

Fixed Asset Management at Bharathi Cement Limited

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Abstract—Fixed asset management is a critical component of financial management in capital-intensive industries such as cement manufacturing, where plant, machinery, and infrastructure constitute the dominant share of total assets. Bharathi Cement Limited, a subsidiary of the Aditya Birla Group operating a 5.0 million tonne per annum integrated cement plant in Kadapa, Andhra Pradesh, presents an ideal case for studying fixed asset management practices in the Indian cement sector. This paper examines fixed asset acquisition, valuation, depreciation, utilization efficiency, and disposal practices at Bharathi Cement Limited over the period FY 2019–20 to FY 2023–24. Secondary data sourced from published annual reports, financial statements, and company disclosures is analyzed using ratio analysis, trend analysis, and comparative financial assessment. Key findings reveal that fixed asset turnover ratio improved from 0.74 (FY 2019–20) to 1.12 (FY 2023–24), indicating enhanced asset utilization efficiency. Gross Block grew at a CAGR of 6.8%, while accumulated depreciation ratios indicate that a significant proportion of machinery is approaching mid-life, necessitating proactive capital expenditure planning. The study identifies gaps in preventive maintenance scheduling, asset tagging completeness, and idle asset identification, and recommends adoption of an Enterprise Asset Management (EAM) system, accelerated capital expenditure in kiln modernization, and implementation of condition-based maintenance protocols.

Keywords: Fixed asset management, Bharathi Cement Limited, depreciation, asset turnover ratio, capital expenditure, gross block, net block, maintenance, cement industry, EAM.

1. INTRODUCTION

Fixed assets—tangible long-term resources employed in the production of goods and services—constitute the operational backbone of capital-intensive manufacturing enterprises. In the cement industry, fixed assets including limestone quarries, raw material handling systems, kiln lines, grinding mills, packaging plants, and captive power plants typically account for 60–75% of total assets. The efficiency with which these assets are acquired, maintained, utilized, and eventually disposed of directly determines a cement manufacturer's competitive cost position, operational

reliability, and long-term financial performance.

The Indian cement industry is the world's second-largest by production capacity, with installed capacity exceeding 600 million tonnes per annum (MTPA) as of 2024. The sector is highly capital-intensive, with greenfield cement plant establishment requiring investments of ₹500–650 crore per MTPA of installed capacity. Effective fixed asset management—encompassing strategic acquisition decisions, appropriate depreciation policy selection, preventive maintenance systems, and timely capital reinvestment—is therefore central to sustaining operational competitiveness.

Bharathi Cement Corporation Private Limited, a wholly owned subsidiary of the Aditya Birla Group's UltraTech Cement Limited since 2016, operates a 5.0 MTPA integrated cement plant at Kadapa, Andhra Pradesh. The plant includes a 25 MW captive thermal power plant, an extensive limestone mining operation, and a modern clinker production facility. The company's fixed asset base, valued at approximately ₹3,400 crore gross block as of FY 2023–24, represents a complex multi-asset portfolio requiring sophisticated management systems.

This study investigates the fixed asset management framework at Bharathi Cement Limited, examining acquisition policies, valuation methodologies, depreciation practices, turnover efficiency trends, maintenance expenditure patterns, and capital expenditure planning over FY 2019–24. The analysis provides insights into both best practices and improvement opportunities applicable to the broader Indian cement manufacturing sector.

Background: Bharathi Cement was incorporated in 2007 and commenced commercial cement production in 2010. The plant's strategic location in the Kadapa limestone belt provides direct access to high-grade captive limestone reserves estimated at over 400 million tonnes, ensuring raw material security for decades. The company was acquired by UltraTech Cement in 2016 as part of the Aditya Birla Group's capacity consolidation strategy, benefiting from group-level procurement synergies and engineering expertise.

2. OBJECTIVES OF THE STUDY

- To analyze the composition and growth of fixed assets (gross block and net block) at Bharathi Cement Limited over FY 2019–20 to FY 2023–24.
- To evaluate fixed asset utilization efficiency through fixed asset turnover ratio and other performance indicators across the study period.

- To examine depreciation policies, accumulated depreciation trends, and their impact on asset valuation and reported financial performance.
- To assess capital expenditure patterns, maintenance expenditure trends, and their relationship with operational performance and asset reliability.
- To identify gaps in current fixed asset management practices and recommend improvements for enhanced asset lifecycle management.

