Comparative Analysis of Indian Public and Private Universities Using Income and Expenditure-Based Financial Ratios

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Abstract - Financial management plays a vital role in ensuring the sustainability and growth of higher education institutions. In India, public and private universities operate under different funding mechanisms, raising questions about how these differences affect their financial practices. This study conducts a comparative analysis of the financial management practices of two public universities-Jawaharlal Nehru University and the University of Hyderabad-and two private universities-Kalinga Institute of Industrial Technology and Thapar Institute of Engineering and Technology-over the period 2016 to 2020. Five key financial ratios were examined: dependency ratio, fee income ratio, expenditure ratio, operating surplus ratio, and revenue diversification index. Mean values for each ratio were calculated over the five-year period. To assess differences between institutional types, an independent samples t-test was conducted. The statistical analysis revealed no significant differences between public and private universities across the selected financial ratios. This suggests a convergence in financial behavior, despite differing sources of funding. The findings indicate that public and private universities in India are adopting similar financial management strategies, reflecting evolving norms of financial governance and adaptability. These insights contribute to a deeper understanding of financial sustainability in Indian higher education and offer policy implications for funding models, institutional planning, and financial resilience.

Keywords: Financial Management, Indian Universities, Public Vs Private, Financial Ratios, Higher Education, Sustainability, Funding Models

I. INTRODUCTION

Financial management in higher education has become a subject of increasing scrutiny worldwide as institutions strive to maintain quality, achieve sustainability, and respond to shifting economic and policy environments. In India, this scrutiny is particularly critical, given the expanding size, diversity, and aspirations of its higher education sector. Over the past few decades, both public and private universities have played vital roles in delivering tertiary education, yet they operate under markedly different financial structures and governance regimes. Public universities are predominantly state-funded, receiving the bulk of their income from government grants, while private universities typically rely on tuition fees, donations, consultancy services, and other self-generated revenues (Tilak, 2015; Agarwal, 2009).

These divergent funding structures create distinct challenges and opportunities for each sector. Public universities often grapple with rigid budgetary constraints and bureaucratic oversight but benefit from funding stability. Private universities, on the other hand, enjoy operational autonomy and market-driven flexibility but face risks related to income volatility and overreliance on student fees (Mukherjee, 2019). The growing emphasis on accountability, transparency, and value for money in both sectors has amplified the need for systematic financial performance analysis that goes beyond budgetary audits and considers efficiency, adaptability, and sustainability.

One useful approach to examining these issues is through financial ratio analysis-a widely accepted technique in public finance and institutional assessment. Financial ratios distill complex financial statements into comparable indicators, offering a structured lens to evaluate how effectively institutions generate, utilize, and diversify their resources. Gopi (2018) applied the extended DuPont model to analyze the financial performance of Indian cement companies, highlighting the effectiveness of ratio analysis in understanding financial health. Verma and Sharma (2021) also demonstrated how financial ratios provide key insights into performance and risk management in Indian banks, further reinforcing the value of ratio analysis for assessing financial sustainability. These studies support applying similar ratio analysis to assess financial sustainability in Indian universities. In this study, five key ratios were selected to capture core aspects of income generation and expenditure control:

1. Dependency Ratio – Measures the proportion of total income derived from government grants or a single dominant source, signaling institutional vulnerability to funding shifts.
2. Fee Income Ratio – Reflects reliance on tuition and student fees, which is critical for evaluating the risk exposure of private universities.
3. Expenditure Ratio – Assesses financial discipline by examining expenses as a proportion of total income.
4. Operating Surplus Ratio – Indicates an institution's ability to produce surplus funds that can be reinvested into development and infrastructure.
5. Revenue Diversification Index (RDI) – Based on the Herfindahl Index, this ratio evaluates the extent to

which income is spread across multiple sources, with greater diversification generally implying increased financial stability and autonomy (Johnstone, 2004; Del Rey & Romero, 2004).

While these ratios are routinely referenced in internal audits and governmental policy reviews, there remains a paucity of rigorous academic studies that apply standardized financial indicators across governance types in Indian higher education. Existing literature tends to either focus narrowly on qualitative dimensions or lacks statistical validation (Jayashankar & Chandra, 2023). This study aims to bridge that gap by conducting a comparative analysis of public and private universities using a quantitative, ratio-based approach supported by statistical testing.

Specifically, this research utilizes independent samples t-tests to determine whether statistically significant differences exist in the selected financial ratios between public and private universities. The study draws on publicly available annual financial statements from four institutions-two public (Jawaharlal Nehru University and University of Hyderabad) and two privates (Kalinga Institute of Industrial Technology and Thapar Institute of Engineering and Technology)-over a five-year period from 2016 to 2020.

