

Cost Drivers and Their Influence on Student Fee Structures in AICTE-Approved Private Autonomous Management Institutions in India

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Abstract: Over the last three decades, management education in India has grown at a tremendous pace with the private autonomous institutes playing a pivotal role in delivering post-graduate management education. These institutions are largely self-financed, and the fees students pay are their main source of income; therefore, the underlying cost structure is a key factor in determining cost and access. The purpose of this study is to identify the key cost drivers in the management education in the AICTE approved private autonomous institutions and evaluate their impact on fee structure of management education. The design was quantitative and descriptive analytical, the sample size was 295 institutions from five regions of India and secondary data was obtained from AICTE, NAAC, NBA, and state fee-regulatory sources. Descriptive statistics, one-way ANOVA, Pearson correlation and multiple linear regression were used to test the hypotheses. The results show that the highest cost item is personnel (average 41.8% of total cost), followed by infrastructure and technology costs. A regression analysis demonstrated that both costs of personnel and infrastructure and technology accounted for 68.4% of the variance in student fees ($R^2 = 0.684$, $p < 0.001$); the cost of personnel was the strongest predictor. As might be expected, there were considerable variations in fees among institutional levels, and a larger number of students per institution was associated with a lower per-student fee, thus supporting economies of scale. The study provides empirical evidence to the economics of management education and implications for fee regulation, cost management of institutions, and education affordability.

Keywords: Cost drivers, management education, fee structure, private autonomous institutions, AICTE, educational finance, economies of scale.

1. INTRODUCTION

Management education has been playing a crucial role in the professional education scene in India and is one of the major avenues to managerial skills, employment and socio-economic mobility. The last three decades have seen significant growth and a growing competitive landscape, coupled with the increasing costs of operations, a fast-changing landscape of new technology and growing stakeholder expectations and demands. In this changing scenario, private institutions, autonomous and approved by the All India Council for Technical Education (AICTE), have emerged as the key players in providing MBA and Post Graduate Diploma in Management (PGDM) programmes which are flexible academically, industry oriented and have more freedom than their affiliated counterparts.

The institutions are predominantly self-financed and student fees are the major source of their revenue. They are thus reliant on their capacity to control a variety of cost factors such as faculty and staff compensation, infrastructure development, technology investment, accreditation and compliance, administrative overheads, student support services and marketing. These cost components directly affect the fee structures imposed on students which in turn affects affordability, the quality of the institution and its viability in the longer term. However, despite the importance of these cost drivers, there is little empirical knowledge of the comparative importance of these drivers and how they are converted to fee determination.

This worry has taken a momentous turn in today's post-pandemic world, characterized by the fast-paced rollout of digital learning platforms, blended learning and technology-enabled administration, which has been impacting traditional spending patterns. In this background the current study aims to find the major cost drivers of management education in private autonomous institutions approved by AICTE and explore the impact of these cost drivers on the student's fee structure. It does so to provide evidence that can feed into institutional financial planning, evidence-based fee regulation and the wider discussion on the trade-off between education quality and affordability and sustainability.

2. REVIEW OF LITERATURE

Though there are considerable theoretical bases in literature for the understanding of institutional cost behaviour, the empirical literature on management education in India is still thin. Bowen (1980) proposed a "revenue theory of cost" which suggested that institutions are designed to collect all the revenue they can and provide all the expenditure that is raised, with expenditure determined less by the marginal cost of providing the expenditure, but more by prestige and quality. Much of the discussion of the increase in tuition at self-financing institutions is still guided by this view.

A complementing explanation is offered by the cost disease thesis, proposed by Baumol (1966), which suggests that productivity growth in service sectors of the economy, like education, is less than the growth of wages in the rest of the economy, causing continuous cost increases in these sectors. Education is structurally subject to cost increases above inflation, as faculty salaries make up the bulk of institutional budgets (as has been confirmed in studies of tuition trends which include Archibald & Feldman, 2011).

The resource dependency theory (Pfeffer & Salancik, 1978), from an organisational perspective, implies that organisations with a single source of revenue, e.g. student fees, organise expenditure and pricing to attract and retain that revenue. In higher education, signalling theory (Spence, 1973) posits that fees and expenditures of the existing infrastructure, accreditation and branding are quality signals that prospective students receive, which can partially remove the price from the cost.

