

BEYOND A-LEVEL POINTS: EVALUATING THEIR RELEVANCE TO RESPONSIBLE AND EFFICIENT UNIVERSITY ADMISSIONS IN THE DIGITAL ERA

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ABSTRACT

In Zimbabwe, admission to university programmes is largely based on the number of points obtained at Advanced Level (A-Level). Because applicants come from schools with unequal access to educational resources, heavy reliance on examination scores may raise concerns about equity. This study examined structural associations among A-Level points, gender, faculty, and final degree classification using records from 1,512 graduates of five Zimbabwean public universities. A log-linear model was used to analyse these associations. The collapsed model [FA, FD] provided an adequate fit, indicating associations between faculty and A-Level points and between faculty and degree class, but no evidence of a direct association between A-Level points and degree class after accounting for faculty. In the four-variable model, gender was associated with faculty but not with A-Level points or degree class. Overall, the findings question the use of A-Level points as a general indicator of subsequent degree classification and suggest that any discipline-specific use of entry scores in admissions should be supported by further evidence.

KEYWORDS

A-Level points, higher education, log-linear modelling, responsible admissions, university admissions, Zimbabwe

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Highlights

- Faculty was associated with both A-Level points and degree class among graduates.
- Gender composition differed across faculties, with female graduates more strongly represented in the non-STEM faculties.
- In the final collapsed model, faculty was associated with A-Level points and degree classification, while A-Level points and degree class were conditionally independent given faculty.
- The results do not support using A-Level points as a general predictor of degree classification across faculties.

INTRODUCTION

Admission to many Zimbabwean universities and other tertiary institutions, including colleges and polytechnics, relies heavily on Advanced Level (A-Level) results. Although factors such as experience and maturity may occasionally be considered, examination performance remains a dominant admission criterion. The predictive validity of A-Level points for subsequent university success, however, remains debated. Highly competitive programmes, such as medicine, may require 14 to 15 A-Level points. Some studies have reported positive associations between stronger pre-university performance and university outcomes (Alfan and Othman, 2005; Klüfa, 2015), whereas others have highlighted additional influences,

including socio-economic background and discipline-specific demands (Tomaszewski et al., 2025; Wang et al., 2024; Betts et al., 2008). Tamara et al. (2016), for example, reported that university performance could not be explained solely by students' previous school performance.

Previous studies have found that A-Level performance can predict university success in the United Kingdom (Rowbottom, 2013; Natalia et al., 2024), although the strength of this relationship varies by discipline and may be particularly relevant in Science, Technology, Engineering and Mathematics (STEM) fields. Universities have a responsibility to ensure that selection decisions are fair, ethical, and based on an appropriate assessment of applicants' potential rather than on a single

indicator alone. Admission policies should also identify students who are likely to succeed while supporting retention and completion. Accordingly, this study examines whether A-Level points are sufficiently associated with later university outcomes to justify their prominent role in admission decisions across different academic fields.

A-Level points also have important limitations in an increasingly digitalised educational environment. Examination scores provide a relatively narrow indicator of academic attainment and may not capture broader competencies such as critical thinking, creativity, collaboration, and digital literacy, all of which are increasingly valued in higher education and employment.

Moreover, students from under-resourced schools may have less access to high-quality teaching, digital resources, and academic support, placing them at a potential disadvantage in high-stakes examinations. University admission processes should therefore consider whether reliance on A-Level results adequately reflects applicants' potential and differing educational circumstances. This may require recognising relevant forms of achievement beyond traditional examination performance.

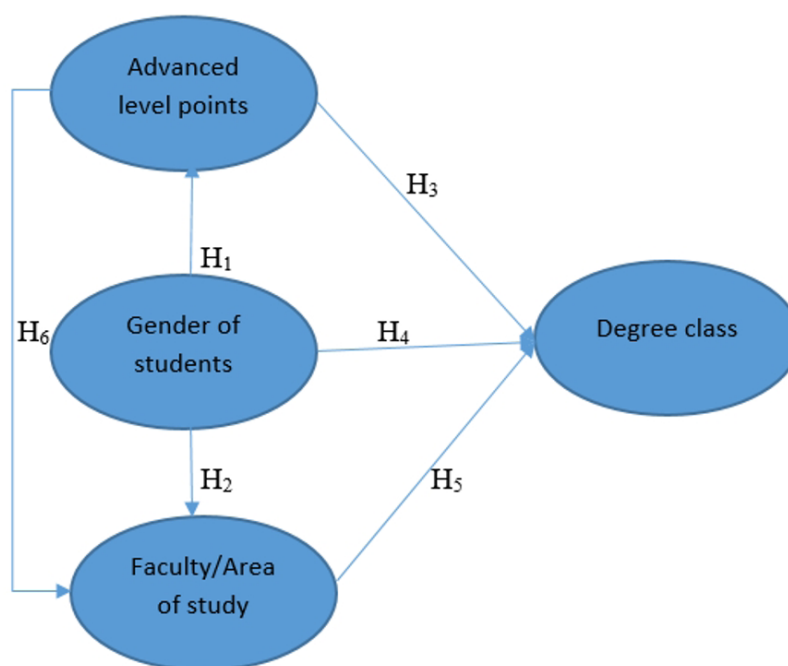
To address these concerns, universities may consider more holistic admission approaches that incorporate relevant contextual information, extracurricular involvement, and non-traditional learning experiences alongside academic results. Over-reliance on A-Level points may fail to capture the full range of applicants' abilities and circumstances, thereby raising concerns about fairness and inclusivity. A broader evidence base may help universities identify students who are

able to adapt and succeed in rapidly changing academic and professional environments.