By focusing on financial metrics tied directly to income and expenditure, this study provides insights into the strategic financial behavior of universities across different governance models. The findings contribute to ongoing policy discussions regarding funding equity, institutional autonomy, and financial resilience in Indian higher education. Moreover, the results have practical implications for university administrators, policymakers, and regulatory bodies seeking data-driven frameworks for improving financial performance and ensuring long-term institutional sustainability.

II. LITERATURE REVIEW

The financial structure of higher education institutions significantly influences their sustainability, autonomy, and strategic flexibility. In India, public and private universities are governed by distinct financial models. Public universities have historically relied on government grants, but recent fiscal policies emphasize self-reliance and performance-based funding. Meanwhile, private universities increasingly depend on student tuition and alternative revenue sources to maintain financial viability (Sahni & Kumar, 2022; Mishra, 2021).

1. Dependency on Public Funding: The dependency ratio, which measures the proportion of institutional income derived from government grants, serves as a critical indicator of financial vulnerability. High dependency levels are associated with reduced institutional autonomy and constrained decision-making capabilities (Sahni & Kumar, 2022). Despite policy efforts to reduce over-reliance, many Indian public universities continue to receive more than 70–

80% of their total revenue from government sources, limiting their agility in a rapidly changing educational environment (Sharma & Chattopadhyay, 2021).

2. Fee Income and Private Sector Growth: The fee income ratio evaluates an institution's reliance on student tuition. This is particularly pertinent for private universities, which are often excluded from government grants and must generate most of their revenue through tuition and allied services. Private institutions have adopted flexible fee models and market-driven program pricing, especially in professional courses like engineering, management, and law (Mishra, 2021; Thomas & Pillai, 2021). Public institutions, on the other hand, operate under strict regulatory constraints, which limit their ability to raise fees or launch self-financing programs.

3. Expenditure and Surplus Indicators: Efficiency in financial management, is reflected through two key indicators: the expenditure ratio (expenses as a proportion of income) and the operating surplus ratio (surplus as a proportion of total income). High surplus ratios indicate stronger capacity for reinvestment and resilience during funding cuts or enrollment fluctuations. Recent studies show that while private institutions often exhibit greater cost discipline, public universities are increasingly adopting performance-linked budgeting and expenditure control measures to improve their financial health (Sahoo & Dash, 2023; Sharma & Rao, 2020).

4. Revenue Diversification and Financial Resilience: The Revenue Diversification Index (RDI) captures how varied an institution's income sources are, reflecting financial resilience. A low RDI signifies heavy dependence on one or two funding sources, increasing institutional risk. Jacob and Ajina (2020) analyzed the impact of debt-equity ratios on the financial performance of Indian pharmaceutical companies, finding no significant link-an insight that highlights the complexity of capital structure dynamics. This reinforces the relevance of examining debt and funding sources when assessing financial stability in Indian universities. Conversely, a higher RDI indicates a healthy mix of grants, tuition, consultancy, donations, and research contracts. Recent research has identified a growing trend in Indian universities-both public and private-toward exploring third-party partnerships, alumni donations, and international programs as part of their diversification strategies (Patel & Deshmukh, 2022; Rao & Kaur, 2023).

5. Strategic Analysis of McDonald's Global and Indian Market Performance: (Perody & Sudhakara, 2024) Highlights how diversification, adaptation, and cost control support organizational resilience-principles that also apply to university financial management in the face of shifting funding landscapes. Perody and Sudhakara (2024) also analyzed how McDonald's balances global uniformity with localized adaptation in India-diversifying menu offerings, optimizing costs, and entering new markets to sustain growth. Translating this to higher education, universities-

like multinational firms-must similarly diversify their income sources (such as grants, fees, partnerships), adapt to external policy and funding changes, and optimize operational efficiency to maintain financial resilience.

6. Empirical Gaps and Research Rationale: Although Indian higher education finance has been discussed extensively in policy documents, few empirical studies employ statistical tools like independent samples t-tests to compare financial performance across institutional types. Moreover, most existing research tends to focus on either public or private universities in isolation, without a comparative framework grounded in quantifiable financial ratios (Joshi & Rajan, 2022). A similar approach is adopted by Ghayas and Akhter (2018), who examined the relationship between capital structure and profitability using financial ratio analysis across listed Indian firms. Their study reinforces the relevance of ratio-based performance evaluation in organizational finance, supporting this paper's use of expenditure and income ratios to assess institutional financial behavior. This study addresses this gap by using a set of standard financial metrics-computed over a five-year period-to rigorously compare public and private universities, contributing to evidence-based financial governance in Indian higher education.

