INTERCAMPUS GRADING PERFORMANCE AMONG PRINCIPLES OF ECONOMICS EXAMINEES OF IAAS, TRIBHUVAN UNIVERSITY, NEPAL

T. Bhandari*
Institute of Agriculture and Animal Science, Tribhuvan University, Nepal
*thaneshwar.bhandari@lac.tu.edu.np

ABSTRACT

In order to familiarize question-specific grading comparison of a board examination, the study analyzed primary score of 447 first-semester examinees to the Principles of Economics course in five grading: fail, pass, second division, first division, and distinction rank for each question. Relationships in grading performance were analyzed by using the chi-square test, independent t-test, and ordered logit regression. Among the examinees, 12.98%, 38.48%, 34.0%, and 8.28% secured distinction, first, second, and pass division, respectively and 94% got success with their average of 25.48 score. Compared to boys, the girls outperformed in terms of distinction, first division, and success rate. Fairly superior grading performance was analyzed for the constituent campus examinees over private to community campuses. Significant variations in grading analyzed due to gender, inter-campus and affiliation-type; however, no ethnicity effect was assessed in overall grading. Both coefficient and odds ratio of ordered logit regression determined the likelihood of positive contribution in grade upgrading. Marginal effect of grading scale=3 likely increased grades by 60%, 20%, 24%, 22%, 18%, 22%,23%, 20%, 22%, 20%, 21%, 19% if those examinees solve first to last question, respectively. Estimated predicting probability of each examinee were closer to grading performance. The Examination Board is suggested using Bloom's Taxonomy in question-set preparation and moderation, introduce cumulative grade point average, and coach potential examiners preceding to question setting and answer-book evaluation. All colleges are suggested to follow quality assurance and accreditation system in order to improve academic environment or establish, at least, advisory support to the poor-scored students.

Keywords: *Bloom's Taxonomy, constituent, gender, marginal effect, ordered logit*

INTRODUCTION

Institute of Agriculture and Animal Science, Tribhuvan University (IAAS-TU) has been offering the Principle of Economics as the compulsory course to the B.Sc. (Agriculture) and Veterinary discipline at first semester. The course aims to deliver general economic concepts, principles in production, consumption, and distribution of factors, outputs, market mechanisms, national income, trade cycle, and public finance. It acts as a fundamental course for succeeding semesters (IAAS, 2011). This course mostly covers principles and theories associated with Agricultural Economics (Chopra, 2012). Preceding to completion of the semester, the course instructor carries out internal evaluation of examinees that is equivalent to 20% mark. The Controller of Examination organizes semester-end board examination for 80% weight. Each student must pass both internal and board examinations separately by securing at least 40% marks in each examination (IAAS, 2012). The board examination takes place concurrently in all four constituent and four affiliated campuses under IAAS.

Past authors hardly analyzed inter to intra-campus comparison in examinees' grading performance in IAAS-TU and have no literatures in Nepalese universities context. The second issue was either the college-based diversity in answering questions, irrespective of examinees taught by tutored instructors, was translated into the answer-book or not. Acquainting on question-specific grading comparison, assessing the best answer, hardness in question, and analyzing its contribution on achieving final grade were unquantified in our examinees case.

The third issue was unconfirmed determinants affecting grading performance. The author set following specific objectives considering these key research problems:

a. Assess examinees' question-specific grading score and analyze heterogeneity in grading among campus and affiliation;
b. Assess question and ascertain relationship in grading performance within intercampus and affiliation type;
c. Analyze determinants in grading performance and their predicting probabilities.

Following alternative hypotheses were set to test second and third objective:

a. Exam results are dependent within and among campus and affiliation type;
b. Significant difference in academic performance of boys and girls;
c. Significant relationship of each ordered logit coefficient on grading performance; and
d. Non-uniform predicted probabilities for each grade.

Analyzing these objectives would be helpful to have better understanding in the determinants of the students' performance, which can consequently aid academic institutions to device improved approaches in future planning, curriculum designing, and examination system improvements.

MATERIALS AND METHODS

The study used the primary data of 447 examinees of seven institutions whose examination held on 24th December 2018 (IAAS, 2018). Among them, 45, 50, and 49, from Gauradaha Agriculture Campus Jhapa, GAASC Baitadi, and Khairahani Campus Chitwan, respectively. Similarly, 103, 50, 100, and 50 examinees belonged to Lamjung Campus, MARI, Paklihawa, and PTC Lamahi, respectively. Gender and ethnicity information was collected from each college. The examinees' answer-book were evaluated based on score in essay and short-question mixed-up of question-set, course references, and preassessment skills of an examiner (IAAS, 2012, 2018). Each examinee was evaluated with twelve questions (full marks 40), and obtained marks were ranked into five categories: failed (<40%), pass division (40 to 49%), second division (50-59%), first division (60-79%), and distinction (>80%) as per Bulletin (IAAS, 2012). Although the Rector office of Tribhuvan University advised to use Cumulative Grade Point Average (CGPA) system since 2013, study analyzed score in percentage basis as same as IAAS system (Poudel, 2020). Categorical variables such as gender, ethnicity, types of college, and campus were coded into numeric form.

