
Impact of Information Literacy Skill on Students' Academic Performance in Bangladesh

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Abstract: The study explores the level of academic performance and information literacy skill of undergraduate students in Bangladesh. In addition, the study examines the impact of information literacy skill on students' academic performance. To achieve the objectives, the study uses primary data collected from 325 students and employs several statistical and econometric methods. The study firstly uses information literacy skill index to measure the level of students' information literacy skill and secondly, uses a linear regression estimated by OLS method to examine the impact of information literacy skill on students' academic performance. The study finds that most of the students' Grade Point Average (GPA) is medium standard which ranges between 3.01 and 3.50 and the level of information literacy skill is lower which ranges between 10 and 20. Besides, the study also finds that study hour, family income, class attendance, past academic result and information literacy skill are the significant factors which influence students' academic performance. More specifically, the study finds that students' GPA may be increased by 0.012 if students' information literacy skill is increased by one unit. Therefore, the study suggests nursing students' information literacy skill to improve the students' academic performance.

Keywords: Academic Performance, Information Literacy Skill, Bangladesh

1. Introduction

To develop a nation, there is no alternative to quality education. University is the institution which provides quality higher education to the nation and higher education is one of the most important tools for research productivity. One hundred and forty-five numbers of universities (both private and public) are playing their role in promoting higher education in Bangladesh [1]. Every year a large number of students are being enrolled in different disciplines in these universities and, they are the important assets and main power of the nation. Their earned skills from academic background can develop the economy of a country as the socio-economic development of a country is directly linked with students' academic performance. Students' academic performance plays a vital role in producing the best quality graduates who will become the great leader and manpower for the country in future and contribute to the country's

socio-economic development [2-3]. Therefore, students' academic performance measurement has received considerable attention to the researchers.

Students' academic performance is affected by many factors like social, economic, psychological, environmental and personal factors [2]. Although these factors strongly influence students' academic performance, these factors vary from person to person and place to place. Previous studies highlights on different factors like class schedules, class size, the environment of the class, the technology used in the class and exams systems, guidance, English textbooks, homework, extracurricular activities, family income and so on. Contrarily, the present study is different in a way that it is the first research in which a variable "students' information literacy skill" is studied. Broadly speaking, the core contribution of this study is that it explores the impact of information literacy skill on students' academic performance. This paper may be helpful for the parents and teachers of the students and, policymakers to design and implement the

policies to improve the students' performance and the quality of education by improving students' information literacy skill.

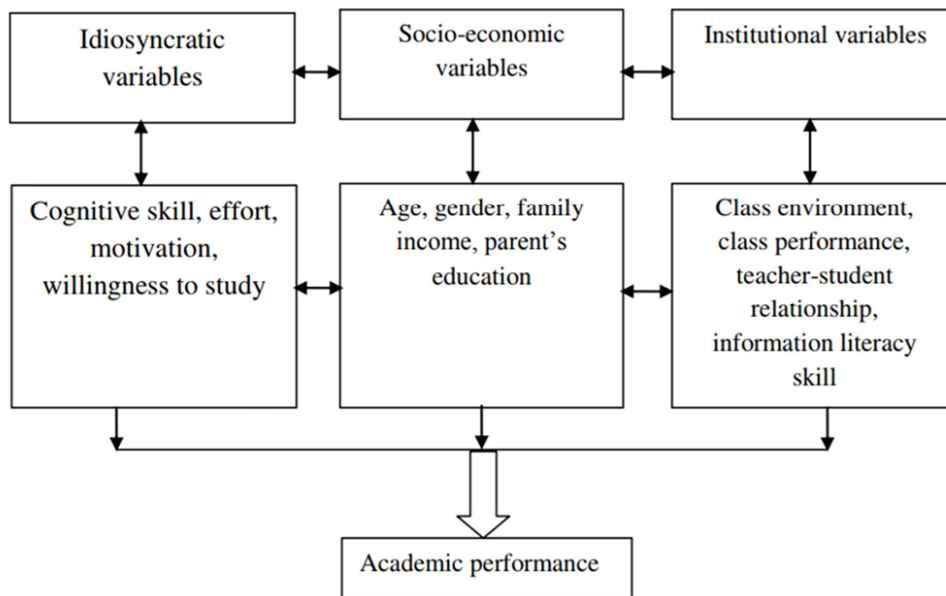
2. Literature Review

Students' academic performance means the extent to which a student academically achieved the educational goals. Most of the researchers in previous studies have measured the academic performance by GPA in a particular year or semester [3-9]. GPA of a student depends on many factors. Information literacy skill is one of them.

