Determinants of Student Attrition at College of Business and Economics, Mekelle University: Econometric Investigation

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Introduction

Higher education enrollment statistics in Ethiopia has been growing tremendously due to strong emphasis of the government on the sector. Moreover, the government has been striving to ensure that some disadvantaged members of the society (like females, individuals from particular ethnic groups in backward regions, disabled individuals, etc) get access to higher education institutions. Obviously, all these efforts are not without cost. Despite this, student attrition or dropout from universities is rising. Although there is no comprehensive study conducted in relation to the percentage of dropouts from Ethiopian universities, some studies (e.g. Abebayehu, 1998) revealed the dropout rate was between 10% and 15%, with the largest losses occurring in the first year of study largely because of difficulties in adjusting to campus life.

A variety of factors including poor preparation and commitment, mismatch area of interest and field of placement, poor social integration, and lack of appropriately developed instructional and assessment methods can be regarded as determinants of student achievement in Cumulative Grade Point Average (CGPA) and cause of student dropouts or persistence. Student related factors that can promote retention include proper preparation and motivation as well as commitment and diligence. The institutional factors point to inputs like information dissemination; designing an appropriate and relevant curriculum along with its suitable delivery methods; appropriate assessment techniques; and fruitful student support mechanisms. Although these factors are important (both student and institutional), it appears that the institution-related factors carry greater weight, not only in terms of directly influencing retention but also indirectly in enhancing the student-related factors (Elizabeth *et al*., 2004).

The host of factors that affect student enrollment persistence and degree completion have been investigated by several researchers (Pascarella, Terenzini, and Wolfle, 1986; Tinto, 1975). Some examined the impact of specific factors on retention, such as selected program major (Mau, 2003), admission status (Laden, Matranga, and Peltier, 1999), student ethnicity and gender (Grandy, 1998; Leppel, 2002), classroom-based learning experiences (Braxton, Milem, and Sullivan, 2000; Tinto, 1975), institutional support services (Lau, 2003), academic and social integration (Beil, Reisen, and Zea , 1999), and pre-college academic preparation (Cambiano, Denny, and DeVore, 2000). Betts and Morrell (1999) found a significant effect of student background (gender, ethnicity, family income) on student CGPA. Besides, they found school resources also have significant effect on student performance though lower than the student personal background. Grunder and Hellmich (1996) indicated that students from families of higher income levels perform better in their academic assessment (CGPA) as compared to those who come from families of lower income brackets. Ermisch and Francesconi (2001) also found that there is significant gradient between each parent's education level and their child's educational attainment. A work by Martin and Walker (2006) found that students' observable and unobservable characteristics seem to play a more important role in explaining student outcomes than university inputs (class size & teachers).

Looking into gender aggregated studies the research conducted at Addis Ababa University indicated that there is no significant difference in the survival rates of males and females (Tilahun, 2003). Similarly a study conducted at a medical school in Pakistan revealed that dropout rates among males and females did not significantly differ (Huda and Agha, 2004). However, other studies (e.g. Semela, 2007; Yeshimebrat *et. al*., 2009; Ministry of Education, 2003) indicated that there is a very high rate of dropout for female students in most of the universities in Ethiopia.

Students who drop out of college education often face personal disappointment, financial constraint, lowering of career and life goals. All are detrimental to the society, hence student drop out can be considered as one of societal problem. Thus, this study examined the phenomenon of student attrition and academic performance at College of Business and Economics (CBE) in Mekelle University (MU) and the factors that affect student performance and dropout in different departments of the college.

Following Bair (1999) and Martin and Walker (2006) that considered multiple factors that affect student performance, namely; academic factors, demographic factors, individual (socio-economic and psychological) and human (habit and culture) factors, we investigated the factors behind student performance and attrition at CBE using a multiple regression model.

Research Methodology

The Data

CBE has five departments offering six undergraduate and five graduate programs in business, finance, economics, and development studies. In the 2010/11 academic year, there were about 4,000 students both undergraduate and postgraduate in the regular, evening, distance admissions. College has nearly 160 plus academic staff both on duty and on leave.

The data for the study is based on both primary and secondary sources. The primary data was collected from students using a structured questionnaire distributed to high performing and low performing students[1]. High performing and low performing students were grouped based on an agreed cutoff-point. This is because, it is highly likely that students having CGPA of less than 2.49 may still be at risk of dropping out during the ensuring semesters, hence they should not be considered as high achievers. A total of 270 copies of questionnaire were distributed out of which 255 were filled in and collected. We gathered secondary data from students CGPA and attrition from Student Service Center[2] of CBE and Departments' data base[3] in the College.