The study used descriptive statistics for preliminary analysis and Pearson chi-square used for testing interdependency of grade performance (Mehta and Patel,2010) considering 10% level of significance. The significance of gender on grading performance was analyzed by using independent t-test. Ordered logit regression (OLR) computed the probability of latent response (Y_i^*) relationship with the regressors under cumulative density function (CDF), using following equations:

$$\Pr(Y_i \le j) = \Pr(\beta_1 X_{1i} + \beta X_{2i} + \ldots + \beta_k X_{ki} + u_i < a_j) \quad \text{..... i)}$$

$$= \Pr(u_i \le a_j - \beta_1 X_{1i} - \beta_2 X_{2i} - \ldots - \beta_k X_{ki}) \quad \text{.....ii)}$$

Compute odds ratios by $\Pr(Y_i \leq j) = \frac{\exp(a_j - \beta X)}{1+\exp(a_j - \beta X)}$, here, βX stands for $\sum_1^k \beta_k . X_k$ ..iii)

The effect of regressors on ordered dependent variable (grading performance) is non-linear, as it gets channeled through non-linear CDF (Gujrati, 2016). Easier estimation of OLR was: Logit $[\Pr(Yi \leq j)] = In\frac{\Pr i(Yi \leq j)}{\Pr i(Yi > j)}\ In\frac{\Pr(Yi \leq j)}{[1-\Pr(Yi \leq j)]} = \alpha_j - \sum_{n=1}^{K} \beta_n X_{in}\ j = 1,2,\ldots,j-1$ .....iv)

Where, Yi= grading performance of i^{th} examinee and unobserved variable; X_i= predictors such as gender, ethnicity etc; n=observations; j= ordered categories; α_j =threshold parameter; Pr = probabilities; β =slope coefficient; ln= natural log; k = # of regressors; and u_i = error term. Statistical significance of individual regression coefficients was tested by using the standard normal distribution Z. Further analysis OLR results estimated for marginal effect ($\frac{\partial Y_i^*}{\partial X_{ij}} = \beta_j$) of the regressors and predicting probabilities of each examinee.

Table 1 depicts perceptions in hardiness of each question was mapped using four criteria in six ordinal scales: 1 as hardest to 6 as the easiest question.

Table 1. Scale of identifying easiness to the hardness of question

Ordinal scale and its value	% of examinee get full marks	Average mark	Failed% range	% of examinee unanswered question
Hardest (1)	≤ 5%	<40%	≥25	>25
Harder (2)	5-10	40-50%	20-25	20-25
Moderately harder (3)	10-15	50-60%	15-20	15-20
Moderately easier (4)	15-20	60-70%	10-15	10-15
Easier (5)	20-25	70-80%	5-10	5-10
Easiest (6)	≥25	>80%	≤5	<5.0

Source: Author's criteria (2020)

Bloom's Taxonomy (BT) technique was used to assess questions from lower to a higher level of cognitive thinking (Bloom,1956). The BT facilitated student performance by examining answer-book, encourage higher-order thought among the examinees, evaluating behavioural and cognitive teaching-learning outcomes at larger-scale educational goals or guidelines. Specific grading weightage assigned based on action verbs used in BT. Bloom gave six-level of question in a question-set for: i) Knowledge (K); ii) Comprehensive (C); iii) Application (App); iv) Analysis (Ana); v) Synthesis, and vi) Evaluation (Anderson, et al., 2001). All types of data were analyzed using Excel 10, SPSS, and Stata 15.

RESULTS AND DISCUSSION

The study included 447 examinees of seven campuses where boys were slightly dominant by 10.6% over the girls. About 23% of the examinees evaluated from Lamjung followed by 22.4% from Paklihawa. Almost 75% of examinees represented upper caste ethnicity (Brahmin, Kshetri, and Thakuri) followed by Janajati cum Adhibasi (14%). Results and discussion, based on score of each question and their relationships are included in the following sub-headings.