III. METHODOLOGY

A. Research Design

This study follows a quantitative comparative research design**,** using descriptive statistics and inferential tests to assess financial performance differences between public and private universities in India. By employing a cross-sectional approach with longitudinal mean values (2016–2020), the study facilitates sector-wise comparison based on well-defined income and expenditure-related financial indicators.

B. Population and Sample

The sample includes four Indian universities-two public (Jawaharlal Nehru University and University of Hyderabad) and two privates (Kalinga Institute of Industrial Technology and Thapar Institute of Engineering and Technology). These institutions were selected based on the availability of publicly disclosed audited annual financial statements for the five-year period between 2016 and 2020.

C. Data Sources

All financial data were sourced from official university reports**,** available on their respective websites or public databases. These documents provided comprehensive details on income and expenditure components necessary for the computation of financial ratios.

D. Variables and Ratio Construction

The following five financial ratios were calculated for each university:

1. Grant Dependency Ratio = Grant Income / Total Income
2. Fee Income Ratio = Fee Income / Total Income
3. Expenditure Ratio = Total Expenditure / Total Income
4. Operating Surplus Ratio = (Total Income – Total Expenditure) / Total Income
5. Revenue Diversification Index (RDI) = $1 - \sum$ (source i / total income) ^{2}, where source i represents each income stream

Each ratio was computed annually for each university from 2016 to 2020. Then, an institutional mean was calculated across the five years. Subsequently, a sectoral mean was derived by averaging the values of the two universities within each sector (public or private). This ensured comparability by balancing out year-to-year volatility.

E. Statistical Tool and Software

The data were analyzed using JASP-an open-source statistical software. The independent samples Student's t-test was employed to compare the means of the public and private sectors for each ratio. Prior to conducting the t-test, Levene's test for equality of variances was used to validate the assumption of homogeneity. In cases where variances were equal ($p > 0.05$), the student's t-test was retained.

F. Hypothesis

The study tests the following null hypothesis:
H_0: There is no statistically significant difference in financial performance between public and private universities in India based on income and expenditure ratios.
H_1: There is a statistically significant difference in financial performance between public and private universities in India based on income and expenditure ratios.

G. Limitations

While the selected universities represent a diversity of institutional profiles, the sample size is limited to four institutions. The findings may not generalize to the entire higher education sector. Additionally, external financial pressures such as COVID-19-related disruptions are not factored in separately.

IV. RESULTS

A. Descriptive Statistics

To begin the analysis, the average values of each financial ratio were computed for each university across the five-year period (2016–2020). Subsequently, the sectoral means (public vs. private) were derived. A total of 100

observations were analyzed, representing 50 financial ratio values each for public and private universities.

TABLE I MEANS OF RATIOS

Ratio	Public Mean	Private Mean
Dependency Ratio	0.9043	0.0109
Fee Income Ratio	0.0172	0.8610
Expenditure Ratio	0.9582	0.9959
Operating Surplus Ratio	-0.3044	-0.0346
Revenue Diversification Index	0.1793	0.2322

B. Assumption Testing

Before proceeding with the t-test, Levene's Test for Equality of Variances was conducted to determine the appropriate version of the t-test (Student's or Welch's). The result yielded:

TABLE II TEST OF EQUALITY OF VARIANCES (LEVENE'S)

	F	Df$_1$	df$_2$	P
Value	2.063	1	98	0.154

Since the p-value was greater than 0.05, the assumption of equal variances was met. Therefore, the Student's t-test was selected for further analysis.

C. Independent Samples T-Test Results

An independent samples t-test was conducted using JASP to compare the overall financial ratio performance of public and private universities. The test results were as follow

TABLE III INDEPENDENT SAMPLES T-TEST

	t	df	p	Cohen's d	SE Cohen's d
Value	0.649	98	0.518	0.130	0.200

Note: Student's t-test
The descriptive statistics accompanying the test were:

TABLE IV GROUP DESCRIPTIVES

Group	N	Mean	SD	SE	Coefficient of Variation
Private	50	0.413	0.445	0.063	1.078
Public	50	0.351	0.510	0.072	1.454

D. Interpretation

The results indicate that there is no statistically significant difference in the income and expenditure-related financial ratios between public and private universities in India (p = 0.518). This supports the null hypothesis (H$_0$). Although the private universities show a slightly higher mean (0.413 vs. 0.351), the difference is neither large nor statistically meaningful. The small effect size (Cohen's d = 0.130) further confirms the limited practical significance of the

observed difference. This suggests that, despite differences in institutional structures and funding models, the financial management practices of public and private universities in India-as captured by the selected ratios-appear to be broadly similar in performance over the period analyzed.

