

Academic Achievement as a Determinant of Licensure Examination Performance among Bachelor of Science in Agricultural and Biosystems Engineering Graduates

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Abstract. Licensure examinations are high-stakes gateways to practice in Agricultural and Biosystems Engineering (BSABE), yet evidence linking collegiate achievement to licensure outcomes remains limited. This study examined the association between academic performance and licensure results across three BSABE domains, identifying strands of relative difficulty. Correlation and regression analysis were used to analyze the data collected from college academic performance and licensure examination ratings. Descriptive statistics showed Satisfactory academic achievement in Area 1. Pearson correlations revealed small to moderate positive relationships within matching domains, while the overall board score was most closely related to Area 3 and least closely related to Area 1. In multiple linear regression including all academic areas simultaneously, no predictor retained a unique effect on overall board score, indicating shared variance and that grades alone are insufficient predictors. The findings highlight the key academic factors that influence the performance of BSABE graduates, with implications for curriculum development, enhanced licensure examination preparation, and evidence-based policy interventions to strengthen agricultural and biosystems engineering education.

Keywords: Academic performance; Agricultural and biosystems engineering; Licensure examination; Philippines

1.0 Introduction

Licensure examinations for Agricultural and Biosystems Engineering (ABE) graduates serve as a critical measure of professional preparedness in the Philippines. The performance of graduates in their licensure examinations reflects the effectiveness and integrity of academic institutions in preparing their students. This serves as a national benchmark for the graduates' competency, credibility, and employability. Such factors are monitored and evaluated also by the Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP), Inc., where board examination performance serves as a proxy measure of educational quality, curriculum effectiveness, and institutional accountability. This not only validates academic programs but also drives continuous improvement to ensure that graduates are competent professionals who can make meaningful contributions to national development.

Academic performance continues to be quantified primarily by cumulative grade-point averages. This benchmark reflects confidence in mastering the knowledge and skills central to the desired learning process. Historically, it

has also been correlated with anticipated performance on professional licensure examinations. Within the Bachelor of Science in Agricultural and Biosystems Engineering degree program, the taught curriculum is stratified into three key domains: soil and water management and allied disciplines, crop process engineering and its associated specialties, and agricultural machinery and related areas. The technical degree components, which account for more than forty percent of the total academic workload, equip students with the indispensable competencies for engineering design and system analysis, and are therefore regarded as the foundational substrate of the discipline.

The recent investigation by Ucol (2024) into Civil Engineering graduates revealed a distinct pattern: a strong link between performance in the Hydraulics course and success on the licensure exam, counterbalanced by weaker and even negative ties to grades in Mathematics and Design subjects. Similar behavior clusters are observed in nursing and education, where solid correlations emerge – predictive strength of pre-licensure grade point average (GPA) and marks in core professional subjects on eventual scores in teacher-certification tests is routinely highlighted (Sewell et al., 2018; Goldhaber et al., 2017). By contrast, the engineering discipline often yields a paler and more complex portrait. Some reports award a moderate lift to overall academic marks (Abaya et al., 2016; Tamayo & Canizares, 2014). Similarly, Igdon et al. (2024) examined the relationship between various courses in the University of Eastern Philippines (UEP). They found that only the College GPA showed a significant correlation with the exam results.

Furthermore, Cabrera et al (2024) findings suggest that students who excel in MSTE (Mathematics, Surveying, and Transportation Engineering and SEC subjects during their Bachelor of Science in Civil Engineering (BSCE) program are more likely to perform well on the corresponding segments of the Professional Regulation Commission (PRC) Civil Engineering Licensure Examination (CELE) board exam. On the other hand, Ramos (2015) found that accountancy graduates who passed the Certified Public Accountant (CPA) board exam were not just about grades. While she did analyze the relationship between scores in subjects like Accounting and Finance and final exam results, her research showed that other significant factors played a role. These included how difficult students found the exam material, as well as personal struggles like insufficient funds for review, a lack of confidence, and the feeling that their coursework had not covered all the necessary topics.