This study contributes to this discussion by examining the Zimbabwean university context. Admission requirements in Zimbabwean universities are generally applied irrespective of applicants' geographical location or socio-economic circumstances. Such a practice may disadvantage students from rural or under-resourced schools if their A-Level results are systematically lower than those of students from better-resourced settings (Mwembe et al., 2022; Mwembe and Moyo, 2024).

The number of A-Level points is an important factor in determining eligibility for admission to particular programmes. Students with high A-Level scores are generally better positioned to compete for places, provided that their subject combinations meet programme requirements. Subject combinations also constrain the disciplines for which applicants are eligible, including science, arts, business, and engineering-related fields.

The present study therefore evaluates the relevance of A-Level points to later university outcomes, given the assumption that university achievement may be associated with prior academic attainment (Kučera et al., 2015). Specifically, it examines degree-class distributions among graduates classified as low-, medium-, and high-point entrants. Previous research suggests that gender (Ram et al., 2025; Eshetu et al., 2024), area of study (Blatt et al., 2020), and prior academic performance (Kipuru et al., 2024; Merchant et al., 2025) may be associated with tertiary-level outcomes. The conceptual framework motivating the study is presented in Figure 1.



H₀: There is no association between the variables,

H_i: There is an association between the variables, $i=1-6$.

Figure 1: Conceptual framework

The conceptual framework assumes potential associations among gender, A-Level points, choice of study area, and final degree classification. The study therefore assesses the structural relationships among A-Level points, gender, faculty, and degree class among university graduates. The findings are intended to inform discussion of whether admission policies that rely heavily on A-Level points are sufficiently evidence-based, equitable, and appropriate across fields of study.

The relationship between A-Level points and university outcomes, particularly final degree classification, remains uncertain. Although higher A-Level points are often assumed to be associated with stronger performance in STEM fields, this relationship may vary across disciplines. This creates a need to examine whether graduates entering university with low, medium, or high A-Level scores show different degree-class distributions and whether any association remains after accounting for faculty. Such evidence can contribute to the development of more effective and equitable admission strategies and to the identification of areas in which students may require additional academic support.

Literature Review of Empirical Research

Previous research indicates that higher education institutions have increasingly emphasised practical competencies alongside theoretical knowledge. Mahmud and Wong (2022), for example, highlighted the growing importance of twenty-first-century skills among university students. Similarly, Zeng and Shen (2026) proposed a Comprehensive Applicant Profile Score (CAPS) that extends beyond prior academic performance to incorporate extracurricular activities and other dimensions of applicants' profiles.

Ali et al. (2024), Kloos et al. (2025), and Lee (2025) likewise emphasise multidimensional approaches to evaluating applicants in a changing higher education environment. Reliance on A-Level scores alone may not fully reflect a student's potential to succeed at university. Alternative or complementary admission mechanisms may therefore provide a broader assessment of applicant readiness. Klüfa (2015), for instance, compared three approaches to admitting students to a Faculty of Informatics and Statistics, illustrating that admission decisions can be structured in different ways rather than relying on a single academic indicator.

Iannelli et al. (2025), Hinojosa et al. (2025), and Fox et al. (2025) also discuss alternative or combined approaches to university admission. These approaches may include prior academic performance, standardised assessments, contextual information, or other selection criteria. Such evidence supports examining whether reliance on A-Level performance alone is sufficient for responsible and effective admission decisions.

The present study focuses on the role of A-Level points in selection into university programmes. Heavy reliance on examination points may have equity implications because students from under-resourced schools may obtain lower scores despite having the potential to succeed in higher education. Consequently, admission systems that use A-Level points as a primary screening mechanism should be evaluated in relation to both their predictive relevance and their potential distributional consequences.

Universities have a responsibility to serve students from both well-resourced and under-resourced communities. From an efficiency perspective, admission and educational processes should help identify and develop students who can successfully acquire and apply relevant knowledge and skills. Nevertheless, inequalities in access to university programmes between students from differently resourced educational settings remain a concern (Koo et al., 2025).

MATERIALS AND METHODS

A retrospective cross-sectional design was used to analyse administrative records from students who completed undergraduate degrees at five randomly selected public universities in Zimbabwe. The sampling frame comprised of 18, 503 eligible students from which a sample of 1,512 graduates was selected, representing a sampling fraction of 8.2%. Stratified sampling ensured adequate representation across faculties and gender. In each stratum, graduates were assigned unique numbers and sampling was done using computer-generated randomisation. This afforded each graduate an equal chance of being included in the study which subsequently minimises selection bias. The sample size was considered adequate for robust statistical analysis of the relationship between advanced level points and degree classification attained by graduates.