Research in the Indian context has focused on outcomes and not economics. Research focused on the quality of education, curriculum, employability and student satisfaction (Dayal, 2002; Sahney et al., 2004) and accreditation and institutional performance have been undertaken. There is little research regarding cost of and affiliation between the cost of education and fee setting for management education. Evidence from international studies on economies of scale (Brinkman & Leslie, 1986; Toutkoushian & Lee, 2018) has shown that per-student costs will fall with increasing student numbers until a point of optimum size is reached, beyond which they will start to rise. The international evidence of economies of scale (Brinkman & Leslie, 1986; Toutkoushian & Lee, 2018) suggests that the per-student costs will reduce with larger numbers of students up to a certain size, after which they will begin to increase. There is little evidence similar to that for autonomous management institutions in India.

More recent contributions have started to address expenditure on technology and financial impact of the COVID-19 pandemic. The investments in LMS, ERP, Cyber security, and Hybrid infrastructure have brought new and permanent cost categories to the school's budget (S. Govindarajan & Srivastava, 2020). The long run consequences of these changes on the cost structure and fee levels of the Indian management institutions, however, still remain under-researched and therefore warrant the present empirical study.

3. RESEARCH GAP

A systematic review of the national and international literature on higher education finance, institutional economics and educational cost structures shows that there are a number of enduring gaps. First, though, although there is much work on the quality of education, employability, and accreditation, there are few empirical studies on the cost of running management institutions and the distribution of costs by faculty, infrastructure, technology, administration and marketing. Second, despite broad studies on the governance and academic flexibility of institutions, their financial implications with respect to expenditure and fee pricing have not been sufficiently explored.

Third, and most centrally, there is a lack of understanding of the empirical relationship between institutional costs and fee determination, and it is not known whether fees are primarily impelled by operation costs or by reputational, competitive and locational factors. Fourth, the cost shifting that has resulted from the COVID-19 and digital transformation has not been properly measured for management education in India. Finally, there is little comparative literature that examines the effects of regulatory regimes on institutional costs and charges and little evidence of cost efficiency and economies of scale. The present study aims to fill these gaps by offering an integrated and empirical explanation of the factors driving costs and how they affect the fee structure of private autonomous management institutes recognized by AICTE.

4. OBJECTIVES OF THE STUDY

In light of the identified research gaps, the study pursues the following three objectives:

1. To identify and analyse the major cost drivers of management education in AICTE-approved private autonomous institutions, and their relative composition.

2. To examine the variation in student fee structures across AICTE-approved private autonomous management institutions of different tiers.
3. To assess the relationship between institutional cost drivers and student fee structures, and to evaluate the presence of economies of scale.

5. HYPOTHESES OF THE STUDY

Corresponding to the objectives, the following null hypotheses were formulated for empirical testing:

1. H_{01} : The difference in the proportions of personnel cost between the different categories of the AICTE approved private autonomous management institutions is not significant.
2. H_{02} : No significant difference is found between the student fee structures of the three institutional tiers (premier, mid-tier and emerging).
3. H_{03} : Institutional cost drivers & Student fee structure are not significantly related.
4. H_{04} : The cost structure of the private autonomous management institutions approved by AICTE does not have significant economies of scale.

6. RESEARCH METHODOLOGY

6.1 Nature and Design of the Study

The type of research conducted in this study is quantitative, descriptive and analytical. The descriptive part characterizes the cost structure of management institutions by personnel, infrastructure, technology, accreditation, administrative and marketing aspects and records differences in fee level by management institution level. The analytical part analyzes these relationships, by means of suitable statistical techniques, as well as the impact of these cost drivers on the fee structure, and the magnitude thereof. A mix of primary and secondary data sources are used to gain an overview of recent developments in the financing of management education in the pre- and post-pandemic period.

6.2 Population and Sampling

The population includes all autonomous institutions in India that are offering full time management courses with the AICTE approval, about 1,304 in India, as per records of AICTE and UGC. Stratified random sampling method was used to secure representation by area and level of institutions. Institutions were stratified to five regional strata (South, West, North, East and Central India) followed by strata by tier within each region with random selection within a strata.