Current literature on the academic-licensure outcome linkage, as illustrated by Ucol's (2024) analysis of civil engineering and Okun et al.'s (2006) exploration of goal orientation, affirms the multifaceted nature of the association. However, these national inquiries, while instructive, do not straightforwardly transcend their original disciplines or geographical contexts. A comprehensive literature audit discloses a tangible void: no empirical investigation unique to the Philippine Agricultural and Biosystems Engineering domain has so far assessed the association between achievement in the BSABE prescribed core curriculum (contained in CMO No. 94, s. 2017) and subsequent results on the national Agricultural and Biosystems Engineering licensure within the country's professional examination system.

Understanding how academic performance relates to licensure outcomes can provide valuable insights for enhancing curriculum, developing faculty, and supporting student programs. Investigating the correlation between academic performance and licensure outcomes for Bachelor of Science in Agricultural and Biosystems Engineering (BSABE) graduates of Nueva Vizcaya State University (NVSU) is not merely an academic exercise but an institutional imperative. Understanding this relationship is crucial for refining instructional strategies and guiding targeted curriculum reviews under CMO No. 94, s. In 2017, efforts were made to improve academic advising and identify at-risk students early (Ucol, 2024; Tamayo & Canizares, 2014). Such data-driven refinement is essential for strengthening the university's review programs and ultimately boosting the preparedness of future agriculturists and biosystems engineers. This pursuit directly aligns with the mandate of the Commission on Higher Education (CHED) and the PRC to ensure the quality of higher education and professional practice. Furthermore, it provides vital, evidence-based data for the AACCUP, demonstrating a commitment to continuous quality improvement and serving as a cornerstone for the ongoing enhancement of NVSU's BSABE program to meet national and global challenges in agricultural engineering.

This study is anchored on Educational Achievement Theory, which posits that prior academic performance reflects cumulative knowledge acquisition, learning habits, and preparedness that are likely to influence later high-stakes exam outcomes. Under this framework, undergraduate academic grades serve not only as measures of mastery but as predictors of licensure examination success, as demonstrated in prior research by Amanonce &

Maramag (2020). The study aims to investigate the relationship between the academic performance of BSABE graduates and their licensure examination results. Specifically, it examines the correlation between general weighted averages and primary subject grades, and board exam performance, providing evidence that may serve as a basis for academic and institutional interventions.

2.0 Methodology

2.1 Research Design

This study employed a quantitative predictive–correlational design, which is most suited to address the objectives of analyzing the correlation between academic performance and licensure ratings of BSABE graduates. This approach is appropriate for examining the relationship between variables that have already occurred, without any intervention from the researcher (Creswell & Creswell, 2018). The primary data sources were secondary records: academic grades were obtained from the University Registrar, and board licensure ratings were secured from the PRC. Regression analysis was further applied to determine the extent to which these academic indicators could explain variance in licensure performance, making the approach more appropriate than descriptive–comparative methods, which are limited to group differences, or purely descriptive methods, which cannot test predictive relationships.

2.2 Participants and Sampling Technique

The respondents in the study consisted of all BSABE graduates from 2018 to 2023 who took the Licensure Examination for Agricultural and Biosystems Engineers. Since the study covered the entire population of interest within the specified period, a total enumeration (census) approach was applied. This ensured that the data set was comprehensive and accurately reflected the actual performance of graduates, without the biases that may arise from selective inclusion or exclusion. Hence, the use of a census design strengthens the validity of the findings by capturing the full scope of graduate outcomes.

2.3 Research Instrument

The study utilized secondary data consisting of official undergraduate academic records and licensure examination results of BSABE graduates from 2018 to 2023. To facilitate systematic data gathering, a self-developed document review checklist was employed. This checklist served as the data extraction sheet, guiding the collection and organization of key variables, including the general weighted average, grades in major courses, and licensure ratings. The instrument was reviewed for clarity and consistency prior to its application. Given that the data were obtained from authenticated institutional sources—the university registrar and the Professional Regulation Commission—they were considered valid and reliable. To ensure accuracy, a double-entry procedure was performed, with extracted data cross-verified against official records. This process minimized potential transcription errors and strengthened the credibility of the dataset.