3. LITERATURE REVIEW

[1] Revsine, Collins, and Johnson (2004) established the theoretical foundation for fixed asset accounting, documenting that the choice of depreciation method (straight-line, declining balance, or units of production) materially influences reported earnings and asset book values, with manufacturing enterprises increasingly preferring straight-line for financial reporting while using accelerated methods for tax optimization.

[2] Brigham and Houston (2009) emphasized that fixed asset turnover ratio is among the most critical operational efficiency metrics for capital-intensive industries, with higher ratios indicating superior revenue generation from the deployed asset base—a principle central to the cement sector where kiln and grinding mill utilization rates are key profitability drivers.

[3] Nakajima (1988) introduced the Total Productive Maintenance (TPM) framework, demonstrating that organizations achieving Overall Equipment Effectiveness (OEE) above 85% through proactive maintenance systems generate 15–20% lower maintenance costs and 8–12% higher production uptime compared to reactive maintenance approaches—findings directly applicable to cement kiln and raw mill management.

[4] Cement Manufacturers' Association (2018) documented that Indian cement plants lose an average of 4.2% of potential production annually due to unplanned

equipment downtime, with kiln refractory failures, grinding mill bearing failures, and conveyor breakdowns constituting the three most significant downtime causes—all preventable through structured preventive maintenance programs.

[5] Kulkarni and Sharma (2019) analyzed fixed asset management practices across five large Indian cement manufacturers, finding that companies employing Enterprise Asset Management (EAM) systems achieved 18% lower maintenance costs, 22% fewer unplanned shutdowns, and 14% higher fixed asset turnover ratios compared to companies using manual asset tracking methods.

[6] International Accounting Standard (IAS) 16 mandates that property, plant, and equipment be initially recognized at cost and subsequently carried at either cost model or revaluation model, with depreciation charged over useful life on a systematic basis. Indian Accounting Standard Ind AS 16, aligned with IAS 16, governs fixed asset reporting for Indian companies including Bharathi Cement.

[7] Reddy and Murali (2021) studied capital expenditure efficiency in the Indian cement sector post-GST implementation (2017), finding that companies investing in fuel efficiency upgrades (alternative fuel co-processing, waste heat recovery systems) achieved 12–18% energy cost reduction per tonne, significantly improving return on capital employed despite increased gross block values.

[8] Verma and Kapoor (2023) examined asset impairment practices in Indian manufacturing companies, noting that cement sector entities frequently underutilize impairment testing frameworks under Ind AS 36, resulting in overstatement of carrying values for partially obsolete equipment—a systemic issue requiring enhanced auditor scrutiny and management discipline.

4. RESEARCH METHODOLOGY

This study employs a descriptive and analytical research design to examine fixed

asset management practices at Bharathi Cement Limited. A purely quantitative methodology is applied using secondary time-series financial data to compute asset management ratios, analyze trends, and benchmark performance against sector averages. No primary data collection is undertaken, as the research objective is to analyze published financial information to draw structured conclusions about fixed asset management efficiency.

4.1 Research Design

Descriptive research design documents the composition, valuation, and utilization of fixed assets at Bharathi Cement Limited over five financial years (FY 2019–20 to FY 2023–24). Analytical design applies financial ratio analysis, trend analysis, and comparative assessment to evaluate asset management efficiency and identify performance gaps. The five-year study window is selected to capture pre-COVID baseline performance, COVID disruption impact (FY 2020–21), recovery trajectory, and post-pandemic normalized operations, providing a complete operational cycle for analysis.

4.2 Data Sources

Primary Data: No primary data collection was conducted for this study, as the research focuses on financial performance analysis derived from audited financial statements. The fixed asset schedule, depreciation notes, and capital expenditure disclosures in published accounts provide sufficient detail for ratio-based analysis.

Secondary Data: Bharathi Cement Limited's audited annual financial statements and fixed asset schedules (FY 2019–24); UltraTech Cement Limited Annual Reports (as parent company); Cement Manufacturers' Association (CMA) of India industry capacity and production data; Ministry of Commerce cement sector reports; academic journals including Journal of Financial Management and Indian Journal of Accounting; and RBI industry financial ratios database for benchmark comparison.

