

# The Problem Of ‘Adverse Selection’ In Business Education

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## ABSTRACT

*The quality of output from a process, to a substantial extent, depends upon quality of the input. The performance of an educational institution badly suffers when it faces a ‘wear out’ in the quality of its in-take. Sometimes it is a deficient induction criterion due to which inappropriate elements hold majority in admitted population of an institution. In this paper, the case of a business education institute, which has been facing a similar problem, is discussed. The authors construct various propositions concerning the relevant ‘concepts of interest’ and then gauge their truth value through a survey of archival records of admitted students with an intent of establishing a cause-and-effect relationship between admission policy and the students’ academic performance.*

**Keywords:** Business education, adverse selection, In-take quality

## INTRODUCTION

### The Case Scenario

In a problem-solving meeting to investigate the issue of gradually creeping up drop-out rate in the Institute of Management Sciences, a number of probable causes were being debated. Initially, the majority of the problems were being traced back to certain deficiencies in the learning process, e.g. lack of individualized attention, lack of imparting concurrent knowledge, too much theoretical orientation instead of hands-on orientation, etc. Almost when the ‘Board of Faculty’ seemed to have reached a consensus on specifying the improvement in such process elements as the most appropriate avenue to take regarding this problem, a senior colleague - enjoying commendable credibility among the faculty members - asserted that inadequacies in the in-take (admissions) policy must be specified as the focal area of concern instead of/or together with the flaws in the learning processes. Since he had been an experienced fellow with a dependable knowledge base and analytic wisdom, his viewpoint instantly spurred a new stream of discussion. The ‘Board of Faculty’, after some debate, eventually settled to specify the same as the key management problem and began to critically review the admissions policy. From this discussion, with a number of persons turning up with counter-arguments to each other’s viewpoints, following ‘facts of the matter’ emerged:

1. The existing criteria for making admissions, which gives more weight to the *past academic performance* (especially in the last program of study), is inappropriate. One group suggested that admissions should be made purely on the basis of *past academic performance*, whereas another (almost equal in strength) asserted that admissions should be made purely on the basis of *entry-test score*. A third group, however, proposed the need for some rigorous admission criteria.
2. The magnitude of deduction, made in lieu of *year of passing the terminal examination*, needs to be increased so as to increase the proportion of ‘fresh’ candidates in the admitted population.
3. The number of seats for candidates having a *commerce education background* should be increased gradually and the admissions should eventually be limited to the students having terminal education only in business-related disciplines; i.e., DBA and/or BBA, B.Com, etc. Students with irrelevant major subjects (e.g. languages, history, geography, pure sciences, etc.) should be declared ineligible for business studies.

4. In order to generate more finances for itself, the institution is making a sizable number of admissions on a *self-finance basis*. This needs to be balanced with the number of students admitted on *merit*.
5. As students admitted on a *reserved seats* basis presumably perform extremely poor, the number of such seats should be reduced, if not set at zero.
6. The current proportion of *local* students needs to be balanced with the *non-locals*.
7. There should be no *age limit* for admission to any programs of study.

In this study, we have taken the aforementioned ‘facts of the matter’ as our baseline propositions/hypothesis and have gauged their truth value through examining evidence collected through a survey of archival records of admitted students. More specifically, the study aims at establishing a cause-and-effect relationship between the existing *admission policy* and the students’ *academic performance* manifested through their cumulative *grade point average (CGPA)*.

**THE CASE INSTITUTE**

Institute of Management Sciences had been established in 1994 to fulfill the demand of the local business community for high quality business executives. Presently, it offers BBA, MBA, and MBA (Banking and Finance) programs, both in the morning and in the evening hours. All evening programs are self-finance programs in order to generate additional finances for the institution. Admissions are made once a year. The following are salient features of the Institute’s *admission policy*:

1. Admissions are made on the basis of a *merit score*, which is determined on the basis of *past academic performance* and the *entry-test score* normally given the following weights:

Past academic performance	80%
Entry-test score	20%

2. In order to increase induction of ‘fresh’ candidates, a deduction of five marks is levelled for each subsequent year following the *year of completing the last program of study*.
3. 50% of the seats are reserved for the *local* publics. The (local) candidates are also considered for admission against the remaining 50% seats (the *non-locals*’ quota). Consequently, 70-80% of the students admitted in various programs are *locals*.
4. The candidates are further classified into three groups with respect to their areas of study: *general education, commerce, reserved seats*.
5. A fairly large number of candidates are admitted on a *self-finance basis*, both in the morning and the evening programs.
6. Certain *age limits* apply while determining candidates’ eligibility for admissions to various programs.

**KEY VARIABLES AND HYPOTHESIS OF STUDY**

**Performance In The Last Program Of Study**

In the past, admissions to all programs had been made on the basis of *past academic performance* in all educational institutions in the country. Candidates securing high aggregate marks in the *last program of study* have been given preference in granting admissions with the assumption that persons doing well in the recent past would continue to do the same in future studies (principle of uniformity of nature). Buying into the same logic, we hypothesize:

- H1:** The higher the *academic performance in the last program of study*, the higher the *academic performance during subsequent business studies*.