The study included students who successfully graduated during 2021/2022 and 2022/2023 academic years, while students who did not graduate during these academic years were excluded. Graduates were from different universities and different academic programmes. Variables analysed were gender, A-Level points, faculty of enrolment and degree classification. There were no missing data and the study was restricted to graduates who successfully completed their studies. Non-completers, withdrawals, discontinued students and applicants who were not admitted were not represented in the dataset. The findings, therefore, reflect associations among graduates and cannot directly assess admission fairness or the predictive validity of A-Level points for university success in the broader admitted student population. Preliminary analyses were conducted in SPSS version 23. Descriptive statistics were calculated, followed by Pearson chi-square tests to assess bivariate associations among categorical variables. All inferential tests used a significance level of 0.05. Of the 1,512 graduates, 764 (50.5%) were male and 748 (49.5%) were female. Four faculty categories were represented: Applied Science (HAS), Built Environment (HAQS), Business and Economic Sciences (HCOM), and Communication and Information Sciences (HCIS).

Applied Science had the largest number of graduates ($n = 479$, 31.7%), including 225 women and 254 men. Business and Economic Sciences included 455 graduates (30.1%), of whom 236 were women and 219 were men. Built Environment included 299 graduates (19.8%), of whom 123 were women and 176 were men. Communication and Information Sciences had the smallest group ($n = 279$, 18.5%), including 164 women and 115 men.

Built Environment and Applied Science included more male than female graduates, whereas Business and Economic

Sciences and Communication and Information Sciences included more female than male graduates.

A total of 234 graduates (15.5%) received a distinction/first-class degree (above 75%; coded 1), including 110 women and 124 men. A further 701 graduates (46.4%) received an upper-second-class degree (65%–74%; coded 2.1), including 350 women and 351 men; 370

(24.5%) received a lower-second-class degree (60%–64%; coded 2.2), including 186 women and 184 men; and 207 (13.7%) received a pass classification (50%–59%; coded 3), including 102 women and 105 men. Degree-class distributions did not differ significantly by gender ($p = 0.868$) but did differ significantly by faculty ($p = 0.002$). These distributions are summarised in Table 1.

			Degree Class				Total	p-value
			Distinction	2.1	2.2	Pass		
Advanced level Points	Low	Count	70	227	132	76	505	0.202
		% of Total	4.6%	15.0%	8.7%	5.0%	33.4%	
	Medium	Count	84	280	143	69	576	
		% of Total	5.6%	18.5%	9.5%	4.6%	38.1%	
	High	Count	80	194	95	62	431	
		% of Total	5.3%	12.8%	6.3%	4.1%	28.5%	
	Total	Count	234	701	370	207	1512	
		% of Total	15.5%	46.4%	24.5%	13.7%	100.0%	
Faculty	HAS	Count	66	226	119	68	479	0.002
		% of Total	4.4%	14.9%	7.9%	4.5%	31.7%	
	HAQS	Count	44	122	84	49	299	
		% of Total	2.9%	8.1%	5.6%	3.1%	19.8%	
	HCOM	Count	78	241	93	43	455	
		% of Total	5.2%	15.9%	6.2%	2.8%	30.1%	
	HCIS	Count	46	112	74	47	279	
		% of Total	3.0%	7.4%	4.9%	3.1%	18.5%	
	Total	Count	234	701	370	207	1512	
		% of Total	15.5%	46.4%	24.5%	13.7%	100.0%	
Gender	Male	Count	124	351	184	105	764	0.868
		% of Total	8.2%	23.2%	12.2%	6.9%	50.5%	
	Female	Count	110	350	186	102	748	
		% of Total	7.3%	23.1%	12.3%	6.7%	49.5%	
Total		Count	234	701	370	207	1512	
		% of Total	15.5%	46.4%	24.5%	13.7%	100.0%	

Table 1: Distribution of graduates by A-Level points, faculty, gender, and degree class

Log-Linear Modelling

Four categorical variables were available for each graduate: gender, A-Level points, faculty, and degree class (Wrigley-Asante et al., 2023). Because the analysis concerned associations within a multiway contingency table, log-linear modelling was used to describe the structural relationships among these variables (Aravkin et al., 2024). Gender was categorised as male or female. A-Level points were grouped as low (2–7 points), medium (8–11 points), or high (12 points or above). These categories were study-defined analytical groups rather than as official policy classifications.

The possible score ranged from 0 to 15 points from three subjects. However, students obtaining 0 or 1 point would not

normally meet the minimum requirement for admission into university studies. Under the Zimbabwe Schools Examination Council (ZIMSEC) grading system, an A grade contributes 5 points, B contributes 4, C contributes 3, D contributes 2, E contributes 1, and F contributes 0 points (Kanyongo, 2005). It is acknowledged that categorising advanced level points leads to loss of information but categorisation provided a practical way of examining the association between degree class and number of advanced level points graduates had.