The sample size was calculated by applying the formula suggested by Cochran (1977). With $Z = 1.96$, $p = 0.5$, $q = 0.5$ and $e = 0.05$, the initial sample size $n_0 = (1.96^2 \times 0.5 \times 0.5) / 0.05^2 = 384$. Applying the finite population correction for $N = 1,304$ yields $n = 384 / (1 + 383/1,304) \approx 294$. Non-response was 320 institutions approached, 295 of which were used. The distribution of achieved sample is presented in Table-1 in the regional and tier-wise manner.

Table 1. Sampling Frame: Regional and Tier-wise Distribution of the Sample

Region	Premier Tier	Mid-Tier	Emerging Tier	Total
South India	25	45	25	95
West India	20	40	20	80
North India	18	32	15	65
East India	8	16	8	32
Central India	6	12	5	23
Total	77	145	73	295

Source: Developed by the researcher based on AICTE institutional distribution and stratified sampling requirements.

6.3 Data Sources and Collection

A structured data-collection schedule was used for data collection on the sampled institutions to collect primary data about the institutional profile, enrolment, faculty strength, the six cost categories and annual fee components. Both electronic forms and administrative contacts at the institutions were used to collect data. The secondary data were obtained from the annual reports of AICTE, the data portal of AICTE, the records of the autonomous-institution of UGC,

the NAAC and NBA accreditation reports, the NIRF, notification of state fee-regulatory authority and the prospectus of the institutions. To improve the categories of costs, clarify the ambiguous items and check that the data exists before the survey, a pilot study was done in 15 institutions in the three states of Maharashtra, Karnataka and Delhi NCR.

6.4 Variables and Statistical Tools

The independent variables are six categories of cost drivers: personnel cost (PC) measured in rupees per annum and as a percentage of total costs, infrastructure cost (IC) measured in rupees per annum and as a percentage of total cost, technology cost (TC) measured in rupees per annum and as a percentage of total cost, accreditation cost (AC) measured in rupees per annum and as a percentage of total cost, administrative cost (ADC) measured in rupees per annum and as a percentage of total cost, and marketing cost (MC) measured in rupees per annum and as a percentage of total cost. The total annual fee per student (SFS) is the dependent variable. IBM SPSS Statistics (Version 27) and Microsoft Excel were used to analyse data. Descriptive statistics provided a profile of the cost composition; also, one-way ANOVA was used to test the differences across institutional categories and tiers, Pearson correlation was used to evaluate bivariate cost–fee relationships, and multiple linear regression was used for an assessment of the joint influence of cost drivers on fees. To test for economies of scale, regression analysis of per student cost with enrolment was conducted.

7. CONCEPTUAL FRAMEWORK

The conceptual framework is based on higher education cost-function theory, resource dependency theory, signalling theory and Baumol's cost disease theory. It estimates that the six institutional cost drivers directly affect the fee levels charged, and that institutional characteristics (in terms of size, location, tier and years of autonomy) affect both the level of expenditure and the level of fees charged. Economies of scale are used as a moderating mechanism, where per student cost is anticipated to be a response to the scale of student enrolments. Figure 1 illustrates the hypothesized relationships between the cost drivers, the context factors and the student fee structure.

Figure 1. Conceptual Framework of Cost Drivers and Student Fee Structure

Independent Variables (Cost Drivers)	Link	Dependent Variable
Personnel cost (faculty, admin, staff pay)	H ₀₁ / H ₀₃	Student Fee Structure: total annual fee per student; fee-cost ratio; cross-tier fee variation
Infrastructure cost (buildings, labs, campus)	H ₀₃	↑
Technology cost (ERP, LMS, digital infra)	H ₀₃	↑
Accreditation cost (NAAC, NBA)	H ₀₃	↑
Administrative & marketing expenses	H ₀₃	↑
Economies of scale (per-student cost vs. enrolment)	H ₀₄	Moderating mechanism

Source: Developed by the researcher. Contextual moderators: institutional tier, size, location and years of autonomy.

8. DATA ANALYSIS AND INTERPRETATION

8.1 Profile of the Sample

The 295 institutions in the final sample were categorized as 26.1% premier-tier, 49.2% mid-tier and 24.7% emerging-tier, very much in keeping with the national distribution. The number of students enrolled on average each year varied in the premier institutions from 612 to 198 students in the emerging institutions. Table 2 presents the average cost composition by each of the six cost driver categories as a percentage of total institutional expenditure.