Q.N.1: Differentiate between monopoly and monopolistic competition. Discuss equilibrium price and output determination under perfect competition (F.M.:10)

The first part of question, signified 40% weight, comprised theoretical differences between monopoly and monopolistic market characteristics with the illustrations. The end part having 60% weight sought answer in a cost, revenue, and period of firm attachment with the industry by determining equilibrium price and output under the perfect competition market conditions. Analysis shows that 34%, 25%, 15%, and 15% examinees received the distinction, first, second, pass division, respectively. The success percentage of the examinees was 88%, fewest 1.12% got full marks, and the mean for all examinees was 6.43 mark ranging from 5.56 (GAASC) to 6.97 (Lamjung) (Figure 2). Causes of receiving second division or below grade were either the examinees underexplained the long-run relationships inside the firm-industry or incorrectly elaborated perishable commodity-based price-output determinations. Analysis showed the consistent mark for the examinees of Lamjung (σ =1.59).

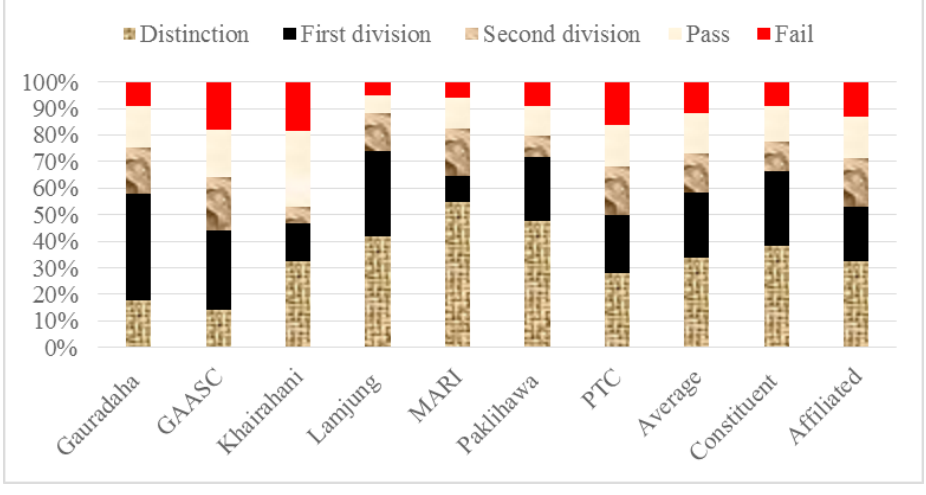

Figure 1. Grading performance of examinee in different campuses in question 1

Source: Own estimation (2018)

Q.N.2: Criticize wealth definition of economics and highlight the merits of material welfare definition with the real-life situation (F.M.: 3)

The score gained while evaluating this question showed 2.07 as average mark of the examinees ranging from 1.89 (Khairahani) to 2.27 (Paklihawa). In aggregate; 43.8%, 20.2%, 10.5%, and 0.1% examinees had distinction, first, second, and pass division, respectively. Just 2.01% examinees obtained full score along with the consistent mark for MARI (σ =0.48). Even though the question was most potent, examinees have to be prepared two most definitions of economics in a district clarity while answering similar question explaining welfare definition given by Adam Smith in 1776 and material welfare definitions of Marshalls (Chopra, 2012).

Q.N.3: What do you mean by indifference schedule? Explain any four important properties of the indifference curve (F.M.: 3)

Regarding to marking first part having one-third weight, some examinees either skipped or wrote inconsiderable explanation since the expected short answer was a "combination of goods or services that offer equal satisfaction to the individual concerned" (Chopra, 2012, p 175.). For evaluating the second part having two-third weight, those who explained four with figure out of eight properties also got full-mark. Surprisingly, 44% (among them, highest 29% from Paklihawa followed by 28% from Lamjung) could receive full-mark three. The average mark was 2.59, which was 86% of full-mark, ranging from 2.26 (Gokuleshwor) to 2.7 (Gauradaha). The consistency in marking also reported to the examinees of the Gauradaha ($\sigma = 0.31$). Grade comparison among colleges showed that 6.1%, 0.9%, 3.3% higher grade of distinction, first division, and second division, respectively for constituent campuses examinees and 2.6% lesser number failed examinees entailed that far better grading performance of constituent campus over the affiliated one.

Q.N.4: Differentiate between inferior and Giffen's goods. Explain the price effect in case of normal good with the help of a neat and clean graph (F.M.:3)

Allocating 50% weightage in the evaluation of the first part of this question, students differentiated suitable goods into inferior and Giffen ones in the perspective of price and demand effect in comparison to Marsellian law of demand (Chopra, 2012). The last 50% weightage of the question sought the explanation of price effect to normal goods case along with graph separating income effect and substitution effect by price change. Among examinees, 27%, 8%, 11%, 1% got distinction, first, second, and pass division, respectively along with 7.2% received full marks. Examinees of Paklihawa, Gauradaha, and Lamjung serially reported top-most position for distinction position in comparison to other institutions. The calculated average was 1.67 mark ranging from 0.93 (Prithu) to 2.01 (Paklihawa) having consistent score reported to Prithu college examinees ($\sigma = 0.7$).