The Model

The general form of the log-linear model used to assess associations among the study variables is given in Equation 1:

$$\log \mu_{ijkl} = \tau + \tau_i^A + \tau_j^D + \tau_k^F + \tau_l^G + \tau_{ki}^{FA} + \tau_{kl}^{FG} + \tau_{kj}^{FD} + \tau_{il}^{AG} + \tau_{ij}^{AD} + \tau_{jl}^{GD} + \tau_{kil}^{FAG} + \tau_{kij}^{FAD} + \tau_{klj}^{FGD} + \tau_{ijl}^{AGD} + \tau_{ijkl}^{FAGD} \quad (1)$$

For $i = 1, 2, 3$; $j = 1, 2, 3, 4$; $k = 1, 2, 3, 4$; and $l = 1, 2$, where i denotes A-Level point category (low, medium, high), j denotes

degree-class category (1, 2.1, 2.2, 3), k denotes faculty (HAS, HAQS, HCOM, HCIS), and l denotes gender (male, female).

where

$\log \mu_{ijkl}$ = Log odds

τ = Overall effect,

τ_i^A = Main effect of advanced level points (at low, mid and high levels),

τ_j^D = Main effect of Degree class (that is 1, 2.1, 2.2 and 3),

τ_k^F = Main effect of Faculty (HAS, HAQS, HCOM and HCIS),

τ_l^G = Main effect of Gender (male and female),

τ_{kl}^{FA} = Second order interaction effect of faculty and advanced level points,

τ_{kl}^{FG} = Second order interaction effect of faculty and gender,

τ_{kj}^{FD} = Second order interaction effect of faculty and degree class,

τ_{il}^{AG} = Second order interaction effect of advanced level points and gender,

τ_{ij}^{AD} = Second order interaction effect of advanced level points and degree class,

τ_{lj}^{GD} = Second order interaction effect of gender and degree class,

τ_{kil}^{FAG} = Third order interaction effect of faculty, advanced level points and gender,

τ_{kij}^{FAD} = Third order interaction effect of faculty, advanced level points and degree class,

τ_{klj}^{FGD} = Third order interaction effect of faculty, gender and degree class,

τ_{ilj}^{AGD} = Third order interaction effect of advanced level points, gender and degree class,

τ_{ijkl}^{FAGD} = Fourth order interaction effect of faculty, advanced level points, gender and degree class.

Subsequent analyses also examined reported odds for selected degree-class contrasts by A-Level point category.

RESULTS

Associations between variables

Pearson chi-square tests identified statistically significant associations between faculty and A-Level points (chi-square = 14.069, $p = 0.029$), faculty and gender (chi-square = 20.224, $p < 0.001$), and faculty and degree class (chi-square = 25.491, $p = 0.002$). Thus, the distribution of A-Level point categories differed across faculties, gender composition differed across faculties, and degree-class distributions also differed across faculties. Table 2 summarises the bivariate associations.

			Faculty	Advanced level Points	Gender	Degree Class
Pearson Chi-Square	Faculty	Pearson Chi-square	1.000			
		Sig. (2-tailed)	.			
	Advanced level Points	Pearson Chi-square	14.069*	1.000		
		Sig. (2-tailed)	.029	.		
	Gender	Pearson Chi-square	20.224**	1.009	1.000	
		Sig. (2-tailed)	.000	.604	.	
	Degree Class	Pearson Chi-square	25.491**	8.522	0.734	1.000
		Sig. (2-tailed)	.002	.202	.868	.

Table 2: Chi-square tests for the study variables

Pearson's chi-square test revealed a statistically significant association between faculty and degree classification, $\chi^2(9) = 25.49$, $p = 0.002$. Examination of adjusted standardised residuals indicated that HCOM had significantly more students obtaining upper second-class degree (2.1) than expected and significantly fewer students obtaining a pass as expected. Applying the Holm correction for multiple comparisons for upper-second class and pass categories, the deviations remained statistically significant with $p = 0.012$ and $p = 0.025$, respectively. The remaining faculty-degree-class combinations did not show statistically significant deviations from the expected frequencies after adjustment. The results are presented in Table 3.

Log-Linear Modelling

Structural relationships among the variables were analysed in SPSS version 23.0. A K-way analysis was first used to determine the highest-order effects required in the model. The results indicated that the third-order interactions (F^*A^*G , F^*A^*D , F^*G^*D , and A^*G^*D) and the four-way interaction ($F^*A^*G^*D$) were not statistically significant, whereas lower-order effects required further evaluation. Table 4 summarises the K-way and higher-order tests.