As one of the purposes of the research was to examine the factors that influenced students' academic performance, it was mandatory to design a questionnaire that assesses their academic, individual, psychosocial, and human experiences. As one of the pre-college indicators of performance, national level entrance examinatio[4] overall result and Mathematics

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[1] High performing students are students with CGPA of above 2.75 and low performing students are with CGPA of below 2.49

[2] The office Responsible for student records at college level

[3] Center responsible for maintaining data at department level

[4] Ministry of Education use to conduct a national level entrance examination for university education called Ethiopian Higher Education Entrance Qualification Examination (EHEEQE)

and English results were considered, since previous academic achievements and excellence in Mathematics and English indicate a high degree of association between the two (Lotkowski, *et al*., 2004).

Data Analysis

In order to achieve the proposed objective of the study, different qualitative and quantitative methods were employed. The study used simple statistical measures (frequencies and percentages) to describe the level of attrition and academic performance of the students. To investigate the factors behind student performance and attrition we estimated two models. First, a regression model (equation 1) estimated to single out the factors behind students' performance. That is, we estimated higher education production function to find the effect of each factors (academic, demographic, individual and human factors) on the student performance measured in terms of CGPA.

$$cgpa_i = \alpha + A'\beta + D'\varphi + I'\gamma + H'\delta + \xi_i \quad \text{..............................(1)}$$

Where: $cgpa_i$ is the students measure of academic performance, A is vector of academic factors, D is vector of demographic characteristics of the student, I is vector of student specific individual factors and H is vector of human factors. α is the intercept, β, φ, γ and δ are vector of parameters to be estimated. ξ_i is the usual disturbance term.

Second, we estimated a probit model to identify factors that affect student attrition (Equ. 2) :

$$pr(y_i = 1 \mid X) = \Phi(X'\beta) \quad \text{.. (2)}$$

Where *pr* is the probability, y_i =1 is an indicator if the student dropout and y_i =0 is otherwise. Φ is the normal cumulative density function (CDF), X is vector of the several factors that determine student attrition and β vector of parameters to be estimated.

Table 1: List of model variables with their labels

Variable Name	Label Name
Age	Age of the sampled students
Gender	Gender
Ent Exam	Ethiopia Higher Education Entrance Qualification Examination overall result
Ent Mathr	Ethiopia Higher Education Entrance Qualification Examination Mathematics result
Ent Engr	Ethiopia Higher Education Entrance Qualification Examination English result
Café user	Café user
Study hrspd	Study hours per day
Study day spw	Study hours per week
Stu choice	Student department first choice
Dad edu	Father Education in years
Mom edu	Mother education in years
P stream	Preparatory Stream of the students
Fin constrstu	Financial constraint
Dn smok	Student smoking habit
Dn chew	Student chat chewing habit
Dn drink	Student alcohol drinking habit

Results and Discussion

Descriptive Statistics Results

The data was analyzed using STATA and Microsoft Excel. 56% were male and 44% females were surveyed. For first year and second year students the proportion of female respondents was 33% and 35% respectively; while the proportion of female students in third year was 65%. The high representation of female students in the third year was due to the fact that the college had admitted 80% female students during 2008/09 academic year. The mean age of respondents is 20.9 for first year, 21.5 for second year, and 22 for third year. Of the total respondents, 31.51% (79) are from Tigrai, 25.7% (66) from Addis Ababa, 25.3% (64) from Amhara, 10.5% (27) from Oromia, and 5% (13) from SNNP, and the remaining 2% (6) respondents are from other regions of the country.

Students' academic performance of the CBE, in terms of CGPA of above 2.75 (HP) and below 2.49 (LP) in second semester of 2010/11 academic year, shows that in all the departments female students are over represented as low achievers as compared to their male counterparts (table 2).