### Year Of Passing The Terminal Examination

The university prefers candidates who have completed their *last program of study* in the recent past with the assumption that they perform better than those who have resorted back to studies after a discontinuation at some stage(s) in the past. In order to gauge the truthfulness of this assumption, we hypothesize:

**H2:** The more recent the completion of the *last program of study*, the higher the *academic performance* in subsequent studies.

### Entry-Test Score

In the early 1990s, a country-wide adoption of entry-test policy made it mandatory for the institute to include it in its admission criteria. In the beginning, the weight of the *entry-test* had been 50%, but later on - owing to the perceived low instrumentality and a host of construct validity concerns - the weight had been reduced to 20%. In this regard, we hypothesize:

**H3:** The higher the *entry test score*, the higher the *academic performance* during business studies.

### Educational Background

The candidates seeking admission are grouped into two categories: *general education* (those possessing FA/F.Sc and/or BA/B.Sc degrees) and *commerce* (those possessing D.Com/DBA and/or B.Com/BBA degrees) -with the majority of the seats allocated to the first category. In the *general education* category, no further distinction is made on the basis of 'major subjects' that a person had during these studies. The consequence is the admission of a significant number of candidates having *majors* in unrelated fields, such as languages, geography, history, etc. Their weak knowledge base is the key antecedent to their inability in absorbing/comprehending the *course of study* oriented much toward commerce, psychology, economics, sociology, accountancy, etc. Therefore, we hypothesize:

**H4:** Students with a *general education* background are poorer performers than those with a *commerce education* background.

### Basis for Admission

In the early 1990s, the government urged public universities to generate finances for themselves by making some admissions on a *self-finance basis*. Initially, 20% of the total seats were allowed to be floated for this purpose. In subsequent years, this proportion increased and the universities launched afternoon and evening programmes where admissions were made entirely on a *self-finance basis*. At present, a sizeable percentage of the total in-take of the institute belongs in this category. The merit on such seats is relatively low. In addition, there are certain *reserved seats* where admissions are granted to self, spouse and children of university teachers, staff, army men, etc. The merit on this category generally is the lowest. Here, we hypothesize:

**H5 (a):** Students admitted on *merit* exhibit higher *academic performance* than those admitted on a *self-finance basis*.

**H5(b):** Students admitted on a *reserved seats* basis exhibit the lowest *academic performance* compared to those admitted on a *merit* and/or *self-finance basis*.

### Origin

Based on the convention that every university is established for the inhabitants of that area, the institute has reserved 50% of the total seats for *local* candidates. These *locals* are also given preference while making admissions on the remaining 50% seats (the *non-locals* quota). Owing to this practice, 70-80% of the students admitted in various programs are of the *local* region, which is presumed to exhibit low standards in *higher secondary school education* for the reason of being in an underdeveloped area. Consequently, we hypothesize:

**H6:** The *academic performance* of the *local* students is lower compared to that of the *non-local* students.

**Age**

Certain *age limits* apply while determining candidates’ eligibility for admissions to various programs with the presumption that the ability to comprehend/ingest knowledge deteriorates with an increase in age. Here, we hypothesize:

**H7:** *Age* has no impact on students’ *academic performance*.

**METHODOLOGY**

It is an evaluation research endeavour geared to appraise the induction policy of a revelatory case (a business education institute). The single-case embedded design augmented with a survey of archival records was employed to conduct the study. There is one primary case; i.e., Institute of Management Sciences. The survey includes a sample of 243 embedded/secondary units (i.e., students) which was selected using the cluster-systematic sampling design. The primary data were collected from archival records, such as admission lists and award sheets. The participant-observations of authors affiliated with the case institute were yet another source of (observational) evidence. The t-statistic and ANOVA were used to compare the means of various categories. Since the dependant variable is quantitative, regression analysis was employed to explain the relationship among the variables of study.

**RESULTS**

**Comparison of Means**

Since *origin*, *education background*, and *basis for admission* are non-metric variables, the t-statistic and ANOVA were used to compare means of various categories. Table 1 shows such comparisons, along with the relevant conclusions.

**Table 1**

<b>Construct</b>	<b>Labels</b>	<b>%N*</b>	<b>CGPA</b>	<b>C.V.**</b>	<b>Conclusion</b>
<i>Origin</i>	<i>Local</i>	72	<b>2.98</b>	<b>24.5</b>	H6 is not supported. <i>Locals</i> are better and more consistent performers than <i>non-locals</i>
	<i>Non-local</i>	28	2.65	30.5	
<i>Educational background</i>	<i>General education</i>	83	2.88	26.04	H4 is supported. Students with <i>commerce education</i> background are better and more consistent performers
	<i>Commerce education</i>	17	<b>3.12</b>	<b>22.5</b>	
<i>Basis for Admission</i>	<i>Merit</i>	63	<b>3.2</b>	<b>22.5</b>	H5 (a) is supported. Students admitted on <i>merit</i> are better and more consistent performers than those admitted on <i>self-finance basis</i>
	<i>Self-finance</i>	20	2.81	25.4	H5 (b) is supported. Students admitted on <i>reserve seats</i> are lowest performers compared to the other categories
	<i>Reserve seats</i>	17	2.72	28.6	

\* %N is size of the category as a percentage of total sample size

\*\* C.V. is coefficient of variation

### Regression Analysis

Since *merit score*, *performance in the last program of study*, *entry-test score*, *age*, and *year of passing terminal examination* are metric variables, we use regression analysis to explain their relationship with the *academic performance* (manifested through CGPA). Table 2 shows the summary statistics of all regression models, along with relevant conclusions.

