Type (RTT/GBT/ ECO)	GBT (Ground-Based Tower)	49
	RTT (Rooftop Tower)	31
	ECO	19
Rural/Urban Distribution	Rural	44
	Urban	30
	Semi-Urban	21
Tenancy Distribution	Metro	5
	Single Tenancy	44
	Double Tenancy	32
	Triple Tenancy	18

Source: Annual Reports

Although ground-based infrastructure is the dominant operational asset at GBT (see figure, about 49 percentage of the portfolio), RTT (about 31 percentage) and ECO (about 19 percentage) sites are not far behind. The geographic segment with the largest share is rural, which is in line with the company's mandate to provide network coverage in rural areas (44%). Notably, in the portfolio, single-tenant towers make up 44 per cent, which is the market's largest revenue and operational difference.

KPI Analysis

The KPI analysis includes the data of the sales performance of three segments: Macro, Micro and COLO during 5 financial years (FY2021 – FY2025).

Table 2 Sales Performance by Segment

Financial Year	Macro CRFI	Macro SO	Micro CRFI	Micro SO	COLO CRFI	COLO SO
FY21	141	190	0	0	38	38
FY22	147	197	0	0	38	36
FY23	256	329	16	24	24	27
FY24	377	348	27	26	31	29
FY25	200	179	17	25	170	181

Source: Annual Reports

Chart 1 Sales Performance

The Macro segment has experienced a gradual increase in growth from FY21 to FY24 and a sudden fall in FY25, suggesting market saturation or strategic changes. The Micro segment has started to grow from FY23 and was moderate. The COLO segment, which remained stable in the early years, has grown considerably in FY25 indicating a shift towards colocation revenues.

Gap Analysis

The gap analysis involves the comparison of the actual Operating Profit Percentage with the industry norm which is reported by Telecom Regulatory Authority of India (TRAI) and has been found to be 8%.

Table 3 Gap Analysis

Table: Actual Operating Performance vs. TRAI Benchmark

Financial Year	TRAI Benchmark (%)	Actual Operating Profit (%)	Gap (%)
FY 21	8.00	6.83	−1.17
FY 22	8.00	7.13	−0.87
FY 23	8.00	6.76	−1.24
FY 24	8.00	8.85	+0.85
FY 24–25	8.00	9.04	+1.04

Source: Annual Reports

The operating profit was negative for the company in FY21, FY22 and FY23, with negative gaps of −1.17 percentage, −0.87 percentage and −1.24 percentage, respectively, highlighting that the company is not very efficient in its operation and costs are being absorbed in a manner that is not optimal. The operating profit ratio increased to 8.85 percentage and 9.04 percentage in FY24 and FY25, respectively, and was ahead of the benchmark by positive margins. This improvement is due to improved cost control, better utilization of resources and improved profitability. H_1 has been rejected on FY21-FY23 (significant gap in existence) and accepted on FY24-FY25 (gap closed). The overall trend is also consistent of a positive impact of operational improvement on the revenue performance which leads to the rejection of H_2.

Root Cause Analysis

A structured fishbone (Ishikawa) diagram analysis is used to identify the main six categories of causes that lead to gaps in operations and opportunities for revenue leakage.

Table 4 Root Cause Analysis

Cause Category	Key Contributing Factors
Technical Issues	Frequent equipment failures, unstable power supply, poor infrastructure quality, network outages causing service interruptions.
Maintenance Management	Delayed fault resolution, lack of preventive maintenance practices, shortage of maintenance resources, inconsistent scheduling.
Commercial Gaps	High dependency on Macro CRFI, single-tenant towers, no-revenue towers, poor SO-to-CRFI conversion rate.
People & Skills	Skill gaps in technical team, inadequate training, low accountability, heavy reliance on external teams.
Logistics Inefficiencies	Absence of proper forecasting, frequent site-to-warehouse returns, warehouse transfers, non-productive movements.
External & Market Factors	Competition from major players, preference for 5G-ready partners, regulatory approval delays, monsoon-related faults.

Source: Annual Reports

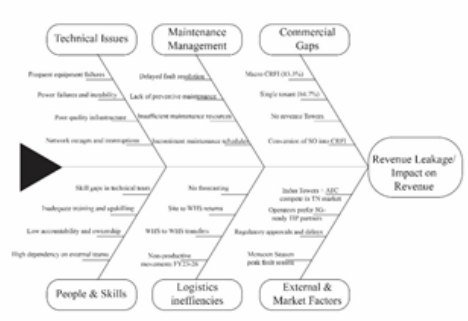

Chart 2 Fish Bone Diagram

The fishbone analysis shows the revenue leakage is multi-causal. Technical and maintenance constraints decrease service reliability, increase downtime and the commercial constraints reduce asset monetization. There is a lack of efficiency in the HR/workforce and logistics, which contributes to the cost of operations, and external market pressures limit growth opportunities. To close these operational gaps, and recover lost revenue, a holistic cross-functional remediation approach is needed.