Table 2: Proportion of High Performing (HP) and Low Performing (LP) Students by Year and Gender in 2010/11

Accounting and Finance	First Year		Second Year		Third Year	
	260 (168M, 92F)		318 (148M, 170F)		261 (48M, 213F)	
	LP	HP	LP	HP	LP	HP
Male	89 (52%)	49 (29%)	29 (20%)	71 (48%)	18 (37.5%)	17 (35%)
Female	57 (62%)	25 (27%)	79 (46%)	29 (17%)	133 (62%)	50 (23.5%)
Cooperative Marketing	First Year		Second Year		Third Year	
	113 (77M, 36F)		72 (53M, 19F)		63 (31M, 32F)	
	LP	HP	LP	HP	LP	HP
Male	31 (40%)	39 (50.5%)	5 (9%)	25 (47%)	9 (29%)	32 (71%)
Female	24 (66%)	10 (28%)	9 (47%)	8 (42%)	7 (21%)	3 (9.5%)
Economics	First Year		Second Year		Third Year	
	258 (217M, 41F)		225 (173M, 52F)		158 (77M, 81F)	
	LP	HP	LP	HP	LP	HP
Male	55 (25%)	114 (52.5%)	51 (29.5%)	82 (47.35)	23 (30%)	41 (53%)
Female	12 (29%)	19 (46%)	30 (58%)	14 (27%)	38 (47%)	14 (17%)
Management	First Year		Second Year		Third Year	
	167 (93M,74F)		278 (148M,130F)		298 (124M, 174F)	
	LP	HP	LP	HP	LP	HP
Male	25 (27%)	50 (54%)	54 (36.5%)	55 (37%)	59 (47.6%)	36 (29%)
Female	30 (40.5%)	23 (31%)	65 (50%)	31 (24%)	129 (74%)	39 (22.4%)
Public and Development Mgt	First Year		Second Year		Third Year	
	150 (110M,40F)		262 (158M,104F)		224 (69M,155F)	
	LP	HP	LP	HP	LP	HP
Male	56 (51%)	35 (31.8%)	44 (28%)	55 (35%)	27 (39%)	35 (50.7)
Female	27 (67.5%)	7 (17.5%)	42 (40%)	11 (11%)	83 (53.5%)	41 (26.5%)

Source: Student Service Center, CBE (2010).

In different departments of CBE, for the 2008/09–2010/11 academic years, the regular undergraduate students' enrolment and attrition rate is presented in table 3. In all the department first year students were dismissed more than any other batches; & the dismissal rate was highest in the Department of Economics (62%) followed by the Department of

Table 3: Attrition[5] by Year and Gender

Department		Admission Year & Student Number	2009/10		2010/11		Overall	
			Male	Female	Male	Female	Male	Female
Accounting & Finance		2008/09(71M, 497F)	52	241	48	213		
	Attn/ gender (%)		26%	51%	7.70%	11.60%	32%	57%
	Total (%)		48%		11%		54%	
		2009/10(148M,170F)	148	170	121	137		
	Attn/ gender (%)				18%	19.40%	18%	19.40%
	Total (%)				19%		19%	
Cooperative Marketing		2008/09(33M, 32F)	32	31	31	32		
	Attn/gender (%)		3%	3%	3%	3%	3%	3%
	Total (%)		3%		0%		3%	
		2009/10(53M, 19F)	53	19	50	8		
	Attn/ gender (%)				5.60%	58%	5.60%	58%
	Total (%)				19%		19%	
Economics		2008/09(130M,251F)	79	70	77	51		
	Attn/ gender (%)		39%	72%	3%	13%	40.70%	79%
	Total (%)		62%		12%		66%	
		2009/10(173M, 52F)	173	52	154	48		
	Attn/gender (%)				11%	18.70%	11%	18.70%
	Total (%)				10%		10%	
Management		2008/09(111M,358F)	70	191	67	177		
	Attn/ gender (%)		37%	46%	4.30%	7.30%	39.60%	50.50%
	Total (%)		44%		3.00%		48%	
		2009/10(148M,130F)	148	130	130	121		
	Attn/gender (%)				12%	7%	12%	7%
	Total (%)				9.70%		9.70%	
Public Admin & Development Mgt		2008/09(100M,281F)	94	171	69	155		
	Attn/ gender (%)		6%	39%	26%	9.40%	31%	45%
	Total (%)		30.50%		15.50%		36%	
		2009/10(158M,104F)	158	104	121	67		
	Attn/ gender (%)				23%	35.60%	23%	35.60%
	Total (%)				28%		28%	

Source: Student Service Center, CBE (2010)

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[5] Data on attrition (dropout) includes: dismissed due to academic failure, dismissed for all other reasons, withdrew, transferred to another institution, required to repeat entire year/semester, and promoted but required to repeat one or more courses

Accounting and Finance (48%), and Department of Management (44%). For those admitted in 2009/10 academic year, students attrition is highest in Public Administration and Development Management (28%) followed by the Department of Accounting and Finance (19%), and Department of Economics (10%). Overall attrition rate in each department for 2008/09 admitted students is 66% in the Department of Economics, 54% in the department of Accounting and Finance, 48% in the department of Management, 36% in the department of Public and Development Management, and 3% in Cooperative Marketing.