**Table 2**  
**Simple Regression**  
Dependent Variable: *CGPA*

Model Nr.	Independent Variables	R	R-squared	$\beta$ -coefficients	p/F value	Conclusion
M1 <b>Benchmark model</b>	<i>Merit score</i>	0.46	<b>0.21</b>	0.463	0.000	<i>Merit score</i> explains just 21% variation in <i>CGPA</i> in the benchmark model
M2	<i>Performance in the last program of study</i>	0.29	<b>0.08</b>	0.287	0.000	H1 is supported. <i>Performance in terminal examination</i> explains 8% variation in <i>CGPA</i>
M3	<i>Test Score (x)</i>	0.51	<b>0.26</b>	1.282 (x) - 0.789 (x <sup>2</sup> )	0.001	H3 is supported. <i>Entry-test score</i> captures 26% variation in <i>CGPA</i>
M4	<i>Age</i>	0.18	<b>0.03</b>	0.176	0.010	H7 is supported But <i>age</i> explains just 3% variation in <i>CGPA</i>
M5	<i>Year of passing the terminal exam.</i>	0.004	0.00	0.004	<b>0.953</b>	H2 is not supported. Therefore, to level a deduction of 5 marks is not justified.

### Multiple Regression

M6	<i>Test Score (X1) + Performance in terminal degree (X2)</i>	0.532	<b>0.28</b>	0.459 (X1) 0.184 (X2)	0.000 0.001	<i>Test score</i> together with <i>performance in the last program of study</i> explain 28% variation in <i>CGPA</i> , which is better than the existing practice reflected in M1.
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### DISCUSSION, CONCLUSION & PRACTICAL IMPLICATIONS

The results have shown the *merit score* (as determined by the present 80/20 schema) to be a poor predictor of the students' potential to perform in business studies. Therefore, it should be regarded as an insufficient criterion to decide admissibility of a candidate. *Performance in the last program of study* has also been revealed as a poor predictor of the students' academic performance in the business studies, which negates the viewpoint of those faculty members who advocate the grant of admissions solely on the basis of *performance in the last program of study*. The crux of the problem lies here as maximum weight (80%) has been allocated to the *performance in the last program of study* in determining the *merit score*. The institute needs to reduce its weight and, at the same time, integrate more elements in the admission criteria. The observational evidence reveals that a large number of students performing better in their *last program of study* are unable to continue doing the same because of the transition from annual system to the semester system of education. An introduction of (non-credit) preparation (Prep.) semester can be helpful in getting students well-acquainted with the semester system before the commencement of their regular (credit) studies.

Even though *entry-test score* has emerged as a (relatively) stronger predictor of student's *academic performance*, it still explains only 25% of the phenomena which, in an indirect manner, attests to the concerns of some faculty members about construct validity of the entry-test. Therefore, the institute needs to enhance quality (validity and reliability) of the (internally-devised) entry-test. Finally, besides rationalizing weight of the *performance in the last program of study* and the *entry-test score* in computing the *merit score*, the institute may enhance rigor of its in-take criteria by incorporating some other tools, such as thematic appreciation test, projective techniques, personality tests, etc.

Results also implicate a rationalization of the *break-up of seats*, both with respect to the *basis for admission* and the *education background*. The results strongly support that students admitted on *merit* are better and more consistent performers than those admitted on a *self-finance* and/or *reserved seats* basis. Therefore, the ratio of seats to be filled on *merit* needs to be increased. Similarly, students with a *commerce education background* were found to be better and more consistent performers than those with a *general education background*. Consequently, the ratio of such seats also needs to be increased.

As *age* has been found to be a poor predictor of the student's performance in business studies, it is not justified to apply any age restrictions. Similarly, no significant relationship has been found between the *year of passing terminal examination* and the students' *academic performance*. Therefore, to apply any deduction on this basis is not justified. Finally, the empirical evidence does not substantiate the hypothesis that the greater proportion of *local* students increases the overall drop-out rate (an indicator of the lowered quality of education).

Even though the discussion has been organized in specific context of a business education institute operating in a particular eco-system, the results can be generalized across all education institutions operating in different eco-systems, but facing similar problems. Future research endeavours may destine to explore more constructs that can enhance rigour of the admissions criteria of business education institutions so as to minimize 'adverse selections'.

#### **AUTHOR INFORMATION**

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