Q.N.5: What does the law of diminishing marginal utility state? Explain this law along with its exceptions (F.M.: 3)

Evaluation of the question measured how much of understanding the examinees had in cardinal utility analysis of the consumer behaviour (Dwivedi, 2014). Results show that 70%, 14%, and 8% examinees evaluated the distinction, first, and second division, respectively. The received average mark was 2.33 ranging from 2.14 (MARI) to 2.49 (Paklihawa) but steady in score evaluated for Gauradaha ($\sigma = 0.41$). Additional 14% distinction holder and less 2% failed examinees entailed that the constituent campuses had fairly better result in comparison to affiliated colleges.

Q.N.6: Discuss on reasons for the law of demand and its exceptions with examples. Explain the measurement of point elasticity of demand (F.M.: 3)

The average mark for this question was 1.86 ranging from 1.61 (Gokuleshwor) to 2.17 (Gauradaha), with the lowest fluctuations for MARI ($\sigma = 0.48$). Among them 29%, 20% 23%, and 4.4% garnered distinction, first division, second, and pass division, respectively. According to Koutsoyiannis (1975), the examinees who defined the demand laws with graph, exceptions by elaborating to future prices, prestigious goods, and Giffen goods, and measurement aspect of point elasticity of demand curve were evaluated them as the best. The constituent colleges had far better grading performances because of 11% higher distinction holders and 5% lesser failed examinees over affiliated one.

Q.N.7: What is the change in supply? Describe the geometric method of measuring elasticity of supply (F.M.: 3)

The average mark gained for the question was 1.43 for the examinees ranging from 0.68 (Gokuleshwor) to 1.99 (Lamjung) with the consistent mark to MARI (σ =0.53). About 9.4%, 5.9% 9.4%, 0.7% of the examinees got the distinction, first division, second division, and pass division, respectively. The last part having 2-3rd weight in the question perceived as too technical since the lowest examinees rightly solved it. Even though the question was most potent, the examinees have to prepare mathematical as well as graphical clarity while answering the question.

Q.N.8: Why the study of population is important to the nation? Describe the Malthusian theory of population in short (F.M.:3)

Altogether 2.5%, 11 examinees out of which five from Lamjung, got full marks. Average score in this question was 2.17 ranging from 2.10 (Khairahani) to 2.28 (Paklihawa) with the consistent mark to MARI (σ =0.49). Among examinees, 57%, 22%, and 11% got distinction, first division, and second division, respectively. Extra 6% distinction holders and 1.9% lesser failed examinees revealed better performance of the constituent campuses over affiliated one. Students have to prepare population structure, perceived reasons of population issues, and its political reasons (Dasvarma, 2010). Almost examinees wrote valid answer for the second part of question describing "arithmetic progression in food production and geometric progression for population growth" (Chopra, 2012, p 224.).

Q.N.9: What do you mean by quasi rent? Describe the modern theory of rent in brief (F.M.:3)

Among examinees, 2.69% garnered full score with average 1.62 score ranging from 1.26 (Khairahani) to 1.89 (Prithu) but consistent mark reported to Paklihawa (σ =0.75). Furthermore, 24.1%, 15.5%, and 15% of examinees got distinction, first division, and second division, respectively. The earning is taken into consideration for fixed cost especially man-made factors especially machinery and other capital equipment (Dwivedi, 2014). Accordingly, who briefly explained the demerits of Ricardian theory and elaborated market-based approach of rent determination as explained by Marshall, Robinson, and Boulding, awarded excellent score. Extra 12% distinction holder and 4% lesser failed examinees revealed better grading performance of the affiliated campuses over the constituents one.

Q.N.10: Enlist the characteristics of Nepalese labour. Describe the marginal productivity theory of wage in brief (F.M.:3)

Of the examinees, 3.14% gained full-mark and mean was 1.89 mark, ranging from 1.61 (Khairahani) to 2.03 (Lamjung and GAAS). Average grading performance was 35%, 20.5%, and 13.1% for the distinction, first-division, and second-division, respectively, with the consistency mark to Paklihawa (σ = 0.66). Furthermore, additional 3% distinction holders and the same status to failed examinees reported that constituent campuses outperformed over affiliated ones.

Q.N.11: Define interest. Discuss Keyne's liquidity preference theory of interest (F.M.: 3)

Analysis revealed that 28%, 22%, 16%, and 1% examinees subsequently garnered the distinction, first, second, and pass division, respectively along with 2.46% got full marks. The consistent score of the examinees evaluated to Paklihawa (σ = 0.62) while mean score of the examinees was 1.78 ranging from 1.53 (GAASC) to 1.95 (Paklihawa). Further analysis

confirmed fairly good performance of constituent campuses because of extra 3% distinction holders, 4% first division holders, and less 7% failed examinees.