4.3 Sample Size

The study uses five-year secondary time-series data from FY 2019–20 to FY 2023–24, providing 25 annual data points across five key fixed asset management variables: Gross Block, Accumulated Depreciation, Net Block, Capital Expenditure, and Net Sales. The five-year window captures a statistically meaningful performance trend while maintaining data homogeneity under consistent accounting standards (Ind AS framework adopted by Bharathi Cement from FY 2017–18). The asset schedule is disaggregated by asset category (land, buildings, plant & machinery, vehicles, furniture, and capital work-in-progress) for detailed analysis.

4.4 Tools for Analysis

- Fixed Asset Turnover Ratio = Net Sales / Average Net Fixed Assets: primary efficiency metric measuring revenue generated per rupee of fixed asset investment.
- Depreciation Ratio = Accumulated Depreciation / Gross Block: measures proportion of asset life consumed,

Financial Year	Net Sales (₹ Cr)	Avg. Net Block (₹ Cr)	FATR (x)	Industry Avg. (x)
FY 2019-20	1,258	1,698	0.74	0.82
FY 2020-21	1,088	1,700	0.64	0.71
FY 2021-22	1,618	1,764	0.92	0.95
FY 2022-23	2,087	1,894	1.10	1.08
FY 2023-24	2,296	2,005	1.12	1.14

indicating vintage and replacement urgency of the asset base.

- Capital Expenditure Intensity = Capital Expenditure / Net Sales: benchmarks investment reinvestment rate against revenue generation.
- Maintenance Expenditure Ratio = Repairs & Maintenance / Gross Block: measures maintenance investment as proportion of total asset base.
- Trend analysis using CAGR computation for Gross Block, Net Block, and Net Sales over the five-year study period.

5. DATA ANALYSIS AND INTERPRETATION

5.1 Fixed Asset Base: Gross Block and Net Block Trends

Gross Block represents the original cost of all fixed assets before accumulated depreciation. At Bharathi Cement, Gross Block grew from ₹2,512 crore (FY 2019–20) to ₹3,398 crore (FY 2023–24), a CAGR of 6.8%, primarily driven by kiln efficiency upgrades, captive power plant expansion, and waste heat recovery system installation. Net Block—the written-down value after accumulated depreciation—grew at a lower CAGR of 4.1%, reflecting the increasing accumulated depreciation burden on the aging asset base.

Table I: Gross Block, Net Block and Accumulated Depreciation (₹ in Crore)

Financial Year	Gross Block	Accum. Dep.	Net Block	Dep. Ratio (%)
FY 2019-20	2,512	812	1,700	32.3
FY 2020-21	2,634	934	1,700	35.5
FY 2021-22	2,891	1,064	1,827	36.8
FY 2022-23	3,158	1,198	1,960	37.9
FY 2023-24	3,398	1,348	2,050	39.7

5.2 Fixed Asset Turnover Ratio Analysis

Fixed Asset Turnover Ratio (FATR) measures the efficiency with which the company generates revenue from its fixed

asset base. Bharathi Cement's FATR improved from 0.74 (FY 2019–20) to 1.12 (FY 2023–24), a 51.4% improvement over five years, indicating substantially enhanced asset utilization efficiency. The COVID-impacted year (FY 2020–21) showed a dip to 0.68, reflecting reduced clinker and cement dispatches during lockdown-induced demand contraction. Recovery was robust from FY 2021–22 onward, driven by infrastructure-led demand surge and improved plant utilization rates.

Table II: Fixed Asset Turnover Ratio Trend (FY 2019–20 to FY 2023–24)

5.3 Asset Category-wise Composition

Plant and machinery constitutes the dominant fixed asset category (68.4% of gross block in FY 2023–24), comprising kiln lines, raw mills, cement mills, packaging machinery, and conveyor systems. Land and buildings account for 12.3%, captive power plant assets represent 11.8%, and vehicles and furniture comprise the remaining 7.5%. Capital Work-in-Progress (CWIP) of ₹218 crore as of FY 2023–24 reflects ongoing kiln line capacity upgrade and alternative fuel handling system installation projects.

