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DETERMINANTS OF EDUCATIONAL PERFORMANCE AMONG AGRICULTURAL STUDENTS IN BANGLADESH

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ABSTRACT

The growth of a nation is seen to be best accomplished through the educational system. Higher education has become critically vital in globalization because intellectual capital is now more highly prized by individuals and nations. Particularly in countries like Bangladesh, where agriculture plays a pivotal role in economic development, the importance of quality agricultural education cannot be overstated. This research explored undergraduate students' shifting academic patterns and performance in agricultural universities across Bangladesh. The primary objective was to identify areas of improvement and shortcomings within the higher education sector, specifically in agriculture. An aggregate of five famed agriculture-grounded universities was taken under consideration for carrying out this exploration. Based on the volume of graduates of target universities in 2022, a sample size of 456 was collected through a stratified random sampling method of unequal size. The study employed a transition probability matrix to detect changing patterns in semester results, complemented by multivariate analysis to identify factors influencing students' academic outcomes. Binary logistic regression was used to justify the study's focus. Findings revealed a higher proportion of female students sharing educational resources in Bangladesh and dissatisfaction among many students regarding their degree programs, which significantly impacted their academic experience. Interestingly, the research indicated that mere class attendance did not correlate strongly with students' ultimate academic performance, suggesting that factors beyond attendance influenced semester-to-semester results. Some students cited logistical challenges such as heavy pressure and long distances between faculty and residential halls as reasons for the delay. Additionally, deficiencies in laboratory facilities were noted in some universities. This study shows that some universities weren't well equipped with laboratory installation. Amid the COVID-19 pandemic, this study revealed that most students (approximately 90%) embraced distance learning opportunities, highlighting the importance of adapting to new educational methodologies. The study underscores the necessity for university authorities to ensure well-equipped research facilities and laboratories to nurture multidisciplinary education in agriculture and produce high-quality Graduates'.

Keywords: Academic performance, COVID-19, switching pattern, tertiary education.

I. INTRODUCTION

Education is like a glowing torch that allows one to view both themselves and the outside world, allows people to think, feel, and act in a way that supports their achievement and raises community satisfaction in addition to their sense of fulfilment. The growth of a nation is seen to be best accomplished through the educational system.Greater access to higher education has the

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power to boost wealth in underdeveloped countries (Monem et al., 2010). Higher education and economic growth have a long-term association (Chaudhary et al., 2009). Higher education has a significant impact on prosperity in poor countries like Bangladesh (Monem et al., 2010).

Numerous researches have been conducted to pinpoint the variables influencing students' academic achievement. Socioeconomic factors, attendance, teacher-student ratios, and distance from school influence academic outcomes (Raychaudhuri et al., 2010). Also, parental education, library use, and extracurricular activities also play crucial roles in academic success (Kirmani &Siddiquah, 2008; Noble, 2006).A study by Mathew (2013) suggested that school facilities, funding, staff morale, and policy changes also impact student performance. Living conditions, such as dormitory residence, positively affect academic results and personal growth (Astin, 1971; Blimling& Paulsen, 1979). Assessment practices influence student learning and performance by clarifying expectations and promoting relevant, feedback-oriented tasks (Brookhart, 1997; Cavanagh et al., 2019). In addition, students' perceptions of assessments and their study approaches significantly affect learning outcomes (Lizzio et al., 2002). Academic self-efficacy and time management are critical for academic success, with effective study strategies improving performance (Weinstein, 1987).Gender differences in study behavior, with females adopting deeper and more structured approaches, were noted by Speth & Brown (1990). Living conditions, such as on-campus housing, significantly influence academic performance, retention, and overall college satisfaction (Astin, 1971; Phillips, 1976; Herndon, 1984). Research consistently shows that dormitory residents perform better academically than non-residents (Nowack et al., 1985). Environmental factors in residence halls, such as noise levels and visitation policies, affect students' satisfaction and academic outcomes (Allen, 1985).Peer pressure significantly motivates academic achievement, with evolving types of peer influence affecting student behavior (Lashbrook, 2000). Furthermore, positive peer groups can enhance academic motivation and performance, while negative peer influences can lead to detrimental behaviors and lower academic achievement (Bankole, 2015; Santor et al., 2000).

Four independent factors contribute positively to students' satisfaction: the quality of the teacher, the design of the course, timely feedback, and the expectations of the students(Gopal et al., 2021).Iglesias-Pradas et al., (2021) found that students' academic performance improved during emergency remote teaching, reinforcing the theory that organizational factors significantly contribute to the success of such teaching methods. Gamification has been shown to be an effective pedagogical strategy for promoting student engagement and motivation, particularly in the context of remote learning during the COVID-19 pandemic(Rincon-Flores et al., 2022).Tang (2023) found that the shift to online or remote learning affects educators and students, particularly in terms of learning loss, instruction, assessment, experiential learning, technological limitations, connectivity, learning resources, and psychosocial well-being. "Grades" and "absences" were the most significant predictors of students' academic performance at the end of the year (Fernandes et al., 2019).