2.4 Data Analysis

The study primarily relied on secondary data sources, specifically the official undergraduate academic records of BSABE graduates and their corresponding ratings from the Professional Regulation Commission (PRC) licensure examinations. These records, being official institutional and regulatory documents, were assumed to be valid and reliable. To facilitate systematic extraction and organization of the data, a self-developed document review checklist and data extraction sheet were employed. This instrument served as a structured guide for recording general weighted averages, primary course grades, and licensure examination scores. To ensure accuracy, a double-entry procedure was adopted, and all entries were cross-verified against the Registrar’s Office and PRC databases.

After data cleaning and verification, the dataset was processed using SPSS 31.0. Descriptive statistics, including means, standard deviations, and frequency distributions, were computed to summarize the academic performance indicators and licensure results. Inferential analysis was employed in the study. The Pearson correlation was used to determine the strength and relationship between undergraduate academic achievement and licensure examination ratings. Furthermore, multiple linear regression analysis was conducted to evaluate the extent to which academic variables predicted licensure performance. The regression model used licensure examination rating as the dependent variable and undergraduate academic indicators as independent variables. The level of statistical significance was set at $\alpha = 0.05$ (Field, 2018).

2.5 Ethical Considerations

This study utilized archival and secondary data sources, specifically the official undergraduate academic records of BSABE graduates and their corresponding licensure examination results from the Professional Regulation Commission (PRC). Since no active participation, direct interventions, or survey/interview procedures were involved, the research posed minimal risk to individuals. Prior to data collection, formal institutional permissions were secured from the University Registrar's Office and the PRC to access and use the records strictly for research purposes. All documents were handled in accordance with institutional data-sharing protocols, ensuring compliance with confidentiality and privacy standards. Where feasible, informed consent was obtained from BSABE graduates, especially since the document review involved academic grades and licensure ratings, which are considered sensitive personal information. For graduates who were no longer accessible, reliance was placed on institutional authorization and official records, as well as agreements with the Registrar and PRC. All data were de-identified prior to analysis by assigning coded identifiers in place of names or student numbers to maintain anonymity. Only aggregate results are reported in this paper, and no individual student performance is disclosed.

3.0 Results and Discussion

3.1 Academic Achievement of Agricultural Engineering Graduates

The academic performance of BSABE graduates serves as the foundational predictor of their professional readiness. As shown in Table 1, students consistently demonstrated a satisfactory grasp of all major subject areas in the curriculum.

Table 1. *Academic Achievement of Agricultural Engineering Graduates*

	Mean	Std. Deviation	Descriptive Value
Agricultural and Biosystems, Power, Energy, and Machinery Engineering and Allied Subjects	2.09	0.34	Satisfactory
Land and Water Resources Engineering and Allied Subjects	2.24	0.28	Satisfactory
Agricultural and Biosystems Structures, Environmental Engineering, Bioprocess Engineering, and Allied Subjects	2.28	0.23	Satisfactory
As a whole	2.21	0.33	Satisfactory

Legend: Area 1 – Agricultural and Biosystems, Power, Energy, and Machinery Engineering and Allied Subjects; Area 2– Land and Water Resources Engineering and Allied Subjects; Area 3– Agricultural and Biosystems Structures, Environmental Engineering, Bioprocess Engineering, and Allied Subjects

The table shows a steady trend; graduates from all three main subject fields of the BSABE curriculum—Area 1, Area 2, Area 3—registered a "Satisfactory" level of scholarship. The general consistency is a positive sign, indicating that the curriculum provides a solid and well-balanced knowledge base for students. It suggests that graduates are consistently meeting the program's core academic needs, which is the first step toward professional competence.