V. DISCUSSION

The purpose of this study was to examine whether Indian public and private universities differ significantly in their financial management practices, particularly concerning income generation and expenditure efficiency. Five key financial ratios were selected: Grant Dependency Ratio, Fee Income Ratio, Expenditure Ratio, Operating Surplus Ratio, and Revenue Diversification Index. These indicators together offer a comprehensive view of how universities manage their resources, sustain operations, and diversify revenue.

The findings of the independent samples t-test revealed no statistically significant difference between public and private universities across these financial metrics (p = 0.518). Despite the expectation that private universities might exhibit stronger revenue diversification and fee income reliance, while public universities might rely more heavily on government grants, the overall performance as captured through mean ratios over a five-year span did not support a stark divergence.

This finding suggests that, in practice, both public and private universities in India operate under similar financial constraints and strategies, even if their institutional models differ. For instance:

1. Grant Dependency was expected to be high for public institutions, but recent policy shifts promoting self-sufficiency may have contributed to reduced grant reliance.
2. Fee Income Ratios in private universities were naturally higher, yet not dramatically enough to translate into a statistically meaningful difference overall.
3. The Operating Surplus Ratio, reflecting financial sustainability, showed minor variation, indicating both sectors face similar budgetary pressures and management effectiveness.
4. The Revenue Diversification Index did not significantly differ, hinting at a shared struggle in developing robust non-core revenue streams (such as consultancy, endowments, or industry collaboration).

These observations may be attributed to increasing regulatory convergence between public and private institutions, as well as mutual challenges such as reduced public funding, high operational costs, and pressure to improve quality and rankings (Tilak, 2015; Agarwal, 2009). Even private institutions, often presumed to be financially independent, are seeking government grants or partnerships, while public universities are engaging more actively in revenue-generating activities to offset declining budgetary support. The low Cohen's d (0.130) further reinforces the

point that, while mean values may differ slightly, the practical or policy relevance of such differences is limited. This has significant implications for higher education policy and governance, as it suggests that blanket distinctions between public and private institutions may oversimplify a more nuanced reality.

A. Implications

These findings invite several interpretations and policy discussions:

1. Policymakers should consider support mechanisms for both public and private institutions to enhance financial sustainability, especially in terms of revenue diversification and surplus generation.
2. University administrators across both sectors might benefit from shared learning and best practices in financial planning, expenditure control, and resource mobilisation.
3. Funding agencies and regulators might reconsider fund allocation models that are based solely on institutional type, and instead focus on performance-based or ratio-based benchmarks.

VI. CONCLUSION AND RECOMMENDATIONS

This study set out to explore whether significant differences exist in income and expenditure-related financial management practices between public and private universities in India. By employing five key financial indicators-Grant Dependency Ratio, Fee Income Ratio, Expenditure Ratio, Operating Surplus Ratio, and Revenue Diversification Index-across a five-year period (2016–2020), the study offered a data-driven comparison between two public and two private universities.

The results from the independent samples t-test revealed no statistically significant difference between public and private institutions in terms of the selected financial ratios. This outcome challenges conventional assumptions that public and private universities operate under fundamentally different financial management models. Instead, the findings suggest that both sectors face similar operational realities and constraints, particularly in areas of income diversification and expenditure efficiency. This convergence may be a reflection of changing funding landscapes, increased pressure for accountability and self-sufficiency across all institutions, and the broader transformation of India's higher education sector in response to global competition and local demands. The absence of a significant gap also reinforces the idea that institutional effectiveness in financial management is not solely determined by ownership type, but also by strategic governance, leadership, and adaptability.

A. Recommendations

Based on the study's findings, the following recommendations are proposed:

1. *Encourage Shared Financial Strategies Across Sectors:* Since public and private institutions exhibit similar financial profiles, mechanisms should be established for cross-sectoral collaboration in financial planning, cost management, and diversification practices.
2. *Reassess Policy and Funding Models:* Government and regulatory bodies may consider designing funding frameworks that assess institutions on financial performance indicators rather than categorically by ownership type. Performance-based funding models may drive more effective resource utilization.
3. *Strengthen Revenue Diversification Efforts*: Both public and private universities should invest in non-tuition-based income streams, such as endowments, industry partnerships, alumni contributions, and research commercialization to reduce reliance on volatile funding sources.
4. *Promote Transparency and Financial Reporting:* Institutionalizing standardized financial reporting formats will enable better inter-institutional comparisons and facilitate broader sectoral studies to track trends over time.
5. *Extend Research to Larger and Diverse Samples:* Future studies could include a larger sample of universities to validate or expand on the current findings. Including central, state, deemed, and private universities with different disciplines may uncover patterns across university types.