In Bangladesh, there are eight agricultural universities. The agricultural sector plays a crucial role in Bangladesh's economy, contributing significantly to employment and GDP. Despite its importance, there is limited research focusing on the educational performance of agricultural students, who are future professionals in this vital sector. Understanding the factors that influence their academic success is essential for developing targeted interventions that can enhance educational outcomes and, consequently, the sector's productivity. Bangladesh faces numerous challenges in the agricultural sector, including climate change, food security, and sustainable development. These challenges require well-educated professionals equipped with the latest knowledge and skills. By identifying and addressing the determinants of educational performance among agricultural students, this study aims to guide the policy planners to take efficient strategies to improve the quality of agricultural education in Bangladesh.

II. MATERIALS AND METHODS

Study areas, sample selection, and data collection

A stratified random sampling method of unequal size has been used to collect primary data from the graduate students of five agricultural universities across various faculties as strata where number of established faculties of each unversity are not equal. Based on the volume of Graduates' of target universities in the year 2022, the pretested structured questionnaires have been distributed proportionally. A total of 456 questionnaires have been handled from where 40% , 20%, 15%, 15% and 10% questionnaires have been responded by the graduates' of Bangladesh Agricultural University, Sylhet Agricultural University, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Sher-e-Bangla Agricultural University, and Chattogram Veterinary and Animal Sciences University, respectively considering nonresponses.

Data Analysis

For analyzing the data a combination of descriptive statistics (i.e., percentages, bar diagrams, and pie charts), a mathematical and statistical analysis such as Markov chain, binary logistic regression, regression analysis, and reliability analysis were used to achieve the objectives.

Markov chain models were used to study students' educational performance over time (Stewart et al., 2009). Besides, the behavior of a Markov chain depends on the transition matrix which contains transition probabilities. A transition probability matrix has been used to find out the switching tendency of the academic performance of students at agricultural Universities.Binary Logistic Regression Analysis was used to reflect the satisfaction level of the students. Regression Analysis was used to find out the significant influential factors which influence the satisfaction of the academic performance of agricultural students. The statistical software especially Statistical Package for Social Sciences (SPSS) and STATA were used to analyze the data for attaining the objectives.

Measures

The Class Oriented Scale (COS) is designed to measure students' attitudes, perceptions, and behaviors related to their classroom experiences. It assesses factors such as engagement with course materials, interaction with instructors and peers, satisfaction with teaching methods, and overall classroom atmosphere. The Time Management Scale (TMS) is a tool used to assess students' ability to effectively manage their time and prioritize tasks. It can help students to identify areas of strength and weakness in their time management practices, leading to improved academic performance and overall well-being. The Personal Interest and Campus Movement Scale (PICMS) evaluates students' level of personal interest in their academic program and their engagement in campus activities and movements. It assesses factors such as participation in extracurricular activities, involvement in student organizations, and overall satisfaction with campus life. The description of different scales and variables used is given in Box 1 under the Annex.

A five-point Likert scale, from strongly disagree to strongly agree was used to assess the degree of existence for all variables in the research domain. Strongly Disagree (1), Disagree (2),Neutral (3), Agree (4), and Strongly Agree (5) on a scale of 1 to 5. The questionnaire was divided into three scales Class Oriented Scale (COS), Time Management Scale (TMS), and Personal Interest and Campus Movement Scale (PICMS).

Cronbach's alpha is a method used to evaluate how reliable and consistent a set of items or questions is within a test or scale. It helps to determine whether the items in the test are effectively measuring the same underlying concept or construct. A higher Cronbach's alpha

value indicates stronger internal consistency, meaning that the items in the test are closely linked and consistently measure the intended concept.

III. RESULTS AND DISCUSSION

Graduates'feedback on a class delivery

After the accumulation and processing of all primary data, the outputs from Figure 1 show that that the majority of students go to their classes regularly. This is because the universities have strict rules and regulations in place. From the responses of the graduates', 90% consistently attend their classes. Transition probability matrix indicated that the academic achievement around 20% graduates' were decreasing in nature from base period to next one. This indicates that poor class attendance is not the sole reason for students' lack of success in their final exams and declining results from one semester to another. The issue primarily lies in not actively engaging in-class activities and effectively participating. Significantly,about 60%to 70% of students rely on their teachers during classes to achieve good grades in their examinations. The opposite scenario is also presented here. Many of these students agree that they came to class only for attendance and this percentage is not very negligible, which is 75%. Approximately 80% of students agree that having an organized teacher or lecturer who presents lectures in a structured manner is extremely beneficial for their learning.