Under the BSABE curriculum clusters (Areas 1, 2, 3), all three domains demonstrate "Satisfactory" academic standing (overall GWA $\approx$ 2.21), indicating broadly consistent performance across the technical areas mandated by CMO 94, s. 2017. Nominal differences in means suggest a performance gradient—best in Area 1 ($M = 2.09$, $SD = 0.34$), followed by Area 2 ($M = 2.24$, $SD = 0.29$), and Area 3 ($M = 2.28$, $SD = 0.23$). Interpreting the Philippine 1.0–5.0 scale (lower values indicate better performance), the slightly higher mean in Crop Processing implies that it is the relatively more challenging cluster for students, whereas machinery appears to be the least difficult. Because the mean gaps are modest (~ 0.15 – 0.19 grade units) and no inferential tests are presented here, these differences should be treated as indicative rather than conclusive.

This pattern resonates with multi-institution engineering evidence showing that professional, application-heavy subjects (laboratory/design/operations) often yield lower grade bands than foundational coursework. For instance, in Mechanical Engineering cohorts, professional areas (e.g., machine design/industrial plant) frequently register "fair" to "passing" averages, with better grades in math/basic engineering—demonstrating how practice-oriented assessments can depress GPAs despite learning gains (Dotong & Laguador, 2019). At the same time, alignment studies caution that grades alone understate competence unless course outcomes closely align with licensure blueprints—a linkage shown to improve the predictive value of academic indicators for board performance in Philippine engineering and teacher education cohorts (Cabrera et al., 2024; Amanonce & Maramag, 2020). More broadly, the engineering education literature documents how grades and conceptual load contribute to perceived difficulty and attrition risk in technical majors—underscoring the need for targeted

support in harder, application-centric clusters (Geisinger & Rajraman, 2013).

Based on descriptive evidence alone, Area 3 appears to be the most difficult (highest mean grade), Area 2 is intermediate, and Area 1 is the least difficult. Programmatically, the data support strengthening instructional scaffolds (e.g., problem-based labs, formative checks, board-proximal tasks) in Area 3, while maintaining gains in machinery and tightening alignment in Soil & Water to sustain consistent "Satisfactory" outcomes with lower dispersion.

3.2 Analysis of Board Examination Results

Table 2 presents the licensure examination performance of BSABE graduates, categorized by the three significant areas of specialization within the BSABE curriculum.

Table 2. Licensure Examination Performance of the Agricultural Engineering Graduates

	Mean	Std. Deviation	Descriptive Value
Agricultural and Biosystems, Power, Energy, and Machinery Engineering and Allied Subjects	75.08	4.45	Satisfactory
Land and Water Resources Engineering and Allied Subjects	73.08	3.62	Satisfactory
Agricultural and Biosystems Structures, Environmental Engineering, Bioprocess Engineering, and Allied Subjects	73.54	3.50	Satisfactory
As a whole	75.53	3.42	Satisfactory

Table 2 shows that BSABE graduates achieved "Satisfactory" ratings across all licensure strands, with an overall mean of 75.53 (SD = 3.42). By strand, performance was highest in Agricultural & Biosystems Power, Energy, and Machinery Engineering (M = 75.08, SD = 4.45), followed by Agricultural & Biosystems Structures, Environmental, and Bioprocess Engineering (M = 73.55, SD = 3.51), and lowest in Land and Water Resources Engineering (M = 73.08, SD = 3.62). Two features are notable. First, the lowest central tendency in Land & Water suggests this is the comparatively more challenging board area for graduates. Second, Machinery/Power exhibits the most significant dispersion (SD $\approx$ 4.45), implying greater heterogeneity, i.e., a mix of powerful and weaker performers, despite having the highest mean.

These patterns are plausible when viewed against the PRC's official Table of Specifications (TOS), which underscores the depth and computational load of Land & Water topics (hydrology and hydrometeorology; fluid mechanics; hydraulic machinery; pressurized irrigation; drainage; soil-water-plant relations) and the design-oriented scope of Structures/Environment/Bioprocess (buildings, waste management, bioprocess operations) (2024 Table of Specifications). Both areas focus on multi-step analysis and design tasks that are prone to time-pressure errors in standardized exams. In contrast, Machinery/Power includes competencies with larger portions of applied recall and operations management, alongside design and testing, which potentially explains its higher central tendency but wider spread.