Q.N.12: Differentiate between a) price and value, b) implicit cost and explicit cost, and c) break-even point and shut-down point (F.M.:3)

Of the examinees, 27%, 23.4%, 16%, and 1.1% held the distinction, first, second, and pass division, respectively along with 7.8% garnered full marks. Mean score of the examinees was 1.84, ranging from 1.63 (GAASC) to 2.07 (Paklihawa) but the steady score reported to Prithu ($\sigma = 0.21$). Further analysis confirmed fairly leading grade to the constituent campuses because of extra 1%,5% and 4% distinction, first division, and less failed examinee over affiliated campuses, respectively.

Analysis in relationship of grading performance and Bloom's Taxonomy

Results depicted in Table 2 discuss percentage explaining full mark, failed, and unanswered question, SPSS results for χ^2 test, and ranking in question based on Bloom's Taxonomy (BT) pyramid, as shown in figure 2.

Analysis for question one shows that the examiner ranked this essay-type question as "moderately easy" since it gauzed three-market knowledge, comprehensiveness, analysis and evaluation skill as per figure 2. Further, χ^2 test analysis confirmed that grade performances of the examinees had significant association among campuses ($p = 0.01$) and affiliation type ($p = 0.1$).

The question two, four, ten, and eleven are short-questions, ranked as "moderately harder" since the sought answer partly analyzed definition with application aspects of principles of economics in a real-world situation, price response of types of goods, and traits of Nepalese labour with their wage determination, respectively. Question eleven evaluated the examinees' knowledge and illustration on interest and its liquidity preference theory coined by John Maynard Keynes in 1926 (Chopra, 2012, 569 p.). These questions were the most potent question taken from IAAS question bank. Analysis by χ^2 test showed significant relationship of grading performance among campus and among affiliation type (question two and four) case. However, χ^2 test for both inter-campus and affiliation type showed insignificant relationship for the grading performance (for question 10 and 11 case) at a 5% level (Table 2). Meaning that results weren't independent among campuses for both inter to intra-campus asymptotically.

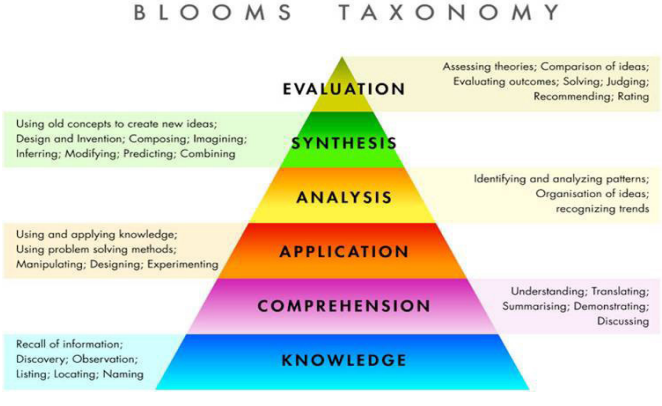

Figure 2. Bloom's taxonomy used for analyzing question

Source: https://questioningedmt903.weebly.com/blooms-taxonomy-questions.html

Table 2. Analyzing the hardiness of question and types of question

Q.N #	% receive full mark	% failed	% not answer	Rank of question hardness	Types of question-based on Bloom's Taxonomy	χ^2 value for inter-campus and its significance	χ^2 value for affiliation-type and its significance
Q.N 1	1.12	11.6	*	4	C, Ana, E	51.81***	9.71*
Q.N 2	2.01	10.3	14.8	3	E	48.64 **	19.54*
Q.N 3	43.95	2.4	0.4	6	K, C	37.88**	8.23*
Q.N 4	7.17	32.6	19.9	3	C, App	143.89***	124.03***
Q.N 5	12.56	5.1	2.6	5	K, C	45.38**	11.67**
Q.N 6	11.66	14.7	9	4	C, App	83.98***	11.01**
Q.N 7	6.5	24.5	50.1	1	K, C	110.98***	47.60***
Q.N 8	2.5	7.7	2.9	4	K, Ana	24.03	1.65
Q.N 9	2.69	23.8	21.3	3	K, C	86.00***	35.74***
Q.N 10	3.14	21.2	9.7	3	K, C	41.95*	5.23
Q.N 11	2.46	22	10.8	3	K, E	42.43*	5.51
Q.N 12	7.8	20.3	11.8	4	C	44.84*	4.56
Final grade		7.1				58.05***	15.43***