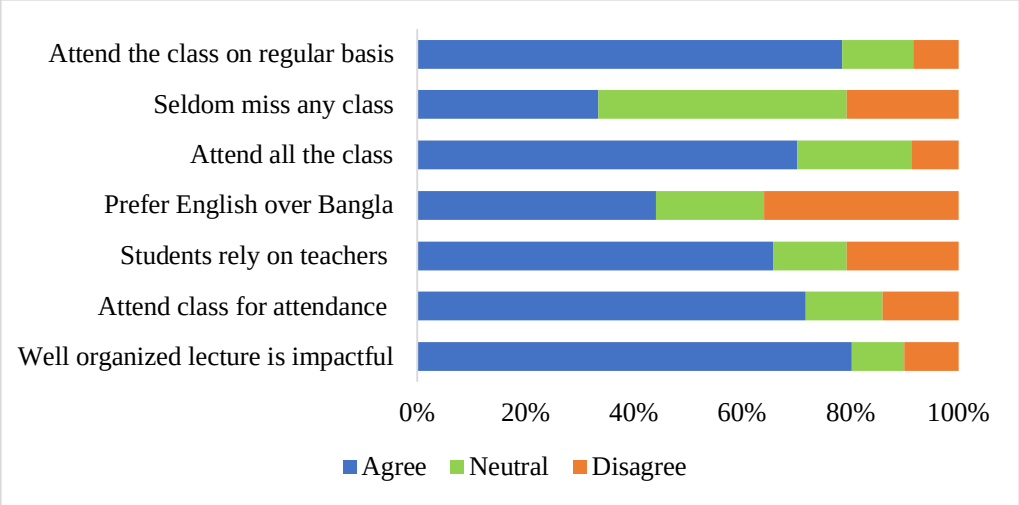


Figure 1: Graduates' feedback on a class delivery

Graduates' response regarding time management

Figure 2 shows that about 70% of the students were not getting proper internet speed for their essential research and documentation during their study period and before the exam. About 35% of the agricultural universities have an up-to-date central library facility and 25% of students never get any of these facilities at their university due to a lack of infrastructural and updated books availability at their university's central library. Most of the students were not willing to buy a whole book and there are too many reference books advised in a semester for every course. About 45% of students maintain their time properly, but more than 30% of students were not doing well to make this as desired. When it comes to different semesters, having good time management skills has the most significant influence on achieving good results in examinations.It is encouraging to discover that around 50% of all students were well-prepared

for exams ahead of the exam season but it is concerning to note that 28% of students were not adequately prepared throughout the entire semester process

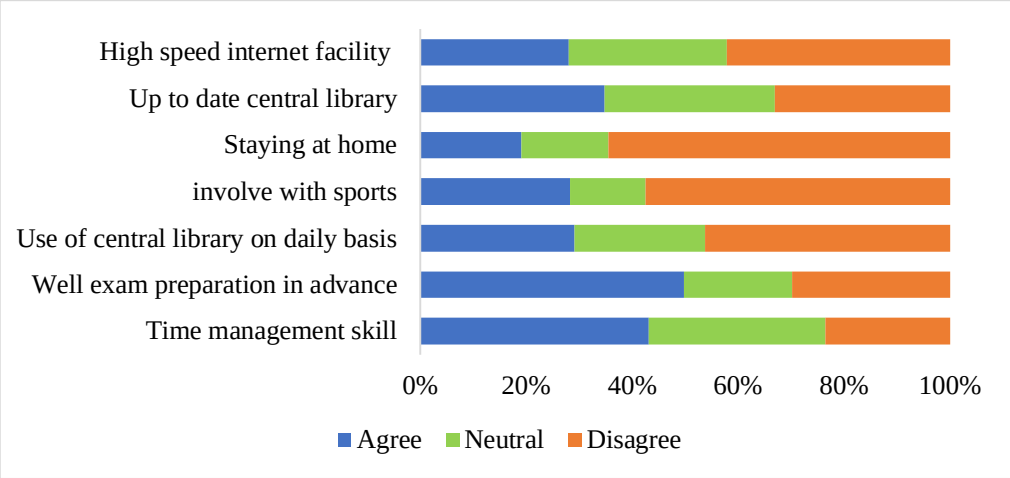


Figure 2: Graduates' response regarding time management

Graduates' response regarding available facilities

About 60% of students agree that teachers were very helpful in achieving their goals at university. By getting more tape into this issue students share that some of the teachers are too much helpful in all cases not only academically but also in solving their problems in their personal life and motivating them and teachers behave very friendly to their students. About 25% to 30% of students were not getting any facilities of a cafeteria and teacher-student center so they do not get any chance to explore themselves for the betterment of society in this manner.

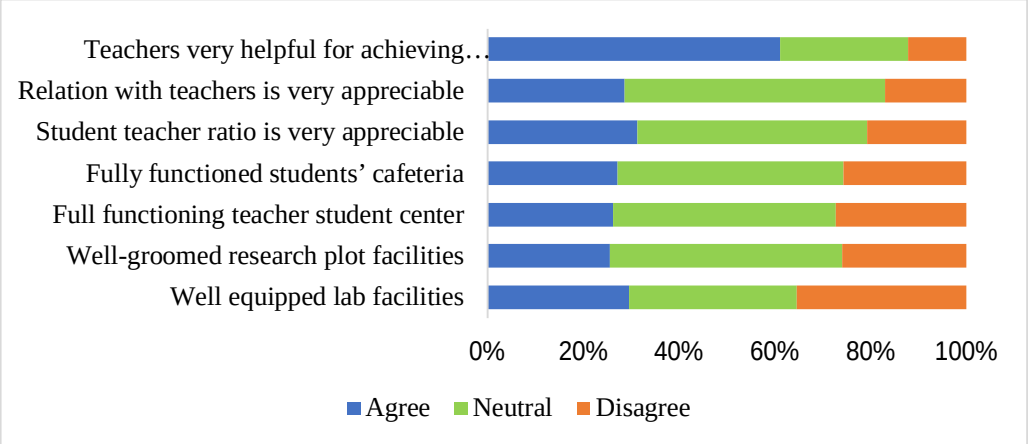


Figure 3: Graduates' response regarding available facilities

Psychological pressure due to course load

About 60% of the students have come to the realization that the current course curriculum does not align well with the present circumstances and additionally, 40% of students expressed dissatisfaction with the way faculties treat them in their academic lives.The data indicates that less than 20% of the students were satisfied with how their faculty treated them, while the

majority did not address this aspect.About 65% of students reported that they were under psychological pressure during the exam season only because of the heavy load of courses.