The K-way and higher-order tests indicated that including three-way and four-way interactions did not materially improve model fit ($p = 0.880$ for the three-way effects and $p = 0.976$ for the four-way effect). A more parsimonious model containing

Faculty	Degree class	Adjusted residual	Holm-adjusted <i>p</i> -value	Conclusion
HCOM	Upper-second class (2.1)	3.36	0.012	Above expectation
HCOM	Pass (3)	-3.15	0.025	Below expectation

Table 3: Comparisons of performance among faculties

	<i>K</i>	<i>df</i>	Likelihood Ratio		Pearson	
			Chi-Square	Sig.	Chi-Square	Sig.
K-way and Higher Order Effects ^a	1	95	565.783	.000	680.228	.000
	2	86	112.646	.029	110.234	.040
	3	57	44.875	.878	44.769	.880
	4	18	8.179	.976	8.160	.976
K-way Effects ^b	1	9	453.137	.000	569.994	.000
	2	29	67.771	.000	65.465	.000
	3	39	36.696	.575	36.609	.579
	4	18	8.179	.976	8.160	.976

a. Tests whether k-way and higher-order effects are zero.

b. Tests whether k-way effects are zero.

Table 4: K-way and higher-order effects

lower-order effects was therefore considered appropriate. One-way and two-way effects were statistically significant overall ($p < 0.05$).

Partial association tests were then examined to determine which specific lower-order terms were required. Faculty ($p < 0.001$), A-Level points ($p < 0.001$), and degree class ($p < 0.001$) showed significant main effects, whereas the gender main effect was not significant ($p = 0.823$). Because hierarchical log-linear models retain lower-order terms that are components of

significant higher-order interactions, however, interpretation of individual main-effect tests must be made in conjunction with the interaction structure.

Among the two-way interactions, F*A ($p = 0.023$), F*G ($p = 0.001$), and F*D ($p = 0.002$) were statistically significant, whereas A*G ($p = 0.575$), A*D ($p = 0.284$), and G*D ($p = 0.795$) were not. Gender therefore remained in the hierarchical model because the F*G interaction was significant. Table 5 presents the partial association tests.

Effect	Abbreviations	<i>df</i>	Partial Chi-Square	Sig.
F*A*G	FAG	6	4.649	.590
F*A*D	FAD	18	15.312	.640
F*G*D	FGD	9	13.455	.143
A*G*D	AGD	6	3.025	.806
F*A	FA	6	14.684	.023
F*G	FG	3	17.701	.001
A*G	AG	2	1.105	.575
F*D	FD	9	26.222	.002
A*D	AD	6	7.417	.284
G*D	GD	3	1.028	.795
F	F	3	84.927	.000
A	A	2	16.715	.000
G	G	1	.050	.823
D	D	3	351.444	.000

Table 5: Partial associations among the variables

The resulting hierarchical log-linear model is given in Equation 2:

$$\log \mu_{ijkl} = \tau + \tau_i^A + \tau_j^D + \tau_k^F + \tau_l^G + \tau_{ki}^{FA} + \tau_{kl}^{FG} + \tau_{kj}^{FD} \quad (2)$$

For $i = 1, 2, 3$; $j = 1, 2, 3, 4$; $k = 1, 2, 3, 4$; and $l = 1, 2$.

The model containing the F*A, F*G, and F*D interactions provided an adequate fit. The likelihood-ratio chi-square was 54.201 with 68 degrees of freedom ($p = 0.888$), and the Pearson chi-square was 54.573 ($p = 0.881$). The non-significant

goodness-of-fit tests indicate no evidence of substantial lack of fit for this model.

Results from the Log-Linear Model

The fitted model [FG, FA, FD], summarised in Table 6, indicated that faculty was associated with gender, A-Level points, and degree class. Gender composition therefore differed across faculties, as did the distribution of A-Level point categories and degree classifications. These associations describe the observed distribution of graduates and should not be interpreted as causal effects of faculty.

A-Level points were not associated with gender, and gender was not associated with degree class after accounting for the model structure. Likewise, the A*D interaction was not statistically significant, indicating no

evidence of an association between A-Level point category and degree class in the fitted four-variable model. Thus, the statistically supported two-way associations were F*G, F*A, and F*D.