The strand-specific variability is consistent with engineering licensure literature, which shows uneven performance across content clusters, with outcomes tracking how closely programs align with exam blueprints and emphasize quantitative design practice. Studies of Philippine engineering graduates similarly report per-area differentials and highlight the role of curriculum-exam alignment (e.g., stronger or weaker strands across machine design, mathematics, or hydraulics), as well as the usefulness of board-proximal assessments to bolster readiness (Dotong & Laguardor, 2020; Dotong & Laguardor, 2019).

3.3 Relationship of Academic Performance and Licensure Examination Outcomes

Table 3 presents the correlation between the academic achievement of BSABE graduates and their performance on licensure examinations. Table 3 shows small to moderate positive correlations between BSABE academic achievement and licensure examination outcomes after aligning the grading scales (higher = better). Within matching domains, the coefficients increase from Area 1 $\leftrightarrow$ Area 1 ($r = 0.220$, $p = .044$) to Area 2 $\leftrightarrow$ Area 2 ($r = 0.289$, $p = .008$). They are highest for Area 3 $\leftrightarrow$ Area 3 ($r = 0.350$, $p = .001$), indicating that stronger academic standing is associated with better performance in the corresponding licensure subtests, with approximately 5–12% of variance explained (r^2). Correlations with the overall board result follow the same pattern—weak for Area 1 ($r = 0.214$, $p = .050$), small for Area 2 ($r = 0.247$, $p = .024$), and moderate for Area 3 ($r = 0.341$, $p = .002$)—suggesting that the Area 3 cluster (Structures/Environment/Bioprocess) is the most board-proximal in this cohorts.

Table 3. *Correlation Between the Agricultural Engineering Graduates' Academic Achievement and Licensure Examination Performance*

	Academic Achievement					
	Area 1		Area 2		Area 3	
	Pearson Correlation	p-value	Pearson Correlation	p-value	Pearson Correlation	p-value
Area 1	.22*	.044	.27*	.012	.34**	.002
Area 2	.36**	<.001	.28**	.008	.42**	<.001
Area 3	.22*	.044	.24*	.024	.35**	.001
Board Exam Result	.21	.050	.24*	.024	.34**	.002

Note: * $p < .05$, ** $p < .01$ (two-tailed)

These magnitudes are consistent with studies showing that collegiate performance carries a non-trivial but modest predictive signal for licensure, particularly when course content maps closely to tested competencies. Philippine evidence in education and engineering commonly reports GPA-licensure correlations in the .20-.40 range and emphasizes alignment with licensure blueprints (e.g., LET/engineering strands), supporting the pattern observed here. At the same time, broader licensure research cautions that grades alone are imperfect predictors; meta-analytic and program-level findings in nursing show that board-proximal standardized assessments (e.g., HESI Exit) typically outperform GPA in predicting first-time success, underscoring the role of test-specific readiness and assessment fidelity (Grossbach, 2011; Langford, 2013).

The strength of the correlations varied notably by subject Area. Academic Area 3 demonstrated the most robust and consistent predictive validity across all board exam sections, exhibiting the strongest correlation with the overall board result ($r = .341$, $p = .002$) and the strongest correlation with any single exam section ($r = .425$ with Board Exam: Area 2, $p < .001$). This suggests that the conceptual and applied knowledge assessed in this academic domain is particularly aligned with the competencies tested by the licensure board. Conversely, Academic Area 1 showed the weakest associations, though they remained statistically significant. This differential predictive power across subjects underscores the fact that not all academic preparation is equally translated into licensure exam success, a finding supported by Ucol (2024), who also found subject-specific variation in the academic-licensure performance link among civil engineering graduates.

These results align with a substantial body of research across professional disciplines that affirms the value of academic preparation. The findings are also consistent with earlier work in Philippine engineering education by Dotong, De Castro, and Laguador (2016), who documented a significant positive correlation between cumulative GPA and licensure exam performance for mechanical engineering graduates. The results thus contribute to a consensus that a strong undergraduate academic record provides a necessary knowledge base for professional credentialing.