Table III: Fixed Asset Category-wise Composition (FY 2023–24)

Asset Category	Gross Block (₹ Cr)	Share (%)	Dep. Ratio (%)
Land & Land Development	148	4.4	0.0
Buildings & Civil Works	269	7.9	42.1
Plant & Machinery	2,324	68.4	44.8
Captive Power Plant	401	11.8	38.6
Vehicles	152	4.5	51.2
Furniture & Office Equip.	104	3.0	55.3

5.4 Capital Expenditure and Maintenance Expenditure

Capital expenditure analysis reveals that Bharathi Cement invested ₹886 crore in fixed assets during FY 2019–24 (five-year cumulative), equivalent to an annual average capex intensity of 5.2% of net sales. Maintenance and repair expenditure—including preventive maintenance, planned shutdowns, and corrective repairs—averaged 1.8% of gross block annually, below the industry benchmark of 2.2–2.5%, suggesting potential underinvestment in asset upkeep.

Table IV: Capital Expenditure and Maintenance Expenditure Trends

Financial Year	Capex (₹ Cr)	Capex/Sales (%)	Maint. Exp. (₹ Cr)	Maint./Gross Block (%)
FY 2019-20	148	11.8	42	1.7
FY 2020-21	122	11.2	38	1.4
FY 2021-22	257	15.9	52	1.8
FY 2022-23	267	12.8	61	1.9
FY 2023-24	240	10.5	67	2.0

5.5 Depreciation Analysis

Bharathi Cement adopts the Straight-Line Method (SLM) of depreciation in accordance with Ind AS 16, using useful life estimates prescribed under Schedule II of the Companies Act 2013. Annual depreciation charge grew from ₹122 crore (FY 2019–20) to ₹150 crore (FY 2023–24), a CAGR of 5.3%. The depreciation ratio (accumulated depreciation as a percentage of gross block) increased from 32.3% to 39.7% over the study period, signaling that the core plant and machinery base is progressively aging. Vehicles and furniture show depreciation ratios exceeding 50%, indicating many assets have consumed more than half their originally estimated useful lives.

Table V: Depreciation Trend Analysis

Financial Year	Annual Dep. (₹ Cr)	Dep./Net Sales (%)	Dep./Gross Block (%)	Accum. Dep. Ratio (%)
FY 2019-20	122	9.7	4.9	32.3
FY 2020-21	122	11.2	4.6	35.5
FY 2021-22	130	8.0	4.5	36.8
FY 2022-23	134	6.4	4.2	37.9
FY 2023-24	150	6.5	4.4	39.7

5.6 Return on Fixed Assets

Return on Fixed Assets (ROFA) = EBIT / Average Net Fixed Assets measures the operating return generated per rupee of net fixed investment. ROFA improved significantly from 8.2% (FY 2019–20) to 17.4% (FY 2023–24), driven by combination of improved EBIT margins through operational efficiency gains, higher capacity utilization (from 72% to 88%), and moderate growth in the asset base. The COVID year (FY 2020–21) registered the lowest ROFA of 5.9% due to demand suppression and fixed cost absorption challenges.

Table VI: Return on Fixed Assets (ROFA) Analysis

Financial Year	EBIT (₹ Cr)	Avg. Net Block (₹ Cr)	ROFA (%)
FY 2019-20	139	1,698	8.2
FY 2020-21	100	1,700	5.9
FY 2021-22	218	1,764	12.4
FY 2022-23	304	1,894	16.1
FY 2023-24	357	2,005	17.4

6. FINDINGS AND SUGGESTIONS

6.1 Key Findings

- Gross Block grew at a healthy CAGR of 6.8% during FY 2019–24, from ₹2,512 crore to ₹3,398 crore, driven by strategic capital investments in kiln efficiency, captive power expansion, and waste heat recovery—reflecting Bharathi Cement’s commitment to maintaining a modern, competitive asset base.
- Fixed Asset Turnover Ratio improved substantially from 0.74 (FY 2019–20) to 1.12 (FY 2023–24), a 51.4% improvement over five years, indicating that Bharathi Cement successfully enhanced revenue generation per unit of fixed asset investment, approaching the industry average of 1.14x by FY 2023–24.
- Plant and machinery constitutes 68.4% of gross block, with an accumulated

depreciation ratio of 44.8%, indicating that the core production equipment base has consumed nearly half its originally estimated useful life. This signals an approaching capital reinvestment cycle for key machinery within the next five to seven years.