Generally, literacy means the ability of a person to read and write. There are different types of literacy such as visual literacy, computer literacy, media literacy, technical literacy, information literacy and so on. Nowadays, the importance of information literacy is increasing significantly. Information

literacy means the ability to know the need for information and the ability to identify, locate, evaluate, and effectively use of information for solving a problem practically. "To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information" is stated by The American Library Association (ALA) [10]. Although different researchers have measured information literacy skill in different ways, most of the researchers have measured it using index [11-14].

Variables affecting students' academic performance can be grouped into three categories of variables broadly such as: (i) idiosyncratic variables, (ii) socio-economic variables, and (iii) institutional variables [8]. All these three categories of variables include many factors that influence students' academic performances are shown in Figure 1.



Source: Adapted from Rosi, 2017

Figure 1. Factors Affecting Academic Performance.

Previous studies show that there are many factors which affect the academic performance of the students in Bangladesh. According to Ahmmad and Salim, variables like gender, class attendance, type of department, teacher-student relationship, the result of pre-university public examinations, self-confidence level of the students, depression and amount of credit hours completed are the significant factors affecting students' academic performance [4]. Hossain et al. have found that the result of SSC and HSC examination are the reasonable factors influencing the academic performance [15]. Applying the logistic regression analysis, Shahiduzzaman et al. have found that sex, family type, faculty, students' monthly expenditure, the result of SSC, the result of HSC and semester dropped of the students were the important predictors for the academic performance of the students of private universities of Bangladesh [16]. On the other hand, Ahmad and Rahman have found that extra-curricular activities have a strong influence on academic

performance [5]. By applying correlation analysis, a study found that academic achievement of students has a considerable negative and significant relationship with all the attributes of problem behavior such as emotional symptoms, conduct problems, hyperactivity-inattention and, peer problems [17]. While Ahmed and Khanam revealed that academic achievement was significantly correlated with academic self-efficacy, organization, and meta-cognitive self - regulation [18]. Alam et al. revealed that age, gender, past academic track, medium of education and absence in the classes have significant influence on the academic performances of a student [19].

Outside Bangladesh, a number of studies have been carried out on this issue. They have also found different factors like students' admission points, parents' socio-economic status and former school background that affect the academic performance of the students. Using Pearson Correlation Co-efficient test, Danyial pointed out that parent's education,

family income and participation in co-curricular activities are the significant factors affecting students' academic performance [20] while applying a linear regression Ali et al. revealed that age, father's social economic status and daily study hours significantly contribute to the academic performance of graduate students [3]. Besides, Fernando found that self-determination, time management, English knowledge and students' attendance on lectures are positively and significantly affecting the academic performance [7]. Applying regression analysis it was found that factors like students' attendance, mother's education and the presence of the trained teacher in the school have a positive impact on students' academic performance [23]. A study in India found that cognitive and non-cognitive factors affect Grade Point Averages of young adults [21] while utilizing correlation analysis, Rosi found that there is no such relationship in the case of evening students [8]. Hijazi and Naqvi have found that family income and study hour have negative, and attendance and mother's education have positive effects on academic performance [9]. Like the other factors, family size, the gender of students, and resident of students and income level of their parents are also responsible for students' performance [22].

Keeping in view the literature, this study is organized to assess the factors affecting the academic performance of the students in Bangladesh.