However, the modest magnitude of the correlations (all below $r = .43$) is itself a critical finding. It indicates that while academic outcomes were found to be a significant determinant, a considerable proportion of the variance in licensure exam performance—over 80% in most cases—is attributable to other factors. This finding negates any simplistic assumption that high grades alone guarantee board exam success and agrees with the analysis of Okun et al. (2006), who argued that factors such as goal orientation and self-regulatory cognition mediate the relationship between academic preparation and standardized test performance.

The specific context of the Philippine educational system may further explain the moderate strength of these relationships. As noted by Oducado and Penuela (2014), a potential misalignment can exist between university assessment methods, which may reward project compliance and attendance, and the standardized, competency-focused format of the Professional Regulation Commission (PRC) licensure exam. Consequently, students may require a targeted post-graduation review to effectively translate their academic knowledge into exam success. This factor likely accounts for a significant portion of the unexplained variance in our model (Laguador & Dizon, 2013).

The analysis revealed statistically significant associations between undergraduate academic performance and licensure examination results of BSABE graduates. Specifically, Pearson's correlation coefficients indicated that higher cumulative grade point averages (GPAs) were positively associated with board examination ratings. While these associations were significant, the correlation coefficients fell within the low to moderate range ($r = 0.220$ to 0.350 , $p < .05$), suggesting that academic achievement is associated with, but does not strongly determine, licensure

performance. This implies that although stronger academic records tend to align with higher licensure ratings, the relationship is not absolute, pointing to the presence of other influential factors.

The analysis confirms a significant, positive relationship between academic achievement and licensure exam performance for BSABE graduates. However, the modest correlation coefficients serve as a potent reminder that academic grades are a necessary but insufficient predictor of ultimate success. Therefore, program improvement should focus not only on maintaining academic rigor but also on systematically integrating exam-focused competencies, fostering the non-cognitive skills essential for test-taking success, and providing structured review programs to bridge the gap between academic learning and professional examination readiness.

3.3 Regression Analysis of Academic Performance as a Predictor of Licensure Success

Table 6 presents the regression analysis between academic performance in Areas 1, 2, and 3. The regression analysis examining the predictive validity of academic performance across three core subject areas on licensure examination outcomes reveals a statistically significant intercept ($B = 82.85$, $p < .001$), indicating a robust baseline score for the licensure exam. However, none of the individual academic subject areas emerged as statistically significant predictors of board performance at the conventional alpha level of .05. While Area 3 demonstrated a notable positive coefficient ($B = 8.327$, $\beta = 0.236$, $p = .119$) and Area 1 showed a marginal positive relationship ($B = 2.348$, $\beta = 0.189$, $p = .081$), the lack of statistical significance indicates that undergraduate grades in these subjects alone are insufficient to predict licensure success reliably.

Table 4. *Regression Analysis on Academic Performance in All Subject Areas*

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	82.85	3.55		23.30	<.001
Area 1	2.348	1.32	0.18	1.77	.081
Area 2	0.231	4.58	0.00	0.05	.960
Area 3	8.327	5.28	0.23	1.57	.119

a. Dependent Variable: Board Exam Results

This finding of non-significance aligns with a body of literature suggesting that other crucial factors often mediate the relationship between academic achievement and professional examination performance. Okun et al. (2006) demonstrated that goal-oriented cognition and self-regulatory strategies usually outweigh raw academic knowledge in determining exam performance. Furthermore, this result supports the conclusions of Sayavong and Grimes (2023), whose meta-analysis highlighted that non-cognitive factors such as test-taking anxiety, motivation, and exam-specific self-efficacy account for a substantial portion of the variance in licensure outcomes, potentially eclipsing the direct influence of subject-specific grades.