Econometric Results

This section presents OLS results of the model in (1) above. Table 4 report the OLS results for the whole sample. We found that student gender negatively affect student performance (CGPA). Female students have lower CGPA as compared to their male counterparts keeping other things same. This is statistically significant at 5% level of significance. Another factor that statistically significantly affected student CGPA is the student's school leaving result (EntExamr). Students that performed very well in the national level entrance examination also do well in the college. This implies that good pre college performance affect student performance in the college. In fact, we could not find statistically significant effect of national level entrance Mathematics (EntMathr) and English (EntEngr) examination results.

Table 4: OLS Estimates for Determinants of Student Performance.

Dependent Variable: Student Cumulative Grade Point Average (CGPA)		
Variable	Coefficient	t-ratio
Age	-0.0220906	-0.85
Gender	-0.3985611***	-3.28
EntExamr	0.0019971***	2.89
EntMathr	0.0023759	0.78
EntEngr	0.0028781	0.88
Cafeuser	0.1049564	0.92
Studyhrspd	-0.0000198	0.00
Studydayspw	-0.0033444	-0.12
Stuchoice	-0.1439873	-1.32
Dadedu	0.0852254	0.85
Momedu	0.064284	0.65
Pstream	0.0519601	0.55
Finconstrstu	-0.2363426***	-2.95
Dnsmok	0.2118946	1.15
Dnchew	-0.180866	-1.08
Dndrink	0.0623492	0.78
Constant	2.467001***	3.58
Number of obs = 255	**F(16, 238)= 5.53**	**Prob > F = 0.0000**
R-squared = 0.1948	**Root MSE = .57949**	

***,** and * indicate statistical significance at 1%, 5% and 10% respectively.

Financial constraint is also found to negatively affect student CGPA. That is, financially constrained students performed less compared to those unconstrained ones. This is in line with our expectation that students with financial constraint for basic goods like stationary and other expenses may feel distracted and/or are not be able to prepare very well since they do not have the required academic materials that impact their performance.

Table 5, presents the OLS estimates disaggregated by students department. In Accounting and Finance program, student's age, gender, reparatory stream, student's department choice and maternal educational background found to affect his/her performance significantly. The older the student, the lower the performance of the student in Accounting and Finance program holding other factors same. Similarly, students from natural science background perform lower than other students (from commerce or art stream). Student's placed without their first choice at the accounting and finance program found to perform poorly compared to those placed on their first choice. We also found that student's maternal education to positively affect student's performance.

The results of economics department students indicate that student's gender, national entrance examination overall results and mother education level significantly correlate with student performance. Female students found to perform lower than male students. Student's national entrance examination overall result is positively correlated with the student performance which is in line with our expectation. Those Students who do not drink alcohol found to have better academic performance than otherwise. Student's mother educational background significantly affects student CGPA, i.e. the higher the level of mother education in years the better the student to perform keeping other things the same. For Public and Development Management students we found student's gender, age and financial constraint to negatively affect academic performance. We also found that national entrance examination overall results and Mathematics result significantly affect student performance. Study hours per day and father education also positively affect student academic performance.

In summary, the results for students in the management program are different from those reported for accounting economics, and PDM students. We found that national entrance examination English result and number of study days to affect student performance under the management program. Except for few differences, we found same results as the whole sample model result while the management department being an exception. Student gender, national entrance examination English results and financial constraint found to significantly affect the student's performance. The results hold true for students from programs in Accounting and Finance, Economics and Management. We could not feasibly estimate the model for Cooperative Marketing students due to small sample size we had.

Further, we estimated the model disaggregating the sample by class year. Here the results are consistent with our earlier findings for the whole sample as can be seen from table 6. Student's gender, national entrance examination overall result and financial constraint found to have significant effect consistently on student performance in each class year. Additionally, student's age found to negatively affect student performance in second and third year. Study hours per day seem to matter in year two and student's smoking behavior have an effect in year three. That is, students that study longer hour in year two and those third year students that do not smoke have better performance than otherwise.