Steps in Modelling ^a		Deleted Effects	Abbreviations	Chi-Square ^c	df	p-value
0	Generating Class ^b	F*A*G*D	FAGD	.000	0	.000
	Deleted Effect	1 F*A*G*D	FAGD	8.179	18	.976
1	Generating Class ^b	F*A*G, F*A*D, F*G*D, A*G*D	FAG, FAD, FGD, AGD	8.179	18	.976
	Deleted Effect	1 F*A*G	FAG	4.649	6	.590
		2 F*A*D	FAD	15.312	18	.640
		3 F*G*D	FGD	13.455	9	.143
		4 A*G*D	AGD	3.025	6	.806
2	Generating Class ^b	F*A*G, F*A*D, F*G*D	FAG, FAD, FGD	11.203	24	.987
	Deleted Effect	1 F*A*G	FAG	4.049	6	.670
		2 F*A*D	FAD	15.207	18	.648
		3 F*G*D	FGD	13.546	9	.139
3	Generating Class ^b	F*A*D, F*G*D, A*G	FAD, FGD, AG	15.253	30	.988
	Deleted Effect	1 F*A*D	FAD	15.497	18	.628
		2 F*G*D	FGD	14.055	9	.120
		3 A*G	AG	1.045	2	.593
4	Generating Class ^b	F*G*D, A*G, F*A, A*D	FGD, AG, FA, AD	30.750	48	.975
	Deleted Effect	1 F*G*D	FGD	14.125	9	.118
		2 A*G	AG	1.114	2	.573
		3 F*A	FA	14.692	6	.023
		4 A*D	AD	7.425	6	.283
5	Generating Class ^b	F*G*D, F*A, A*D	FGD, FA, AD	31.864	50	.979
	Deleted Effect	1 F*G*D	FGD	14.116	9	.118
		2 F*A	FA	14.787	6	.022
		3 A*D	AD	7.305	6	.294
6	Generating Class ^b	F*G*D, F*A	FGD, FA	39.169	56	.957
	Deleted Effect	1 F*G*D	FGD	14.116	9	.118
		2 F*A	FA	14.809	6	.022
7	Generating Class ^b	F*A, F*G, F*D, G*D	FA, FG, FD, GD	53.285	65	.850
	Deleted Effect	1 F*A	FA	14.809	6	.022
		2 F*G	FG	17.803	3	.000
		3 F*D	FD	26.242	9	.002
		4 G*D	GD	.916	3	.822
8	Generating Class ^b	F*A, F*G, F*D	FA, FG, FD	54.201	68	.888
	Deleted Effect	1 F*A	FA	14.809	6	.022
		2 F*G	FG	17.599	3	.001
		3 F*D	FD	26.037	9	.002
9	Generating Class ^b	F*A, F*G, F*D	FA, FG, FD	54.201	68	.888

Table 6: Initial log-linear model estimates

The Final Model

The four-variable hierarchical log-linear model revealed a statistically significant faculty and gender [FG] interaction which shows that the distribution of male and female students differed significantly across faculties. However, the gender and advanced level points [GA] and gender and degree classification [GD] associations were statistically not significant. One of the researchers' motivation was to examine the relationship between faculty and degree

classification. A marginal analysis collapsing over gender was therefore conducted to assess faculty and degree classification [FD] association across male and female graduates. This approach was considered appropriate due to the fact that there was no evidence of a significant direct gender and degree classification association. It should be noted that collapsing over gender does not mean that gender is globally insignificant. Summary of the marginal model is shown in Figure 2 below.

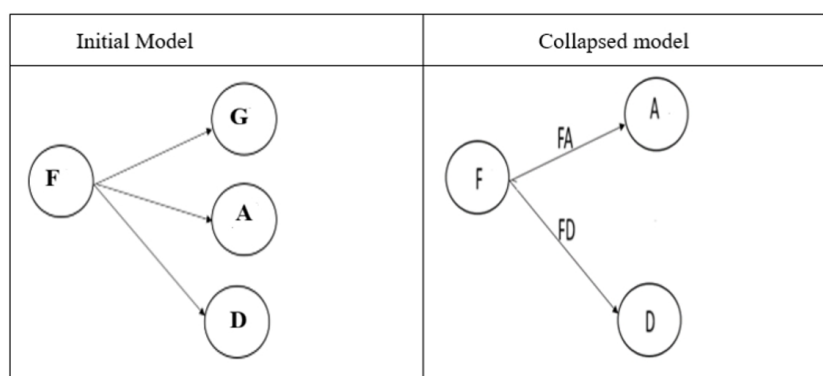


Figure 2: Diagrammatic representation of the log-linear models

The final model after collapsing over gender is given in Equation 3:

$$\log \mu_{ijk} = \tau + \tau_i^A + \tau_j^D + \tau_k^F + \tau_{ki}^{FA} + \tau_{kj}^{FD} . \quad (3)$$

The collapsed model indicated an association between A-Level points and faculty and an association between degree class

and faculty. The absence of an [AD] term implies conditional independence between A-Level points and degree class given faculty. The goodness-of-fit test for the [FA, FD] model was non-significant ($p = 0.527$), indicating that the model provided an adequate representation of the three-way table. Table 7 summarises the model-selection results.

Step ^a		Effects	Abbreviations	Chi-Square ^c	df	Sig.
0	Generating Class ^b	Faculty*A' Points*Degree Class	FAD	.000	0	.000
	Deleted Effect	1 Faculty*A' Points*Degree Class	FAD	15.566	18	.623
1	Generating Class ^b	Faculty*A' Points, Faculty*Degree Class, A' Points*Degree Class	FA FD AD	15.566	18	.623
	Deleted Effect	1 Faculty*A' Points	FA	14.787	6	.022
	Deleted Effect	2 Faculty*Degree Class	FD	26.014	9	.002
	Deleted Effect	3 A' Points*Degree Class	AD	7.305	6	.294
	Generating Class ^b	Faculty*A' Points, Faculty*Degree Class	FA,FD	22.871	24	.527
2	Deleted Effect	1 Faculty*A' Points	FA	14.809	6	.022
	Deleted Effect	2 Faculty*Degree Class	FD	26.037	9	.002
3	Generating Class ^b	Faculty*A' Points, Faculty*Degree Class	FA,FD	22.871	24	.527

a. At each step, the effect with the largest significance level for the likelihood-ratio change is deleted, provided that the significance level exceeds 0.050.

b. Statistics are displayed for the best model at each step after Step 0.

c. For a deleted effect, this value is the change in chi-square after the effect is removed from the model.