3. Methodology

3.1. Sample Design and Data Collection

The study is mainly based on primary data. For conducting the study, Rajshahi district of Bangladesh, known as education city, has been selected as the study area. There are four universities in Rajshahi district in which academic activities are running now. Among them, two are public universities such as Rajshahi University and Rajshahi University of Engineering and Technology and, others two are private universities such as Varendra University and North Bengal International University. From these four universities, one university is selected following simple random sampling method and the selected university is Varendra University. Varendra University had 12 academic departments where about 5000 students were studying. Following the simple random sampling method, a total of 350 questionnaires were distributed proportionately among the undergraduate students in different departments in September, 2018 and 335 questionnaires were got back. Among them, 10 questionnaires were not properly filled up, thus, they were rejected. Finally, after sorting, coding and editing 325 questionnaires are used for the analysis.

3.2. Empirical Methods

3.2.1. Measurement of the Level of Academic Performance

Although different researchers have measured students' academic performance in different ways, following previous studies the present study measures the level of students'

academic performance by the last year examination's Grade Point Average (GPA) [3-9]. As the study is carried out in undergraduate level, students' GPA of a particular year is in the scale of 4.00. In this study, GPA 3.00 and below out of GPA 4.00 has been considered as the low standard performance while GPA 3.01 to 3.50 and GPA 3.51 to 4.00 have been considered as medium standard and the high standard performance.

3.2.2. Measurement of the Level of Information Literacy Skill

The present study has measured the level of students' information literacy skill with an index-"information literacy skill index" following previous studies [11-14]. This newly constructed index is the sum of five components having ten distinct indicators. These indicators are measured with five points likert scale such as strongly disagree = 1, disagree = 2, neither agree nor disagree = 3, agree = 4 and strongly agree = 5. The estimated value of the information literacy skill index ranges from 10 to 50. In this study, the value ranges from 10 to 20 has been considered as the lower level of information literacy skill. On the other hand, 21 to 30 and 31 to 50 have been considered as average and the higher level of information literacy skill, respectively. The components and indicators of the information literacy skill index are shown in Table 1.

Table 1. Components and Indicators of Information Literacy Skill Index.

Components	Indicators
Identification	Identifying the lack of knowledge in a subject area Deciding what information is needed, and how much
Searching	Finding relevant information within books Finding relevant information online
Evaluation	Evaluating information sources according to my needs Using online indexes, abstracts and full text journals and books
Application	Using Computer and Internet Making bibliography or reference list Making assignments and presentations
Acknowledgement	Understanding concepts of the fair use, copyright and plagiarism

3.2.3. Estimation of the Factors Affecting Academic Performance

There are a lot of factors that affect the academic performance of university students. The present study has considered a cause and effect relationship between academic performance and a set of influencing factors which is shown in the following equation:

$$P_i = f(X_i) \quad (1)$$

Where, P_i = academic performance and X_i = a set of socio-economic, demographic and institutional factors that affect academic performance. Academic performance in this study is measured by last year examination's Grade Point Average (GPA). Since the dependent variable is continuous, following earlier studies a linear regression estimated by OLS method is applied to find out the factors affecting students' academic

performance [8, 9, 19, 24]. The specified regression model is as follows.

$$P_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + u_i \quad (2)$$

Where, P_i is academic performance; β_0, \dots, β_8 are parameters to be estimated; X_1, X_2, \dots, X_8 are the

explanatory variables that affect academic performance and u_i is the stochastic disturbance term. The regression equation (2) shows a linear relationship between the dependent variable with a set of eight explanatory variables. The equation (2) is estimated through a linear regression by the OLS method. The explanatory variables considered in equation (2) are described in Table 2.

Table 2. Description of Explanatory Variables Used in Regression Model.

Name of Variables	Type	Measurement	Expected Sign
Study hour (X_1)	Continuous	Averagely total hours of study per day	+
Family income (X_2)	Continuous	Family's total income per month (Tk.)	+
Parent's education (X_3)	Continuous	Average years of father's and mother's education	+
Class attendance (X_4)	Dummy	1 if good (90% and above attendance), otherwise 0	+
Class performance (X_5)	Dummy	1 if good (80% and above marks), otherwise 0	+
Past academic result (X_6)	Continuous	Average of Secondary and Higher Secondary examination result (GPA)	+
Secondary school location (X_7)	Dummy	1 if urban, otherwise 0	+
Information literacy skill (X_8)	Continuous	Estimated value of information literacy skill index	+

4. Results and Discussion

4.1. Socio-economic, Demographic and Institutional Features of Students

The socio-economic, demographic and institutional features of students are analyzed through SPSS 23 and presented in tabular form in the following table.