Table 5: Disaggregated OLS Estimates for Determinants of Student Performance by Department.

Dependent Variable: Student's Last Semeser Cumulative GPA(CGPA)

Variable	Accounting Coefficient	t-ratio	Economics Coefficient	t-ratio	Management Coefficient	t-ratio	PDM Coefficient	t-ratio
Age	-.1733475***	-2.85	-0.0553744	-1.36	-0.0737569	-1.33	-0.543215***	-1.88
Gender	-.4348048**	-2.12	-.6973364***	-2.49	-0.1026965	-0.48	-0.322566**	-1.11
EntExamr	0.0012311	1	.0028167***	2.58	-0.0007441	-0.52	0.5526**	2.32
EntMathr	-0.0028904	-0.43	0.0066615	1.22	0.0004982	0.06	-0.68013*	-0.19
EntEngr	0.0100748	1.5	-0.0006351	-0.1	.017495**	2.39	-0.532276**	-1.67
Cafeuser	0.2669998	1.35	0.2297402	0.78	-0.283534	-1.32	0.2196758	0.84
Studyhrspd	-0.0200403	-0.67	0.0063565	0.26	0.0119485	0.32	0.457889**	1.04
Studydayspw	-0.0374343	-0.58	-0.0581939	-1.19	.122846**	2.21	0.0457663	0.62
Stuchoice	-.5467461**	-2.57	-0.1380005	-0.62	---	---	-0.2930693	-0.52
Dadedu	0.024181	0.12	0.0203159	0.12	0.3248596	1.45	0.5672682*	1.44
Momedu	.4058947**	2.1	.3084507*	1.84	-0.3227422	-1.4	0.0308169	0.08
Pstream	-.3047101*	-1.72	-0.1029051	-0.65	-0.1964535	-0.87	0.2803402	0.9
Finconstrstu	-.5458565***	-3.15	-0.1828352	-1.31	-0.0195826	-0.09	-0.486479***	-1.81
Dnsmok	0.31494	0.64	0.6746197	1.54	0.3881588	1.02	0.0842446	0.29
Dnchew	-0.4389713	-1.06	0.063198	0.16	-0.1953096	-0.59	-0.223585	-0.32
Dndrink	-0.099142	-0.4	.3031123**	2.22	-0.0199467	-0.12	-0.0512199	-0.17
Constant	6.209394	3.89	2.52**	2.32	2.998058	2.22	4.564242	2.68

	Accounting	Economics	Management	PDM
	Number of obs =48	Number of obs=77	Number of obs = 52	Number of obs = 50
	F(16,31) = 3.74	F(16,60)=3.27	F(15,36) = 2.32	F(16, 33) = 1.15
	Prob > F = 0.0008	Prob > F= 0.0004	Prob > F = 0.0195	Prob > F = 0.3578
	R-squared= 0.6588	R-squared=0.4656	R-squared = 0.4915	R-squared = 0.2234
	Adj.R-squared= 0.482	Adj.R-squared =0.323	Adj R-squared = 0.2796	Adj R-squared = 0.1681
	Root MSE = .43844	Root MSE =.50711	Root MSE = .48836	Root MSE = .68846

***,** and * indicate statistical significance at 1%, 5% and 10% respectively.

In conclusion, from table 3-5, consistent result emerges. That is, student's gender, national entrance examination overall result and financial constraint found to significantly affect students college performance. While other factors like parents background, student behavior, study hours, student's department placement found to have an affect only in some group (class year or department).

We estimated a probit model to find out the factors that lead to student attrition or dropout in CBE. Table 6 presents the probit estimates. Keeping other things same; the older the student, the higher the likelihood of attrition. Over all national entrance examination and Mathematics and English examination result found to negatively correlate with probability of

attrition. Similarly, students that study longer hours have less probability of dropout. Students that use cafeteria service have lower probability of attrition compared to non-café users.

Table 5: Disaggregated OLS Estimates for Determinants of Student Performance by Class Year.