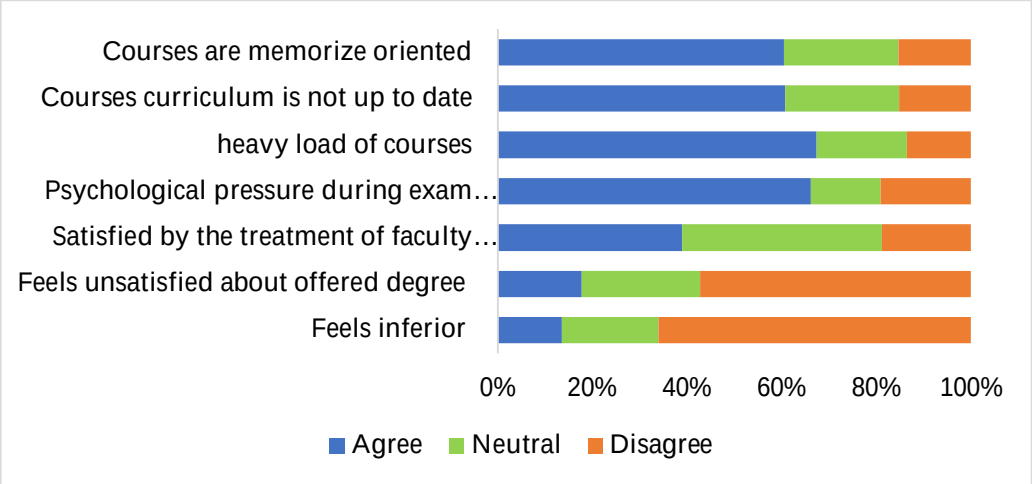
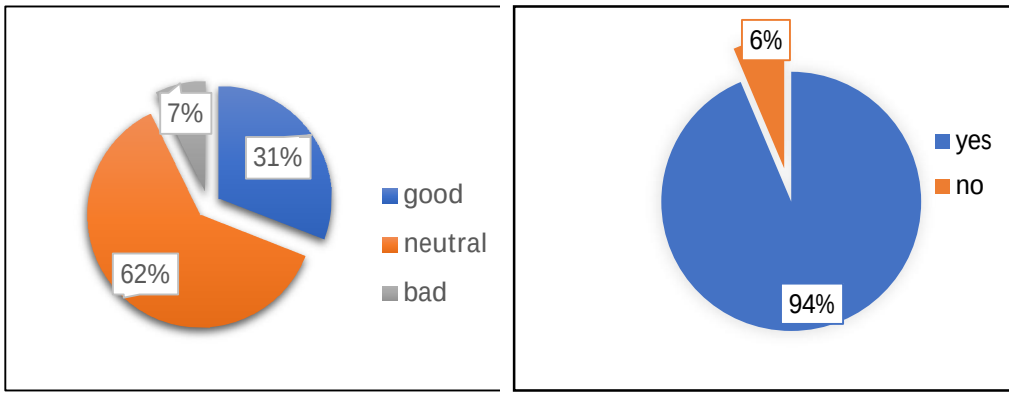


Figure 4: Pychological pressure due to course load

Graduates' responsesabout remote education and device availability

Figure 5 clearly shows that31% of students were feeling very comfortable with remote education. Students were not very happy about this distance learning system because they were out of so many activities and real-life experiences on their campus life due to only this stagnated life on monitors. To some extent, students become frustrated and even not get any help when they were in need. The figure also shows that 94% of students have their own devices available for this distance learning system though Bangladesh's economy is not equal in every geo-educational sector.



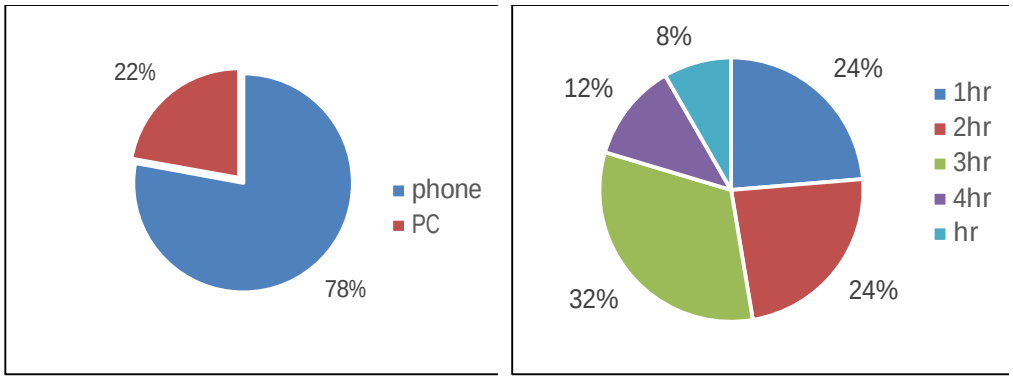
(a) Graduates' responsesabout remote education

(b) Graduates' responses about device availability

Figure 5: Graduates'responses about remote education and device availability

Device type and daily use time

Figure 6 shows that 78% of students attend their online classes by using a mobile phone and only 22% of students were present by their personal computer or laptop.