Table 3. Socio-economic, Demographic and Institutional Features of Students.

Features	Categories	Percentage
Age (years)	20 and below	29
	20.1 to 22	37
	22.1 to 24	23
	24 and above	11
Sex	Male	57
	Female	43
Study year	First year	27
	Second year	33
	Third year	23
	Fourth year	17
Study faculty	Arts and Social Science	52
	Business	21
	Biology	9
	Engineering	18
Study hour (hours/day)	2.00 and below	61
	2.01 to 4.00	28
	4.01 to 6.00	7
	6.01 and above	4
Parents' education (years)	No formal education	9
	0 to 5	29
	6 to 10	37
	11 to 16	25
Family income (Tk./month)	15000 and below	33
	15001 to 25000	42
	25001 to 35000	16
	35001 and above	9
Class attendance (present in class)	Lower (60% and below)	23
	Average (61% to 89%)	49
	Excellent (90% and above)	28
Class performance (got marks in class)	Lower (50% and below)	26
	Average (51% to 79%)	47
	Excellent (80% and above)	27

Features	Categories	Percentage
Past academic result (GPA in the scale of 5.00)	3.50 and below	33
	3.51 to 4.50	45
	4.51 to 5.00	22
Secondary school location	Rural	57
	Urban	43

Source: Field survey, 2018

The Table 3 shows that most of the students' age is between 20.1 and 22 years and they are male. On the other hand, it is found that the majority of the sampled students study in second year in Arts and Social Science faculty which is 33 percent and 52 percent, respectively. The study finds that 61 percent of students study 2.00 hours and below a day. Table 3 also shows that the level of education of the majority students' parent is between 6 to 10 years while their monthly family income is between Tk.15001 and Tk.25000. Most of the students attend in the class averagely (61% to 89%) and their class performance (got marks in the class test, assignment, presentation, and group discussion) is also average (51% to 79%). From the above analysis, it is also found that the past academic result of the majority students is between 3.51 and 4.50 in the scale of 5.00 and their secondary school location is in rural areas.

4.2. Level of Academic Performance of Students

The level of students' academic performance is measured by the last year's GPA. The result is analyzed through SPSS 23 and presented in tabular form in the following table.

Table 4. Level of Academic Performance of Students.

Level of performance (GPA)	Frequency	Percentage
GPA 3.00 and below	81	25
GPA 3.01 to GPA 3.50	150	46
GPA 3.51 to GPA 4.00	94	29
Total	325	100

Source: Field survey, 2018

Table 4 shows that 25 percent of students obtained GPA 3.00 and below in the last year examination. On the other

hand, maximum students (46 percent) achieved a medium standard GPA which ranges from GPA 3.01 to GPA 3.50 while 29 percent of students obtained the highest GPA i.e GPA 3.51 to GPA 4.00. From the above analysis, it is found that most of the students' GPA is the medium standard which is between GPA 3.01 and GPA 3.50.

4.3. Level of Information Literacy Skill of Students

The level of students' information literacy skill is measured with an index. The result is analyzed through SPSS 23 and presented in tabular form in the following table.

Table 5. Level of Information Literacy Skill of Students.

Level of information literacy skill	Frequency	Percentage
Lower (10 to 20)	137	42
Average (21 to 30)	117	36
Higher (31 to 50)	71	22
Total	325	100

Source: Field survey, 2018

Table 5 shows that most of the students (42 percent) had a lower level of information literacy skill. On the other hand, 36 percent of students had an average level of information literacy skill while 22 percent of students had the higher level of information literacy skill. From the above analysis, it is found that most of the students' information literacy skill level was lower which is between 10 and 20.

4.4. Factors Affecting Students' Academic Performance

The study examines the factors affecting students' academic performance with a linear regression estimated through OLS method. The result is analyzed through STATA 13 and presented in tabular form in the following table.

Table 6. Factors Affecting Students' Academic Performance.