Note: K = Knowledge, C= Comprehensiveness, App= Application, Ana= Analysis, S= Synthesis, and E= Evaluation
, **, and * denotes significant at p=0.1, p= 0.05, and p=0.01, respectively. Rest of other are nonsignificant at p≥0.1*

Question three, five, six, seven and nine tested the knowledge and comprehensiveness skill of examinees especially on indifference curve, cardinal utility analysis of the consumer behavior, demand, supply, and rent measurement, respectively (Dwivedi, 2014; Bloom,1969). Question three, five and six counted as "easier" most whereas question seven as "hardest" one but question nine as "moderately harder" by observing: getting to garner full marks, fail percentage, and skipped to answer easier option. The χ^2 values for the score were highly significant not only for inter-campus but also to affiliation-type (Table 2). Therefore, both intercampus and affiliation type had association in grade performance.

Question eight and twelve, on the other hand, tested knowledge, comprehensiveness, differentiative and partly analytical skill of the examinees. Both questions ranked as "moderately easy" to the examinees among all questions because of more than 80% were successfully garnered good score and solved question. Grading performance of examinees tested for within and affiliation type of campus for the question eight case found independent relationship since χ^2 value insignificant at 5% level. Same test for question 12 found fairly significant relationship (p= 0.1) for intercampus case but insignificant for affiliation type.

At par, structured questions-set supported in mapping knowledge and comprehensiveness dominantly, fairly focused application, evaluation and analytical skill aspects but hardly focused synthesis test of the examinees while following Bloom's Taxonomy. Based on perception in hardiness of the question, authors ranked 42% as "moderately harder", 33% "moderately easier" and equal 8.33% each counted as easier, easiest, and hardest. The χ^2 test carried out for the cumulative grade found that inter-campus performance and affiliation types showed a significant relationship on grading performance at 1% level.

Aggregate grade determinants

Results in twelve questions determined an aggregate performance of each examinee for the course. The data analysis shows that 12.98%, 38.48%, 34.0%, and 8.28% received the distinction, first, second, and pass division grading, respectively for whom the average score was 33.45, 28.35, 23.09, and 17.81 for each grade (Figure 3). The error bar illustrates fairly high deviation for the failed examinees. Average score of all examinees was 25.48, which was 63.7% of the full marks 40, ranging from 21.94 (GAASC) to 26.45 (Paklihawa).

The examinees of MARI tended to show steady grade performance ($\sigma = 4.48$) while fluctuations reported to GAASC ($\sigma = 6.93$). The highest score (39) reported to be from an examinee of Lamjung and minimum score for GAASC (3). Average failed examinees were 7.1%, ranging from 18% (GAASC) followed by Prithu (10%) and Gauradaha campus (6.67%). Compared to constituent colleges, 2.66 times higher failed examinees reported to the affiliated colleges. Further grade comparison entailed perfectly good performance of constituent campuses over examinee of affiliated college ones. The study estimated extra 10% distinction, 4% first division, 2-point higher average mark, and less 6% failed examinees in the constituent campuses.