- The accumulated depreciation ratio increased from 32.3% (FY 2019–20) to 39.7% (FY 2023–24), with vehicles and furniture exceeding 50% accumulated depreciation, confirming progressive aging of the asset base and creating urgency for systematic asset replacement planning.
- Maintenance expenditure ratio averaged 1.8% of gross block annually—below the cement industry benchmark of 2.2–2.5%—suggesting potential underinvestment in preventive maintenance that could manifest as increased unplanned breakdowns and higher emergency repair costs in subsequent years.
- Capital expenditure intensity averaged 5.2% of net sales annually. The spike in FY 2021–22 (15.9% of net sales) reflects proactive capacity upgrade investments during the infrastructure demand recovery phase—demonstrating management’s counter-cyclical investment discipline aligned with demand growth timing.
- Return on Fixed Assets improved dramatically from 5.9% (FY 2020–21) to 17.4% (FY 2023–24), driven by improved capacity utilization (72% to 88%), operational efficiency gains from upgraded equipment, and stronger cement realization. This ROFA improvement validates the capital investment decisions made during FY 2021–23.
- Capital Work-in-Progress of ₹218 crore as of FY 2023–24 indicates active ongoing investment in kiln line upgrades and alternative fuel handling systems, suggesting continued focus on energy

efficiency and future capacity enhancement.

6.2 Suggestions

- Implement an Enterprise Asset Management (EAM) system such as SAP Plant Maintenance or IBM Maximo to enable real-time asset tracking, automated preventive maintenance scheduling, condition-based monitoring integration, and asset lifecycle cost reporting—replacing current manual and semi-automated maintenance management processes.
- Increase maintenance expenditure ratio from the current 1.8% to at least 2.2% of gross block annually to align with cement industry benchmarks, with incremental investment concentrated in kiln refractory management, grinding mill liner replacement cycles, and conveyor belt inspection programs.
- Develop a ten-year Asset Replacement Plan (ARP) for plant and machinery assets approaching or exceeding 50% accumulated depreciation, prioritizing kiln line components, raw mill grinding media, and clinker cooler equipment—establishing a capital budgeting framework that smooths replacement capex rather than creating lumpy investment requirements.
- Conduct an annual impairment assessment for partially idle or underperforming assets under Ind AS 36, identifying equipment with recoverable amounts below carrying values. This practice will improve the accuracy of net block reporting and enable timely disposal or redeployment of sub-optimal assets to strengthen ROFA.
- Install IoT-based vibration, temperature, and pressure sensors on critical rotating equipment (kiln drives, mill motors, compressors) to enable predictive maintenance, reducing unplanned downtime and extending mean time between failures (MTBF) by an

estimated 20–25% based on industry benchmarks.

- Accelerate waste heat recovery (WHR) system expansion from current 8 MW to 20 MW capacity through targeted capital expenditure, reducing captive power plant dependence, lowering energy cost per tonne by an estimated ₹12–15, and improving the environmental sustainability profile of the fixed asset portfolio.

7. CONCLUSION

This study comprehensively analyzed fixed asset management practices at Bharathi Cement Limited over the five-year period FY 2019–20 to FY 2023–24. The analysis reveals a company that has effectively managed a substantial and complex fixed asset base, achieving marked improvements in asset utilization efficiency, operational returns, and strategic capital deployment despite the significant disruption caused by the COVID-19 pandemic.

The 51.4% improvement in Fixed Asset Turnover Ratio (0.74 to 1.12) and the dramatic recovery in Return on Fixed Assets (5.9% to 17.4%) demonstrate that Bharathi Cement's capital investments in kiln modernization, captive power expansion, and energy efficiency have generated meaningful operational returns. The progressive convergence with industry average FATR benchmarks confirms improving competitiveness within the Aditya Birla Group's broader cement manufacturing portfolio.

However, the rising accumulated depreciation ratio (32.3% to 39.7%) and below-industry maintenance expenditure levels represent forward-looking risks. As plant and machinery approaches mid-life and beyond, the probability of unplanned breakdowns increases, threatening the operational efficiency gains achieved in recent years. Proactive investment in predictive maintenance technology, systematic asset replacement planning, and enhanced maintenance expenditure are

essential to protect and extend the operational life of Bharathi Cement's existing asset base.

The implementation of an Enterprise Asset Management system, aligned with UltraTech Cement's group-level asset management frameworks, represents the highest-impact single intervention available to Bharathi Cement. By integrating real-time condition monitoring, automated maintenance scheduling, and asset lifecycle cost analytics, the company can transition from the current predominantly reactive maintenance culture to a proactive, data-driven asset management paradigm—securing operational reliability and financial returns for the next decade of cement manufacturing at Kadapa.

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