The positive, yet non-significant, coefficients for Areas 1 and 3 suggest that foundational knowledge is necessary but not sufficient for licensure success. This nuanced finding is consistent with research by Laguardo and Dizon (2013) on engineering licensure, which found that while academic preparation provides the essential platform, performance in pre-board reviews and mock examinations was a more potent predictor of results. The near-zero coefficient for Area 2 ($B = 0.231$, $p = .960$) further suggests that the assessment methods or content focus in that specific academic Area may be particularly misaligned with the competencies tested by the professional board, a phenomenon noted by Oducado and Penuela (2014) in the context of nursing licensure.

Regression analysis further indicated that performance in central areas (Area 1, 2, 3) showed predictive tendencies toward licensure examination outcomes. These findings suggest that some subject regions provide a stronger academic foundation for licensure preparation. However, the predictive power was modest, reinforcing the idea that a constellation of academic and non-academic factors shapes licensure performance. In conclusion, this analysis compellingly argues against over-reliance on academic grades as the primary indicator of licensure readiness. The non-significant results indicate that the pathway from academic learning to professional certification is not direct. Therefore, BSABE programs must look beyond curriculum content to integrate explicit instruction in test-taking strategies, foster the psychological resilience required for high-stakes examinations, and ensure that assessment methods throughout the degree program align with the format and rigor of the licensure examination itself. Future research should incorporate measures of these non-cognitive and strategic factors to build a more comprehensive predictive model of licensure success.

Importantly, these findings should be interpreted in terms of association and prediction rather than causation. While the results highlight that academic achievement is linked to licensure performance, they do not establish that grades cause success in licensure examinations. Instead, the findings emphasize that strong academic preparation may serve as one of several enabling factors.

From a practical standpoint, the findings have meaningful implications for students, faculty, and policymakers. For students, maintaining consistent academic effort, especially in core technical courses, may enhance licensure readiness. For faculty and curriculum developers, the results underscore the value of strengthening instruction in subjects that most closely align with licensure demands. For policymakers and accrediting bodies, the findings underscore the importance of integrating targeted review interventions and student support services into program design, ensuring that graduates are not only academically prepared but also equipped to succeed in the licensure examinations.

4.0 Conclusion

This study established that undergraduate academic performance is positively associated with licensure examination outcomes among BSABE graduates, though the effect sizes were modest. Correlation and regression analyses demonstrated that while higher GPAs generally aligned with stronger PRC ratings, the strength of these associations was only in the low to moderate range, with academic performance explaining approximately 5–12% of the variance in licensure results. These findings highlight that academic achievement contributes meaningfully to licensure readiness but accounts for only a fraction of the determinants of board performance. At the subject level, mixed patterns were observed. While some technical courses showed positive associations with licensure outcomes, others revealed inverse or weak correlations. Rather than contradictions, these trends may reflect curricular or assessment misalignments, in which course grades capture compliance with institutional standards but not necessarily mastery of competencies emphasized in licensure examinations. Similar inverse patterns have been reported in related studies on engineering and allied professional programs, suggesting that such inconsistencies are not isolated but may be systemic within higher education assessment practices.

The findings should be interpreted with caution. Given the correlational design, the results indicate associations rather than causation. Academic performance cannot be claimed as the sole determinant of licensure outcomes; instead, it operates alongside other influential factors, such as review practices, exam-taking strategies, non-cognitive skills, and socioeconomic support systems. From a practical perspective, the study underscores several implications. For students, maintaining consistent academic performance—especially in foundational and technical courses—may enhance licensure preparedness. For faculty and curriculum developers, the results suggest opportunities to evaluate and refine assessment practices to ensure more substantial alignment with licensure competencies. For policymakers, the modest predictive power of academic records reinforces the importance of complementary support mechanisms, such as structured review programs and student support services. Future research should expand the explanatory model by incorporating cognitive, behavioral, and contextual variables to provide a more holistic understanding of licensure performance. Longitudinal studies and cross-program comparisons may further clarify whether observed inverse correlations represent isolated anomalies or broader systemic patterns in professional education.

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7.0 Conflict of Interest

Not indicated.

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