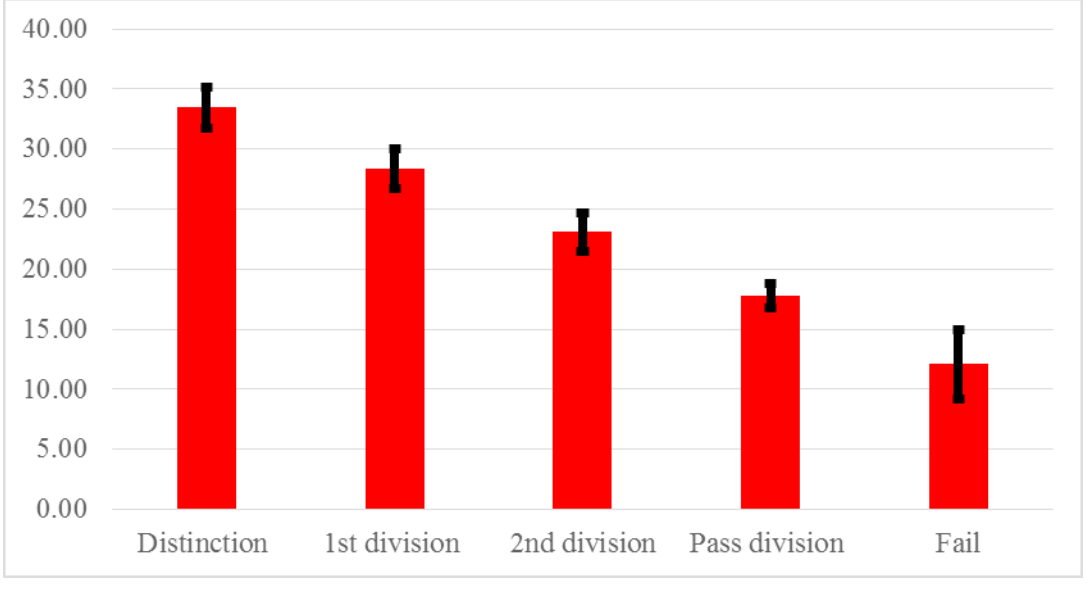

Figure 3. Average score of the grade holder with error bar

The boy-girl composition was 1.2:1 ratio but unsuccess proportion superior to boys i.e.,1:12 for boy and 1:29 for girl examinees. Moreover, number of success rate of girls exceeded boys in each campus especially outperformed in average score, distinctions and foremost success. Both χ^2 test and t-test measured significant variation in grading in respect to their sex. Banatunde et al (2016) concluded insignificant difference in academic performance of gender in social studies course but referred the literatures indicating outperformed to girls in mathematics but inferior to quantitative economics.

The χ^2 test showed no ethnicity effect to the total grade performance at 5% level but significant relationship observed for the examinees of Gauradaha, Lamjung, and Paklihawa at 1% level. Since 74.9%, 13.9%, 3.4%, 4.3%, 2.9%, and 0.7% examinees represented upper caste, Janajati, Dasnami, Madheshi, Dalit and Muslim ethnicity, respectively. The

examination success percentage for the respective ethnicities reported 95.5%, 87%, 100%, 84%, 92%, and 67%. The diversity in ethnicity in constituent campuses was because of the quota system in admission policy.

Results of OLR assessed the likelihood of the effect of the selected predictors on grading performance shown in table 2. Likelihood ratio χ^2 test (LR chi 2 = 936) shows likelihood of each predictor had strong influence on grading at 1% level. Pseudo $R^2 = 0.76$ estimated false proportion of variance in the regress and as explained by the regressors. Definitely marks gained for each question had the likelihood of a positive effect on grading performance (p=0). Interpretation of odds ratio (OR) recognized assurance effect. For OR of question 1 score for example "if any examinee increases the score by a unit, the odds in favour of higher grade (first to distinction, second to first, pass to the second division, or fail to pass division) by 12.38%, *cetiras paribus*. Likewise, partial coefficients had a strong influence on the grading performance of the examinee.

Table 3. Results of ordered logit on dependent variable grading performance.

Iteration 0:	log likelihood = -616.43342			Number of obs	=	447
Iteration 1:	log likelihood = -307.19981			LR chi2(16)	=	935.68
Iteration 2:	log likelihood = -191.34674			Prob > chi2	=	0.00
Iteration 3:	log likelihood = -150.26789			Log likelihood	=	-148.59
Iteration 4:	log likelihood = -148.61935			Pseudo R^2	=	0.76
Iteration 5:	log likelihood = -148.59584					
Iteration 6:	log likelihood = -148.59583					
Grade code	Coef.	Odds ratio	Std. Err.	z	P>z	
Q.N.1	2.51	12.36	.24	10.39	0.00	***
Q.N.2	0.83	2.3	0.11	7.54	0.00	***
Q.N.3	0.99	2.7	0.23	4.38	0.00	***
Q.N.4	0.94	2.5	0.12	7.98	0.00	***
Q.N.5	0.75	2.1	0.15	4.94	0.00	***
Q.N.6	0.92	2.5	0.13	7.17	0.00	***
Q.N.7	0.95	2.6	0.12	8.02	0.00	***
Q.N.8	0.85	2.3	0.15	5.78	0.00	***
Q.N.9	0.91	2.5	0.12	7.69	0.00	***
Q.N.10	0.85	2.3	0.11	7.5	0.00	***
Q.N.11	0.87	2.4	0.11	7.66	0.00	***
Q.N.12	0.80	2.2	0.11	7.14	0.00	***
Ethnicity	0.06	1.06	0.15	0.41	0.68	
Gender	-0.21	0.81	0.33	-0.65	0.52	
Type-college	-0.14	0.87	0.09	-1.54	0.12	
Affiliation type	0.12	1.13	0.41	0.29	0.77	
/cut1	22.22	2.14				
/cut2	31.83	2.83				
/cut3	41.83	3.61				
/cut4	47.98	4.11				

Source: Own analysis from STATA (2020)

Further analysis of the marginal effect of j^{th} regressor on Y^*_i derivative estimators pointed out insignificant results for distinction, third division, and fail scorers but showed less likely and positive effect in case first and second division holders, respectively. The

marginal effect of grading scale =3 likely increase grade by 60%, 20%, 24%, 22%, 18%, 22%,23%, 20%, 22%, 20%, 21%, 19% if those examinees solve 1,2,3,4,5,6,7,8,9,10,11, and 12th question, respectively. The analysis gave idea of carefulness in effective question solve. For example; score getting in question 1, full marks =10, was more effective since it likely contributed 60% in grade than least likely effect of question 5, which likely contributed 18% in grade because of full marks 3. Finally, the study estimated predicting probabilities equals 0.131, 0.383, 0.342, 0.08, and 0.063 for grade 1, grade 2, grade 3, grade 4, and grade 5, which were more representative because of very similar value with the grading scale performance.