Table 7: Results of the final log-linear model

Descriptive Probabilities and Odds of Distinction and Pass by Faculty

The study also descriptively examined selected outcomes for graduates in the low- and high-point categories within each faculty. The medium-point category was not included in these contrasts. These comparisons were based on the observed counts and are presented to illustrate the distributions in the data; they are not formal tests of an A-Level-points-by-degree-class association within faculties. The primary inferential model remained the parsimonious [FA][FD] model, which implies conditional independence between A-Level points and degree class given faculty. The three-way F*A*D interaction was also not statistically significant. $\Delta G^2 = 10.593$. Alternative hierarchical models were examined as a sensitivity

check and are summarised in Table 8. Although models containing an A-Level-points-by-degree-class [AD] term can also show acceptable absolute fit, the [AD] term was not statistically significant and its inclusion was not required to obtain an adequate model. The [FA][FD] model was therefore retained for inferential interpretation on grounds of parsimony. The descriptive faculty-specific probabilities reported below should consequently not be interpreted as evidence that A-Level points predict degree classification within faculty or that faculty modifies such a relationship.

Accordingly, Table 8 is presented as a comparison of alternative model specifications rather than as a basis for replacing the final [FA][FD] model. The inferential conclusions of the study are based on the final parsimonious model reported in Table 7.

Model	G ² (likelihood ratio χ^2)	df	p-value	AIC	Decision
[F][A][D]	72.98	39	< 0.001	337.019	Reject
[FA][FD]	31.45	24	0.141	325.50	Acceptable
[FA][AD]	46.86	27	0.010	334.90	Reject
[FD][AD]	36.19	24	0.053	330.23	Marginal fit
[FA][FD][AD]	20.86	18	0.286	326.91	Acceptable
[FAD]	0	0	-	312.04	Acceptable

Table 8: Comparison of possible models

Faculty of Applied Sciences

For descriptive purposes, attention was given to two particular outcomes:

1. the odds of obtaining a distinction among graduates with low A-Level points, and
2. the odds of obtaining a pass-class degree among graduates with high A-Level points.

As an illustration, among the 170 HAS graduates with low points, 16 attained distinctions. This means:

$$P(\text{Distinction} | \text{Low, HAS}) = \frac{16}{170} = 0.0941.$$

This corresponds to an observed probability of 9.41% and odds of 0.104.

The observed probability of graduating with a pass was also examined. Of the 112 HAS graduates with high A-Level points, 18 obtained a pass-class degree, corresponding to a probability of 16.07% and odds of 0.191.

Odds within the Faculty of the Built Environment

For the Built Environment, the observed odds of obtaining a distinction among graduates with low A-Level points were 0.167, corresponding to the probability shown below:

$$P(\text{Distinction} | \text{Low, HAQS}) = \frac{15}{105} = 0.1429.$$

This corresponds to 14.29%. In the Built Environment faculty, 16 of the 93 graduates with high A-Level points obtained a pass-class degree, corresponding to a probability of 17.20% and odds of 0.208. The same descriptive calculations were applied to the other faculties.

Odds within the Faculty of Business and Economic Sciences

For Business and Economic Sciences, the probability of attaining a distinction given that the graduate had low points was 15.44% and the odds were 0.183. The probability of graduating with a pass-degree classification while with high advanced level points was found to be 9.66% with corresponding odds of 0.107.

Odds within the Faculty of Communication and Information Sciences

For Communication and Information Sciences, the estimated odds were 0.250 and the probability of getting a distinction given that a graduate had low points was 20%. The probability of graduating with a pass-degree classification given that the graduate had high advanced level points was found to be 14.89% with corresponding odds of 0.175. HCIS recorded the highest observed probability of distinction among graduates with low A-Level points (20.00%), followed by HCOM (15.44%), HAQS (14.29%), and HAS (9.41%). HCOM had the lowest observed probability of a pass among graduates with high A-Level points (9.66%), whereas HAQS had the highest (17.20%). These descriptive differences illustrate variation in the observed faculty distributions but do not establish an A-Level-points-by-degree-class association within faculties.

Faculty Patterns

Descriptive probabilities and odds of distinction and pass among low- and high-point graduates were also compared across faculties. Among low-point graduates, the observed odds of obtaining a distinction were 0.104 in Applied Science, 0.167 in the Built Environment, 0.183 in Business and Economic Sciences, and 0.250 in Communication and Information Sciences. These comparisons are summarised in Table 9.