Key Findings

Ground-based infrastructure is the largest revenue asset as it comprises 49 per cent of the telecom site portfolio (total tenancy of 4,000).

44 percentage of all sites is single-tenancy towers, the largest tenancy category that is a critical underutilization gap involving a fixed cost and very little revenue return.

The revenue mix shift towards Macro segments from FY21 to FY24, followed by a steep decline in FY25, and the COLO segment followed a steep spike in FY25, suggesting a strategic shift to the revenue mix.

Actual operating profit has also been below the TRAI benchmark of 8 percentage points and has been at lower levels in FY21 (−1.17 percentage), FY22 (−0.87 percentage) and FY23 (−1.24 percentage), thus reflecting that it has been operating inefficiently during these years.

Operating profit ratio has been above the benchmark at 8.85 percentage and 9.04 percentage in FY24 and FY25 respectively, which are indicative of better cost control and operational efficiency.

Technical issues such as equipment failure and power instability are cited as key causes of downtime and service interruptions.

Insufficient preventive maintenance systems and lack of technical skill are factors affecting fault resolution time and high operation costs.

Low SO to CRFI conversion ratio and reliance on low value Macro contracts restricts revenue optimization opportunities.

Lack of logistics efficiencies such as poor forecasting, unnecessarily sending items back to the warehouse, and unnecessary site-to-warehouse movement increases unnecessary expenses and slows service deployment.

External pressures like competition from 5G enabled infrastructure providers and delayed regulatory approvals have a negative impact on revenue growth potential.

Suggestions

Expand multi-tenancy by drawing in more telecom operators to single tenant towers, resulting in higher revenue per tower without increasing fixed costs.

Establish a formal preventive maintenance program with clear schedules and accountability for performance to minimize equipment downtime and recurring fault.

Roadmap; invest in the upskilling and technical training of the maintenance and operations team to minimise reliance on third parties and reduce fault resolution time.

Improve the SO to CRFI conversion process, with a better coordination between the Sales, Project Management and O&M departments to minimize deployment time and revenue postponement.

Improve logistics and supply chain planning by forecasting demand through tools to minimise unnecessary movements of materials and delays between warehouse and site.

Provide hybrid power generation such as lio batteries and energy-efficient SMPS to minimize the diesel usage and minimize operating costs.

Use Power BI what-if scenarios to identify the circles with high potential and low tenancy ratios and pursue them with multi-tenancy growth campaigns.

To proactively communicate with regulators to expedite approvals and minimise delays to project delivery due to legal and compliance issues.

Consider COLOS segment growth as a strategic revenue diversification channel, as the performance of the segment has shown a steep improvement in FY25.

Conclusion

The present study aims to give a scientific empirical analysis of the gaps in operation and their implications on the revenue of the private telecom infrastructure company, named Telecom Infrastructure Pvt. Ltd., Chennai, which is one of the leading telecom infrastructure provider in Tamilnadu. The study provides actionable insights into the operational landscape of the organization using secondary data from FY2021 to FY2025 and analytical tools such as KPI analysis, gap analysis and root cause analysis.

The results clearly show that an operational gap is no longer an administrative issue, but a financial risk. The gap analysis shows that during FY21-23, there was a significant leakage of revenue as actual operating performance was below the benchmark set by TRAI, which was 8%. The operating profit ratio of 8.85 percentage and 9.04 percentage during FY24 and FY25 respectively respectively, is a testament to the positive trends that resulted from the financial performance due to the operational efficiency improvement.

Key factors identified in the root cause analysis are technical problems, maintenance management, commercial shortcomings, people and skills, distribution inefficiencies and external market factors, all of which are interconnected in causing revenue leakage. The site overview shows that the 44 per cent single tenancy towers are the largest under utilised revenue opportunity in the portfolio. With these gaps being tackled through specific operational enhancements, better uptake of analytics and a planned expansion of multi-tenancy, Telecom Infrastructure can continue to deliver above-par performance levels and improve its competitive edge in the changing landscape of the telecom infrastructure market in India.

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