Variable	Coefficient	Robust Std. Err.	t-ratio	p > t
Constant***	1.898	0.204	9.28	0.00
Study hour**	0.011	0.005	2.21	0.03
Family income*	0.033	0.012	1.66	0.09
Parent's education	0.004	0.004	0.97	0.33
Class attendance*	0.055	0.030	1.82	0.07
Class performance	0.005	0.036	0.13	0.89
Past academic result*	0.017	0.009	1.81	0.07
Secondary school location	0.004	0.045	0.10	0.92
Information literacy skill***	0.012	0.001	9.28	0.00

F(8, 316) = 86.97; Prob.> F = 0.0000; R² = 0.9180; Root MSE = 0.11019; DW = 1.97

Note: ***, ** and * means 1%, 5% and 10% level of significance

Source: Field survey, 2018

The table 6 shows that the value of R² is 0.9180 indicates that explanatory variables of the model explain the dependent variable by 92 percent. Elsewhere, the F-statistic value (86.97 with prob>F= 0.000) brings out that the model is completely good at fitted. The study had no heteroscedasticity problem in the data because it is clarified using robust standard error action. The study also exercised VIF to detect multicollinearity problem and the estimated VIF explicitly revealed was below

10 i.e. no multicollinearity. The Durbin Watson test (DW = 1.97) expresses that no autocorrelation problem exists in the model. The study finds that study hour, family income, class attendance, past academic result and information literacy skill are the significantly affect students' academic performance although all variables exhibited the expected sign.

The estimated coefficient of study hour is 0.011 exhibits that the students' GPA may be increased by 0.011 if the students' study hour is increased by one hour per day. This is significant at 5 percent level of significance. The dynamic explanation may be that the more the students will study, the more the students will gather skill and knowledge and improve GPA. This finding violates the finding of Hijazi and Naqvi [9] in such a way that Hijazi and Naqvi [9] found a negative direction between study hour and students' academic performance but the present study found a positive direction.

The coefficient of family income reveals that students' GPA may be increased by 0.033 if the students' monthly family income is increased by one unit which is significant at 10 percent level of significance. The rational explanation may be that students having the higher family income have the higher opportunities to spend on education purposes. This may help to gather more knowledge and improve academic performance. Although this finding is in line with Rosi [8], it contradicts with the finding of Hijazi and Naqvi [9].

The students' GPA may be increased by 0.055 if the students' class attendance is good which is significant at 10 percent level of significance. The interpretation may be that if a student attends in the class regularly, he or she may gather more knowledge which contributes to the improvement of students' academic performance. This result is in line with Ahmmad and Salim [4], Fernando [7], Hijazi and Naqvi [9] and Raychaudhuri et al [23].

Similarly, students' GPA may be increased by 0.017 if students' past academic result would be higher by one unit. This result is significant at 10 percent level of significance and can be interpreted by the fact that the students who have bright results in the past may give more effort in the study which may improve students' GPA. Similar result has been found by Ahmmad and Salim [4], Rosi [8], Hossain et al. [15], Shahiduzzaman et al. [16] and Alam et al. [19].

The study also shows that the students' GPA may be increased by 0.012 if the level of students' information literacy skill is increased by one which is significant at 1 percent level of significance. This finding can be interpreted by the fact that students who have the higher level of information literacy skill have the higher level of knowledge. This increasing level of knowledge may improve students' GPA.

5. Conclusion and Policy Recommendation

The study emanates two findings. First, the study finds that maximum students obtain GPA between 3.01 and 3.50 and the level of information literacy skill of maximum students is

lower which ranges between 10 and 20. Second, the study finds that study hour, family income, class attendance, past academic result and information literacy skill are the significant factors which influence students' academic performance. In addition, the study finds that students' GPA may be increased by 0.012 if students' information literacy skill is increased by one. Therefore, the study suggests government and non-government organizations taking proper initiatives to develop students' information literacy skill. Students' information literacy skill may be developed by providing them proper quality education and training both in academic and vocational aspects; making them interested in identifying problems and, searching and applying information; making them efficient in using Computer and Internet and making them efficient in fair use and acknowledgement of information. With the developed information literacy skill, students' academic performance may be improved significantly and it may contribute to the national development.

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