CONCLUSION

The study confirms unique style of answering the question for those received full marks to distinction grade irrespective of having same syllabus and curriculum each campus taught. Secondly, study analyzed fairly superior grading performance for the examinees of the constituent campuses. However, getting better score in a subject does not mean of the best quality in whole subjects of the semester. Thirdly, analysis on a test of significance results confirm that gender, ethnicity (Gauradaha, Lamjung, and Paklihawa), campus-type, and affiliation affect consolidated grading performance. Fourthly, the degree of unsuccess rate and inconsistency in write-up higher for the examinees who admitted under reserved quota system, boys from Dalit ethnicity and poor English writing. Unobserved variables such as expertise and commonalities among course-instructor, self-study dismays and sharing among examinees, types of question, mistyping question number, English language, the ability to translate the study into an answer book, note memorized-vis-à-vis referenced-based study, and overall teaching-learning environment of each college might have a significant effect on the grading performance. This study suggests IAAS-Examination Board to maintain Bloom's Taxonomy in question-set preparation, moderation, and orientation to the examiners preceding to answer-book grading. University Grant Commission-Nepal confirms that quality assurance and accreditation-certified colleges can improve overall teaching-learning environment and can bring homogeneity in grade even for poor-scored students. At least, arrangement of additional lectures to the poor-scored students is suggested to improve their final grade. Further, the Examination Board of IAAS is also requested to follow the CGPA grading system while evaluating the grade performance of Bachelor degree as same technique as abroad universities are applying it in semester system.

ACKNOWLEDGEMENT

Author is very thankful to IAAS Examination Board for offering the occasion of evaluating examinees and publish their actual score in an analytical form. Highly acknowledged to those staffs who provided supportive information and extend sincere gratitude to the anonymous reviewers for their valuable time.

REFERENCES

Anderson, L. W., Krathwohl, D. R., Airasian, P.W., Cruikshank, K.A., Mayer, R. E., Pintrich, P.R., Raths, J., & Wittrock, M. C.(Ed.) (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of educational objectives*. https://www.uky.edu/~rsand1/china2018/texts/Anderson-Krathwohl

Babatunde, D. A., Benedict, T.A., & Adu, E.O. (2016). A comparative study of students' performance in economics concepts and other social in social studies curriculum.

Journal of Sociology and Social Anthropology, *7*(4), 256-271. https://doi.org/10.1080/09766634.2016.11885724

Bloom, B. S. (1969). *Taxonomy of educational objectives: The classification of educational goals*. Handbook I, Cognitive domain. McKay, New York

Chopra P.N. (2012). *Principles of Economics* (10th ed.). Kalyani Publishers, New Delhi.

Dasvarma, G.L. (2010). The importance of population studies and state of technical demographic training in Asia. *Asian Population Studies*. *6*(1), 1-2, https://doi.org.10.1080/17441731003603330

Dwivedi, D.N. (2014). *Microeconomics: Theory and application* (2nd ed.). Pearson Education. India.

Gujrati, D.N. (2016). *Econometrics by Examples* (2nd ed.). Palgrave MacMillan.

IAAS (2012). *IAAS Bulletin: Course catalogue of B.Sc. Agriculture*. Institute of Agriculture and Animal Science, Rampur Chitwan Nepal. Shubba General Oder Suppliers, 1-11.

IAAS (2018). *Final examination question, Principles of Economics*. Examination Board, Institute of Agriculture and Animal Science, Rampur Chitwan Nepal.

IAAS (2020, August 23). *IAAS information*. https://iaas.edu.np/

Koutsoyiannis, A. (1979). *Modern microeconomics* (2nd ed.). MACMILLIAN Press London.

Mehta, C.R. and Patel, N.R (2010). *SPSS exact tests.* http://www.sussex.ac.uk/its/pdfs/SPSS_Exact_Tests_21.pdf

Poudel, S. (2020). TriBima Semester Pranaliko Pravkarita (Trans: Effectiveness of semester system in Tribhuvan University). *TU Bulletin Special 2020*, 27-36.

TU (2020). *Notice of examination grading technique 2018.* Tribhuvan University.