Table 2. Mean Cost Composition by Category (as % of Total Institutional Expenditure)

Cost Category	Mean (%)	SD	Rank
Personnel cost (PC)	41.8	6.2	1
Infrastructure cost (IC)	19.4	4.1	2
Technology cost (TC)	13.7	3.8	3
Administrative cost (ADC)	10.5	2.9	4
Marketing cost (MC)	8.9	3.3	5
Accreditation cost (AC)	5.7	1.6	6
Total	100.0	—	—

Source: Primary data (N = 295). SD = standard deviation.

Personnel cost emerged as the dominant expenditure category, accounting for over two-fifths of total institutional cost, consistent with Baumol's cost disease thesis. Infrastructure and technology costs together constituted approximately one-third of expenditure, with the elevated technology share reflecting accelerated post-pandemic digital investment.

8.2 Differences in Personnel Cost Proportions (H_{01})

A one-way ANOVA was performed to determine if there were significant differences between the personnel cost proportions from the three institutional levels. The results shown in Table 3 show that the difference is statistically significant ($F(2, 292) = 14.62, p < 0.001$). The post hoc comparison indicated that the senior institutions invested more proportionately in personnel cost, which suggests that they invested more in better qualified faculty and senior faculty members. Therefore, H_{01} is rejected.

Table 3. One-Way ANOVA — Personnel Cost Proportion across Institutional Tiers

Source	SS	df	MS	F / p
Between groups	1042.6	2	521.3	14.62
Within groups	10410.8	292	35.65	$p < 0.001$
Total	11453.4	294	—	—

Source: Primary data (N = 295).

8.3 Variation in Fee Structures across Tiers (H_{02})

The mean annual fee per student was significantly different between the tiers, with ₹4.82 lakh for premier institutions, ₹2.94 lakh for mid-tier institutions and ₹1.71 lakh for emerging institutions. These differences were statistically significant ($F(2, 292) = 38.71, p < 0.001$) and Tukey HSD post-hoc tests revealed all pairwise differences in tiers to be significant at $p < 0.01$. Therefore, H_{02} was accepted, indicating that there is no significant difference in fee structure between the different levels of institutions.

Table 4. Mean Annual Fee per Student by Institutional Tier (₹ lakh)

Tier	Mean Fee	SD	n
Premier	4.82	0.71	77
Mid-tier	2.94	0.58	145
Emerging	1.71	0.44	73
Overall	3.06	1.18	295

Source: Primary data (N = 295).

8.4 Relationship between Cost Drivers and Fee Structure (H_{03})

The results of Pearson correlation analysis (Table 5) indicated that there were positive and significant correlations between all the cost drivers and student fees, the highest of which was the personnel cost ($r = 0.74$, $p < 0.001$), followed by infrastructure cost ($r = 0.61$, $p < 0.001$) and technology cost ($r = 0.57$, $p < 0.001$). A multiple linear regression was then carried out to predict annual fee per student using the six cost drivers as predictors. The model was significant ($F(6, 288) = 103.7$, $p < 0.001$) and explained 68.4% of the variance in fees ($R^2 = 0.684$, adjusted $R^2 = 0.677$). Personnel cost was the most significant single predictor ($\beta = 0.42$, $p < 0.001$), followed by infrastructure ($\beta = 0.24$) and technology ($\beta = 0.19$). Accreditation and marketing costs were positive, but not as strong indicators. H_{03} is thus rejected.

Table 5. Correlation and Regression Results — Cost Drivers and Student Fee

Cost Driver	r	β	t	p
Personnel cost (PC)	0.74	0.42	8.91	***
Infrastructure cost (IC)	0.61	0.24	5.07	***
Technology cost (TC)	0.57	0.19	4.12	***
Accreditation cost (AC)	0.39	0.11	2.46	*
Administrative cost (ADC)	0.44	0.13	2.88	**
Marketing cost (MC)	0.36	0.09	2.01	*

Source: Primary data ($N = 295$). Model $R^2 = 0.684$; $F(6, 288) = 103.7$, $p < 0.001$. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

8.5 Economies of Scale (H_{04})

For the purpose of testing for economies of scale per student cost was regressed against total enrolment. The correlation was negative and significant ($\beta = -0.48$, $t = -9.36$, $p < 0.001$) and the correlation coefficient of enrolment alone accounted for 23.1% of the variance in per-student cost ($R^2 = 0.231$). There were significant scale efficiencies with an average per-student cost of ₹3.61 lakh for institutions serving fewer than 200 students, and of ₹2.18 lakh for institutions serving over 600 students. Therefore H_{04} is rejected, thus there is economies of scale.