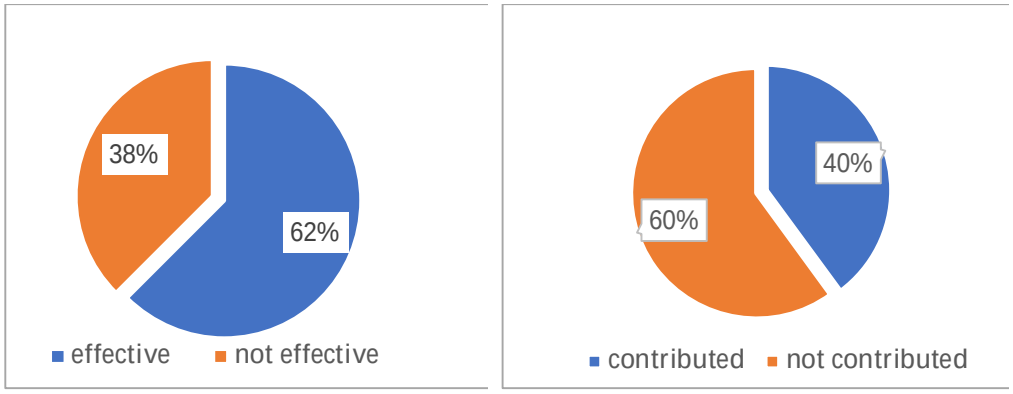
(a) Device type **(b) Daily use time**

Figure 6: Device type and daily use time

According to the current findings, 32% of the total students were doing online classes for about 3 hours per day, and 24% of the students were doing their classes only for 2 hours per day, eventually 12 % of the students attend more than 4 hours of classes on daily basis by using their devices.

Effectiveness of distance learning and financial contribution by Universities

62% of students reported that distance learning is helpful in the way of sharing knowledge, and 38% differ with this statement because of some social barriers and economic constraints. Also, in some cases, students were not able to connect good internet connection, and they had to suffer from their schedule only for this interruption.About 60% of students have gotten economical facilities for their devices.



(a) Effectiveness of distance learning **(b) Financial contribution by universities to device**

Figure 7: Effectiveness of distance learning and financial contribution by Universities

Stress regarding distance education

33% of students said online-based education can be somewhat stressful because there is no in-person assistance readily available when needed. However, approximately 13% of students expressed that the stress level was not significant as they felt comfortable attending classes from

their homes. On the other hand, a majority of students, accounting for 54% of the total, mentioned that their stress levels were normal while attending regular in-person classes.

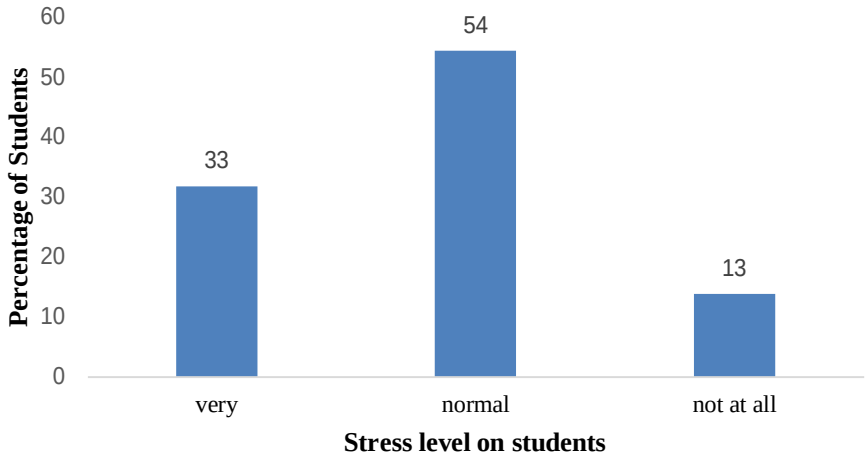
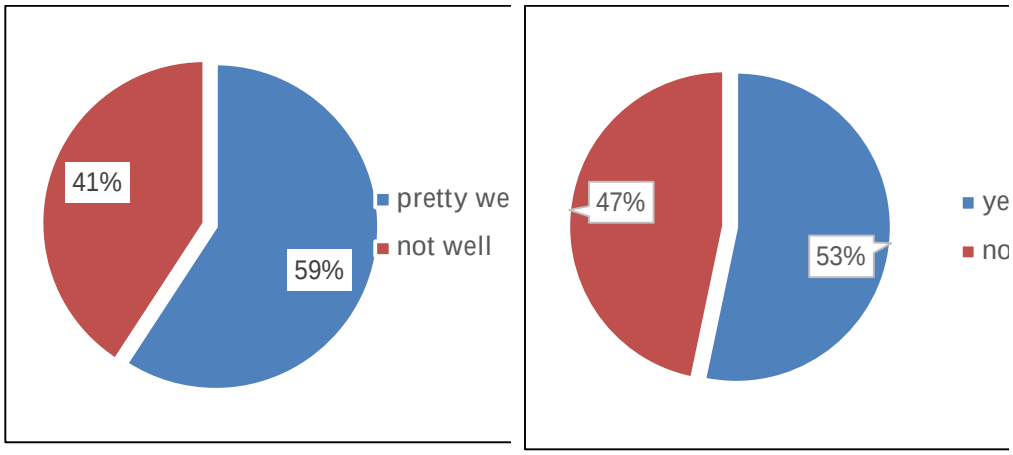