Faculty	P(Distinction Low A-Level points)	Odds of Distinction Low A-Level points	P(Pass High A-Level points)	Odds of Pass High A-Level points
HAS	9.41%	0.104	16.07%	0.191
HAQS	14.29%	0.167	17.20%	0.208
HCOM	15.44%	0.183	9.66%	0.107
HCIS	20.00%	0.250	14.89%	0.175

Table 9: Comparison of odds of distinction and pass among faculties

Taken descriptively, these comparisons show variation in observed degree-class outcomes across faculties. They do not demonstrate that faculty modifies the relationship between A-Level points and degree classification, because the F*A*D interaction was not statistically significant. The relatively high distinction rate among low-point graduates in HCIS and the relatively low pass rate among high-point graduates in HCOM therefore should be interpreted as descriptive patterns rather than evidence of faculty-specific A-Level effects.

DISCUSSION

The analysis found no evidence of associations between A-Level points and gender and gender and degree class in the fitted four-variable model. These findings differ from those of Wrigley-Asante et al. (2023) and Matteucci and Mignani (2021), who reported gender differences in academic performance, particularly in STEM-related contexts. Differences in study populations, outcomes, educational systems, and disciplinary composition may contribute to the contrasting results.

In the present sample, gender was not associated with either A-Level point category or final degree class. This finding is broadly consistent with studies reporting that gender alone does not consistently explain academic performance once other factors are considered. However, direct comparison with Suchithra et al. (2022) should be interpreted cautiously because that study examined prediction of school-level academic performance using machine-learning methods rather than university degree classification.

At the faculty level, faculty was associated with A-Level points, gender, and degree class. These findings indicate that the composition of graduates differed across faculties with respect to prior A-Level attainment, gender, and final degree classification. Because the study is observational and includes graduates only, these associations should not be interpreted as evidence that faculty itself caused the observed differences.

The association between gender and faculty is consistent with literature documenting gender differences in participation across STEM and non-STEM fields. Alam (2022) and Tandrayen-Ragoobur and Gokulsing (2022), for example, discuss lower female participation in some STEM pathways, while De las Cuevas et al. (2022) examined gender-related factors associated with higher-education choices. The present findings similarly show that gender composition differed across the four faculty categories.

Faculty was also associated with degree classification, indicating that degree-class distributions differed across faculties. Such differences may reflect multiple factors, including programme characteristics, assessment practices, class size, student composition, and available resources, none of which were directly measured in the present study. Consequently, the observed faculty differences should not be attributed to a single mechanism. Related research has likewise documented variation in student outcomes across disciplinary contexts (Costello et al., 2023; Hatfield et al., 2022).

After collapsing over gender, the final model retained associations between faculty and A-Level points and between faculty and degree class. Thus, A-Level point distributions differed across faculties, as did degree-class distributions. However, the final model did not retain an A-Level-points-by-degree-class interaction, indicating conditional independence between these variables given faculty. This result suggests that differences in prior A-Level attainment and degree classification are structured primarily by faculty in the fitted model rather than by a direct association between A-Level points and degree class.

The observed differences in degree-class distributions across faculties are consistent with previous evidence that academic outcomes vary across fields of study (Otavová and Sýkorová, 2016). Potential explanations include differences in class size, teaching and assessment practices, staffing, and resource availability (Kara et al., 2021; Kaspříková, 2012), but these factors were not measured

in the present study and therefore remain hypotheses for future research. Similarly, although gender differences in academic performance have been reported elsewhere (Mensah et al., 2024; Barra et al., 2024), gender was not associated with degree class in this dataset.

The observed gender composition suggests that efforts to support female participation in STEM-related programmes may remain relevant. Universities may therefore consider admission and outreach strategies that promote equitable access across fields while avoiding assumptions about academic potential based on gender. More generally, the findings do not support using A-Level points as a universal stand-alone indicator of degree classification. Admission decisions should therefore be based on evidence appropriate to the programme and should consider fairness, transparency, and the broader context in which prior attainment was achieved.

CONCLUSION

This study analysed records from 1,512 graduates to examine structural associations among gender, A-Level points, faculty, and final degree classification. The four-variable model retained the F*G, F*A, and F*D interactions. After collapsing over gender, the final three-variable model was [FA, FD], indicating associations between faculty and A-Level points and between faculty and degree class. The absence of an A-Level-points-by-degree-class [AD] interaction indicates conditional independence between A-Level point category and degree class given faculty. Accordingly, the results do not provide evidence that A-Level point category generally predicts final degree classification once faculty is taken into account.

Several limitations should be considered. First, the analysis included graduates only; it did not include applicants, rejected applicants, admitted students who withdrew, or students who had not yet graduated. The findings therefore describe associations among graduates and cannot, on their own, establish the predictive validity or fairness of admission decisions. Second, school resourcing, rural or urban background, socio-economic status, teaching methods, class size, and other potentially relevant contextual variables were not available, so their effects could not be tested directly. Third, the data covered only two academic years, limiting temporal generalisability and the ability to assess changes in admission policies or student cohorts over time. Future studies should include broader cohorts and contextual variables to evaluate whether admission criteria operate differently across educational and socio-economic settings.

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