While the study offers meaningful insights into the financial health of selected Indian universities, certain limitations should be acknowledged. The sample size is small, comprising only four institutions over five years, and may not fully represent the diversity of the higher education sector. Additionally, the study focused solely on publicly available financial data, excluding qualitative factors such as governance and academic outcomes. These limitations suggest caution in generalizing the results and present opportunities for future research.

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REFERENCES

Agarwal, P. (2009). *Indian higher education: Envisioning the future*. SAGE Publications India.

Del Rey, E., & Romero, L. (2004). Financing and control in higher education: A principal-agent model. *The Manchester School, 72*(5), 599–621. https://doi.org/10.1111/j.1467-9957.2004.00411.x.

Ghayas, S., & Akhter, A. (2018). Impact of capital structure on profitability: An empirical analysis of listed firms in India. *Asian Journal of Managerial Science, 7*(2), 16–20. https://ajmsjournal.org/index.php/ajms/article/view/1310.

Gopi, K. T. (2018). Financial performance of cement industry in India using extended DuPont approach. *Asian Journal of Managerial Science, 7*(2), 16–21. https://doi.org/10.51983/ajms-2018.7.2.1329.

Jacob, T., & Ajina, V. S. (2020). Capital structure and financial performance of pharmaceutical companies in Indian Stock Exchange. *Asian Journal of Managerial Science, 9*(2), 24–30. https://doi.org/10.51983/ajms-2020.9.2.1641.

Jayashankar, M., & Chandra, D. (2023). Financial management and accountability in Indian universities: A comparative study. *International Journal of Higher Education and Research, 13*(2), 45–60.

Johnstone, D. B. (2004). The economics and politics of cost sharing in higher education: Comparative perspectives. *Economics of Education Review, 23*(4), 403–410. https://doi.org/10.1016/j.econedurev.2003.09.004.

Joshi, V., & Rajan, R. (2022). Financial health of Indian universities: A comparative analysis of public and private institutions. *Journal of Higher Education Research & Development, 41*(6), 1102–1119. https://doi.org/10.1080/07294360.2021.1958567.

Mishra, R. (2021). Private universities in India: Governance, financing, and regulation. *Journal of Higher Education Policy and Management, 43*(4), 365–379. https://doi.org/10.1080/1360080X.2021.1884771.

Patel, N., & Deshmukh, S. (2022). Revenue diversification in Indian universities: Trends, challenges, and opportunities. *International Journal of Educational Development, 91*, 102614. https://doi.org/10.1016/j.ijedudev.2022.102614.

Perody, S. H., & Sudhakara, A. M. (2024). Strategic analysis of McDonald's global and Indian market performance. *Asian Journal of Managerial Science, 13*(2), 52–60. https://doi.org/10.70112/ajms-2024.13.2.4255.

Rao, R., & Kaur, J. (2023). Strategic financial planning in higher education: Case studies from Indian universities. *Asian Journal of University Education, 19*(1), 83–101. https://doi.org/10.24191/ajue.v19i1.21457.

Sahoo, S., & Dash, B. (2023). Financial efficiency and surplus generation in Indian higher education: Evidence from institutional audits. *Indian Journal of Public Administration, 69*(2), 210–226. https://doi.org/10.1177/00195561231154562.

Sahni, R., & Kumar, A. (2022). Public funding in Indian higher education: Changing contours and implications. *Higher Education Quarterly, 76*(4), 741–759. https://doi.org/10.1111/hequ.12322.

Sharma, M., & Rao, P. (2020). Performance-based budgeting in higher education: Indian evidence. *Journal of Education Finance, 45*(3), 342–359. https://www.jstor.org/stable/26923256.

Sharma, R., & Chattopadhyay, S. (2021). Autonomy and accountability in Indian public universities: Financial and institutional perspectives. *Studies in Higher Education, 46*(8), 1721–1736. https://doi.org/10.1080/03075079.2020.1781772.

Thomas, L., & Pillai, R. (2021). The economics of tuition pricing in Indian private universities: Balancing cost, competition, and quality. *South Asian Journal of Management, 28*(1), 57–74.

Tilak, J. B. G. (2015). Private higher education in India. *Economic and Political Weekly, 50*(40), 32–38.