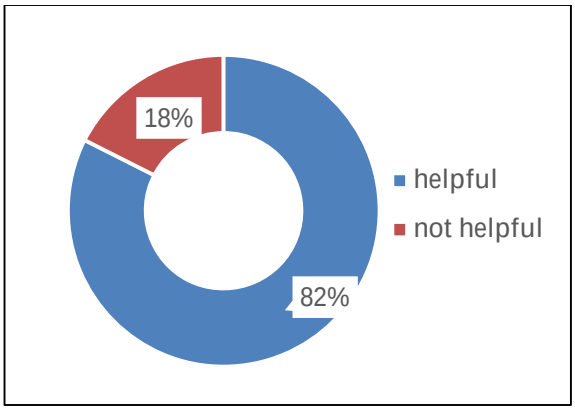
Figure 8: Student's stress level associated with distance education

Graduates'response regarding online classes and time management

Figure 9 shows that about 59% of the students effectively manage their schedules. Although 41% of students will not be able to manage that time very specifically so this might be another issue of concern that they were in their comfort zone still they were not able to maintain their schedule. About 53% of the total surveyed student says that online classes were enjoyable, but 47% of students differ with this statement. On a more wide aspect, 82% of the students agree that the online classes were helpful, but 18% of students were not fully satisfied with these distance learning paths.



(a) Time management done by students **(b)Online classes enjoyable for students**



(c) Percentage of students helped by online class

Figure 9: Graduates'response regarding online classes and time management

Reliability of the study variables

In our reliability analysis (Table 1), the result of the Cronbach's alpha (∝) coefficient for the Class Orientation Scale (COS) is 0.78, which is high. So, the complex variable namely, Class Orientation Scale (COS) is highly correlated and representsa reliable set of items. The results of the alpha coefficient for the Time Management Scale (TMS) and Personal Interest and Campus Movement Scale (PICMS) are 0.77, and 0.81 respectivelythese are also high and represent high correlation among items. So, Class Orientation Scale (COS), Time Management Scale (TMS), and Personal Interest and Campus Movement scale (PICMS) are a reliable set of items.

Table 1: Reliability of total variables

Variables	Cronbach's Alpha(∝)	No. of items
Class Orientation Scale (COS)	0.78	14
Time Management Scale (TMS)	0.77	15
Personal Interest and Campus Movement Scale (PICMS)	0.81	23

Association between independent variables and academic achievement

Table 2 shows about 53% of female students are significantly more likely to achieve better academic performance than males (OR=1.530, 95% CI=1.004, 2.332). Students stayed neutral with Campus Oriented (CO) part as significantly 7 times more likely (OR=7.141, 95% CI=1.828,27.890), and agreed with Campus Oriented (CO) part as significantly 5 times more likely (OR=5.390, 95% CI=2.164, 13.426) to achieve better academic performance than stayed with disagree. Students who stayed neutral with Time Management (TM) part is significantly 60% less likely to achieve their academic performance than stayed with disagree (OR=0.397, 95% CI=0.172,0.913). Students who agreed with Personal Interest (PI) part are about 3 times significantly more likely to achieve better academic performance than stayed with disagree (OR=2.694, 95% CI=1.512,4.800). Students who access their devices are 12 times significantly more likely to achieve better academic performance than those without device accessibility (OR=12.330, 95% CI=2.817,53.962). Of the eight faculty, Agricultural Engineering Faculty is about 4 times significantly more likely to achieve better academic performance than Agricultural Faculty (OR=3.478, 95% CI=1.092,11.068).

Table 2: Association between independent variables and academic achievement

Factors		n (%)	Odds Ratio[95%CI]	P value
Gender [ref: male]				
Female		289(63%)	1.530[1.004,2.332]	0.048*
Male		169(37%)		
COS [ref: disagree]				
Neutral		17(4)	7.141[1.828,27.890]	0.005*
Agree		402(88%)	5.390[2.164, 13.426]	0.000***
Disagree		37(8%)		
TMS[ref: disagree]				
Neutral		36(8%)	0.397[0.172,0.913]	0.030*
Agree	Disagree	232(51%)	1.070[0.690,1.658]	0.762
		188(41%)		
PICMS [ref: disagree]				
Neutral		10(2%)	1.001[0.231,4.327]	0.999
Agree	Disagree	77(17%)	2.694[1.512,4.800]	0.001**
		369(81%)		
Device- Accessed [ref: no]	Yes		12.330[2.817,53.962]	
No		427(94%)		0.001**
		29(6%)		
Faculty [ref: Agriculture]				
Agril. Econ.		154(34%)	0.716[0.423,1.212]	0.214
Agril. Engg.		19(4%)	3.478[1.092,11.068]	0.035*
Fisheries		55(12%)	1.575[0.774,3.202]	0.209
Veterinary		67(15%)	0.836[0.445,1.570]	0.578
Animal Husbandry		4(1%)	1.271[0.171,9.406]	0.814
Food Engg.		16(3%)	0.741[0.246,2.228]	0.595
BEG		17(4%)	0.707[0.228,2.189]	0.549
Agriculture		124(27%)		

*Note: In table 2, *significant **highly significant ref: reference category*
n represents the sample size of the variable, Agril. Econ. indicates the Faculty of Agricultural Economics, Agril.Engg. indicates the Faculty of Agricultural Engineering, Food Engg. indicate the Faculty of Food Engineering, and BEG indicates the Faculty of Biotechnology and Genetic Engineering.