Dependent Variable: Student's Last Semester Cumulative GPA(CGPA)

Variable	Year I Coefficient	t-ratio	Year II Coefficient	t-ratio	Year III Coefficient	t-ratio
Age	-.0013781	-0.05	-.098742**	-2.32	-.0643026*	-1.78
Gender	-.3069176**	-2.00	-.4299001**	-2.30	-.4275361**	-2.23
EntExamr	.0041382***	2.66	.0076103***	4.54	.0033918**	2.36
EntMathr	-.0048192	-0.86	-.0067847	-1.19	-.0055747	-0.94
EntEngr	-.0027733	-0.49	.0011855	0.23	.0037351	0.62
Cafeuser	---	---	.1405716	0.82	-.111207	-0.64
Studyhrspd	-.030772	-1.37	.0379033*	1.73	-.0114647	-0.44
Studydayspw	---	---	.0187696	0.48	.079711	1.61
Stuchoice	.0484085	0.27	-.0248605	-0.12	-.2824513	-1.22
Dadedu	-.0175557	-0.10	.1855855	1.21	.1487858	0.87
Momedu	-.1346476	-0.73	.1259653	0.86	.1306551	0.81
Pstream	.0062434	0.04	.2630402*	1.86	-.060078	-0.38
Finconstrstu	-.3320354**	-2.20	-.2438502*	-1.95	.0235016	0.15
Dnsmok	---	---	.1005706	0.47	.6633335**	2.17
Dnchew	---	---	-.0146357	-0.07	-.2551869	-0.83
Dndrink	---	---	-.0999382	-0.80	-.0158018	-0.11
Constant	2.275968***	2.67	2.941442***	2.62	2.782353***	2.73
	Number of obs =92 F(11,85) = 2.11 Prob > F = 0.0276 R-squared= 0.2148 Adj.R-squared=0.113 Root MSE = .60657		Number of obs =91 F(16,79) = 5.19 Prob > F = 0.0000 R-squared =0.5124 Adj.R-squared=0.413 Root MSE =.49704		Number of obs = 72 F(16,55) = 3.25 Prob > F = 0.0006 R-squared = 0.4857 Adj R-squared = 0.3360 Root MSE =.49284	

***,** and * indicate statistical significance at 1%, 5% and 10% respectively.

Contrary to our expectation, we found that students that are financially constrained to have lower probability of dropping out from college. Similarly, we found mother's and father's level of education to have divergent effect on student likelihood of attrition.

Table 6: Probit Estimates for Determinants of Student Attrition.

Variable	Coefficient	z-value
Age	.131701*	1.89
Gender	-0.2383274	-0.4
EntExamr	-.0067952*	-1.88
EntMathr	-.0304512**	-2.14
EntEngr	-0.0050477	-0.29
Cafeuser	1.10407**	2.01
Studyhrspd	-.1717246**	-2.34
Studydayspw	-0.1941936	-1.32
Stuchoice	0.030347	0.06
Dadedu	-1.200164**	-2.07
Momedu	1.287537***	2.59
Pstream	0.5625537	0.99
Finconstrstu	1.271431***	-2.43
Dnsmok	-0.0055	-0.31
Dnchew	0.045407	0.16
Dnrink	0.0069433	0.01
Constant	-0.1130416	-0.05
Number of obs = 239	**Pseudo R2 = 0.4138**	
Wald chi2(14) = 69.74	**Prob > chi2 = 0.0000**	

***,** and * indicate statistical significance at 1%, 5% and 10% respectively.

Conclusion and Implications

Using cross-sectional data drawn from sampled students in five undergraduate programs in CBE (MU) during second semester 2010/11 academic year, we assessed the level of attrition and determinants of student performance and attrition. The level of attrition varied from nearly 3% to 66% and female students are overrepresented as low achievers. Our results also show that first year students are more dismissed that the other years. Reasons for attrition are academic failure and others

Our regression results consistently found significant effect of student's gender, national level entrance examination overall result and financial constraint on students' college performance. While other factors like parents background, student behavior, study hours, student's department placement found to have varying effects by class year and program. With regard to student attrition, our prohibit estimates revealed that higher national level entrance examination overall results and more study hours reduce the likelihood of student dropout. The older and the more financially constrained the student, the higher the likelihood of the student attrition. Student's father and mother's educational background has opposite effects on student attrition.

The implication of our study is at CBE undergraduate students' performance is determined based on the student's gender, previous preparatory results and financial constraints of the student. Further research is required to look at the effects of the school resource (class size, text book availability, teachers' qualification and experience, etc) and whether our findings are similar to natural science, arts and humanities disciplines. Moreover, the low performance of the female students warrants an in-depth investigation given the support programs (like tutorial and remedial) by the college in place.

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