Table 6. Per-Student Cost by Enrolment Band (₹ lakh)

Enrolment Band	Mean Cost / Student	SD	n
< 200 students	3.61	0.52	61
200–400 students	3.04	0.47	112
401–600 students	2.55	0.41	78
> 600 students	2.18	0.39	44

Source: Primary data ($N = 295$).

8.6 Summary of Hypothesis Testing

Hypothesis	Statement (Null)	Decision
H_{01}	No difference in personnel cost proportions across tiers	Rejected
H_{02}	No difference in fee structures across tiers	Rejected
H_{03}	No relationship between cost drivers and fees	Rejected
H_{04}	No economies of scale in cost structure	Rejected

Source: Compiled from the analysis above.

9. FINDINGS AND DISCUSSION

Four main conclusions are drawn from the analysis. The first is personnel cost which has the greatest influence on the institutional expenditure, with an average of 41.8% of total cost and a wide range of percentages by tier. This is in support of structural labour intensity of management education and provides empirical support to Baumol's cost disease in the Indian context. Second, there is a significant institutional hierarchy in fee pricing, with the highest priced being those offered by the most prestigious institutions, which—alongside cost differentials—is indicative of the signalling function of prestige pricing.

Third, personnel and infrastructure and technology costs are the most important predictors and they account for more than two-thirds of the variation in student fees as a group. This shows that the factors of reputation and competitive pressure are important, but the most important is operational cost. Fourth, the inverse relationship between enrolment size and per-student cost is significant, which is further evidence of economies of scale and indicates that there are cost efficiencies to be gained from larger institutions that in principle could slow the rate of fee increases. These results collectively fill the core research gap by quantifying the cost–fee relationship which was largely ignored in the previous literature.

10. CONCLUSION

The aim of the study was to find the key cost contributor of management education in the private autonomous institutions approved by AICTE and also to evaluate the impact of the same on the fees charged by the institutions. The evidence shows that institutional fees are mostly cost-driven, with personnel expenditure being the single most influential cost, and that there is substantial variation in institutional fees between the institutional tiers. Economies of scale confirmed suggest that the factor of institutional size plays a significant role in cost-efficiency. The study, which gives empirical estimates of cost composition and cost–fee relationship, is one of the few studies on the economics of Indian management education and could provide a foundation for more transparent fee determination based on evidence.

11. SUGGESTIONS AND IMPLICATIONS

- From the results of the study, the following recommendations are made to institutions, regulators and policymakers:
- Institutions should compare their cost composition to that of their tier peers and should focus on better efficiency in the use of personnel, which has the largest proportion of costs, while at the same time maintaining academic quality.
- To limit the growth of fees and reduce the per student cost, smaller institutions should consider optimal enrolment levels, the use of shared services and consortiums.
- Regulatory bodies should mandate that there is higher transparency and uniformity in financial disclosures, and greater financial reporting, so that fee committees can consider the reasonableness of the proposed fee in relation to verifiable cost structures.
- Policymakers should accept technology as a permanent cost category and prioritize the investment in digital infrastructure, e.g., by offering targeted support for emerging-tier institutions which are struggling in the affordability dimension.
- Future fee-fixation frameworks should be designed to take into account empirically derived cost–fee models to strike a balance between institutional sustainability and affordability and access to students in the context of fee-fixation frameworks, rather than uniform caps.

12. LIMITATIONS AND SCOPE FOR FUTURE RESEARCH

There are a number of limitations to note. The study draws some data from self-reported institutional financial data and some expenditure data was difficult to access as it was confidential and subject to reporting variation. The sample is stratified but only includes those willing to participate which may limit generalisability. The analysis is restricted to the institutions approved by the AICTE under the private autonomous management and the results should not be generalized to the government institutions, deemed institutions or non-autonomous institutions. Nonfinancial indirect and intangible costs (which are not readily measurable) were not modeled and inter-state regulatory differences may impact comparability.

Future research may include the application of structural equation modelling to include moderation and mediation effects, as well as a longitudinal study of cost trends over time before and after the pandemic, and the addition of qualitative analysis of the rationale behind fee-determination decisions. Comparative studies between the different regulatory mechanisms and institutions would add to the educational finance discourse in India.

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