Graduates' performance over semester to semester

One of the important objectives of this study is to assess the student's performance over time (semester to semester). Transition matrices have been developed based on the academic result data of graduate students. The transition probability matrix reveals that the student's performance changes from semester to semester. Let R_n be the states of grade point averages whose possible values are A+, A, A-, B+, B, B-, C+, and C. The transitions from one state to another state depend only on the present state, not the previous one. Therefore, it is reasonable to consider

(Rn) as a Markov chain with eight states. The transition probability matrix is denoted by $P_{ij,}$where,i represent an earlier semester and j represents a later semester.

Transition Probability matrix 1

P_{ij}^{1} = L1S1 \ L1S2

	A+	A	A-	B+	B	B-	C
A+	1	0	0	0	0	0	0
A	0	0.69	0.26	0	0	0.05	0
A-	0	0.15	0.55	0.27	0.03	0	0
B+	0	0.05	0.37	0.43	0.14	0	0.
B	0	0	0.07	0.38	0.38	0.17	0
B-	0	0	0	0.06	0.56	0.38	0
C+	0	0	0	1	0	0	0
C	0	0	0	0	0	0	0

Transition Probability matrix 2

P_{ij}^{2} = L1S2 \ L2S1

	A+	A	A-	B+	B	B-	C
A+	1	0	0	0	0	0	0
A	0	0.75	0.25	0	0	0	0
A-	0	0.17	0.41	0.23	0.13	0.06	0
B+	0	0.06	0.33	0.28	0.28	0.05	0
B	0	0	0.15	0.44	0.32	0.09	0
B-	0	0	0	0.25	0.45	0.30	0
C+	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0

Transition Probability matrix 3

P_{ij}^{3} = L2S1 \ L2S2

	A+	A	A-	B+	B	B-	C+
A+	1	0	0	0	0	0	0
A	0.02	0.56	0.34	0.08	0	0	0
A-	0	0.17	0.47	0.32	0.04	0	0
B+	0	0	0.38	0.37	0.18	0.05	0.(
B	0	0	0.11	0.30	0.50	0.09	0
B-	0	0	0	0.33	0.42	0.25	0
C+	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0

Transition Probability matrix 4

P_{ij}^{4} = L2S2 \ L3S1

	A+	A	A-	B+	B	B-	C+
A+	0.83	0	0.17	0	0	0	0
A	0	0.79	0.16	0.05	0	0	0
A-	0	0.36	0.54	0.09	0.01	0	0
B+	0	0.14	0.41	0.31	0.14	0	0
B	0	0	0.25	0.55	0.20	0	0
B-	0	0	0	0.30	0.50	0.20	0
C+	0	0	1	0	0	0	0
C	0	0	0	0	0	0	0

Transition Probability matrix 5

P_{ij}^{5} = L3S1 \ L3S2

	A+	A	A-	B+	B	B-	C+
A+	1	0	0	0	0	0	0
A	0.07	0.59	0.30	0.01	0	0.03	0
A-	0	0.21	0.50	0.23	0.05	0	0
B+	0	0.05	0.20	0.41	0.32	0	0.(
B	0	0	0.48	0.40	0.12	0	0
B-	0	0	0	0	1	0	0
C+	0	0	0	0	0	0	0
C	0	0	0	0	1	0	0

Transition Probability matrix 6

P_{ij}^{6} = L3S2 \ L4S1

	A+	A	A-	B+	B	B-	C+
A+	0.50	0.50	0	0	0	0	0
A	0.08	0.77	0.15	0	0	0	0
A-	0	0.21	0.51	0.23	0.05	0	0
B+	0	0.03	0.41	0.37	0.19	0	0
B	0	0	0.22	0.54	0.24	0	0
B-	0	0	0.40	0	0.60	0	0
C+	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0

Transition Probability matrix 7

L4S2

L4S1

$P_{ij}^{7} =$

	A+	A	A-	B+	B	B-	C
A+	0.70	0.30	0	0	0	0	0
A	0.04	0.87	0.09	0	0	0	0
A-	0	0.27	0.63	0.04	0.05	0	0
B+	0	0.02	0.45	0.53	0	0	0
B	0	0.04	0.04	0.71	0.21	0	0
B-	0	0	0	0	0	0	0
C+	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0

Transition probability matrix 8 (Pooled)

Present semester

Past semester

$P_{ij} =$

	A+	A	A-	B+	B	B-	C
A+	0.80	0.18	0.02	0	0	0	0
A	0.04	0.72	0.21	0.02	0	0.01	0
A-	0	0.23	0.53	0.21	0.03	0	0
B+	0	0.05	0.38	0.39	0.16	0.02	0
B	0	0.00	0.12	0.43	0.37	0.08	0
B-	0	0	0.03	0.20	0.55	0.22	0
C+	0	0	0.20	0.80	0	0	0
C	0	0	0	0	1	0	0

The likelihood ratio test is $-2 \ln \Lambda = 2 \sum_{t=1}^{T} \sum_{i=0}^{m-1} \sum_{j=0}^{m-1} n_{ij}^{t} \ln \frac{n_{ij}^{t}}{n_{i}^{t-1}}$ Which follows χ^2 distribution with (T – 1) [m(m – 1)]df

The estimated value of the likelihood ratio statistic of pooled transition probability matrix is 295.74 with p value<0.05 which generalized the existence ofswitching pattern of academic performance over the eight-semester period.

IV. CONCLUSION AND POLICY RECOMMENDATIONS

This study provides up-to-date educational statistics about agricultural students and offers effective and efficient strategic directions that will help enhance the academic performance of agricultural students in Bangladesh. The statistical analysis gives us information that students' performance changes from semester to semester and over the eight-semester period is not the same. Class Orientation Scale (COS), Time Management Scale (TMS), and Personal Interest and Campus Movement scale (PICMS) are reliable sets of items for achieving good academic results. Female students are significantly more likely to achieve better academic performance than males.Students who access their devices are significantly more likely to achieve better academic performance than those without device accessibility. Of the eight faculties, Agricultural Engineering Faculty is significantly more likely to achieve better academic performance than Agricultural Faculty.

Following policies can be made based on the major findings of the research. (1) Teachers should be well organized when they delivered their study materials in the classroom. (2) Teaching tools like projection and visual aids including field visits and first-hand experience should be available in the teaching method. (3) Course Curriculum should be updated to extend the wings of students in research and development. (4) For essential Research and documentation, high-speed internet facilities should be ensured by the university authorities. (5) Well-groomed research plot facilities and well-equipped lab facilities should be ensured by university authorities as agriculture is the multidisciplinary subject of trial and error-based research so a research plot is essential to produce quality Graduates' from this university. (6) Treatment of faculty members should be friendly and University authorities should appoint psychologists for counseling the student's mental and physical health. (7) University authorities should maintain political issues in such a way that students' academic achievement is not hampered by political involvement.

This research identifies the factors and gives proper guidelines to the students and university authorities to take appropriate action to ensure quality education. If the recommended task is followed by the students and university authorities properly quality of Graduate Students from Agricultural Universities will be much better,will contribute to the nation's development by doing great research, and the GDP of Bangladesh will be increased by improving the Agriculture sector.

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Annex

Box 1: Description of scales and variables

Scale	No. of Variable	Variable Name
COS	1	When teachers are well organized for a session it is more impactful
	2	Students attend the class due to the mandatory attendance system
	3	Students rely on teachers to tell them what is important to learn
	4	Students prefer English as a medium of instruction over Bangla
	5	It is important to attend all the classes
	6	Students seldom miss any class
	7	I attend the class ona regular basis
	8	I do not come late to class.
	9	Students attend the class because they want to learn important information
	10	Technology was essential in the teaching process, which aided my learning.
	11	The role played by the lecturer/ tutor in the teaching process aided my learning.
	12	Theoretical classes help me to improve preparations towards examinations oriented
	13	The feedback methods are likely to enhance my development on the conceptual understanding/problem solving at class.
	14	The instructional methods and activities used reflect the lectures attention to my experiences and readiness.
TMS	1	I have better time management skill.

	2	I always start preparing for an examination well in advance
	3	I do use our central library for studying on daily basis
	4	I do involved with sporting events at campus
	5	I continue my university by staying with my family
	6	University possess a well set upped up to date central library
	7	University has high speed internet facility all around the campus
	8	Faculty has well equipped lab facilities
	9	Faculty has well-groomed research plot facilities
	10	University has full functioning teacher student center
	11	University has fully functioned student's cafeteria
	12	University's student teacher ratio is very appreciable
	13	My relation with teacher's is very appreciable
	14	Teachers are very helpful towards achieving academic goals
	15	My home environment is study friendly
PICMS	1	Gave time regular basis on political activities
	2	Participating in cultural programs
	3	Abusing drugs
	4	Start abusing drugs (cigarette) from university level
	5	Start abusing drugs (marijuana) from university level
	6	Start abusing drugs (alcohol) from university level
	7	Taking drugs in hall with influence of roommates/senior brother
	8	Feels inferior with compare to other faculty's students of my campus
	9	Feels unsatisfied about my degree with compare to others professional degree
	10	Satisfied by the treatment of faculty members
	11	Huge psychological pressure during exam seasons
	12	Feels pressure due to heavy load of courses
	13	Course curriculum is not up to date
	14	Courses are memorize oriented rather than analytic
	15	Satisfied by the degree I have been offered
	16	Campus is highly politically volatile
	17	Political environment of my campus doaffectour academic calendar
	18	Teacher's political activities are more visible rather than student's activity
	19	Political activities enriched my knowledge range in a positive way
	20	Political activities reduce my study time
	21	Political activities help me in my study area
	22	By taking drugs my study pressure become lighter which influence me to study more in exam seasons
	23	Future professional insecurity affects present academic study