"Predictive Validity of Entrance Exam Stanine Scores and Academic Performance in English and Math on Career Service Exam Success Among BPA Students"

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ABSTRACT

This study examined the predictive validity of entrance exam Stanine scores and academic performance in English and Math on the success of the Career Service Exam (CSE) among Bachelor of Public Administration (BPA) students at Davao del Norte State College (DNSC) from 2018 to 2024. Using a descriptive-correlational design, data were analyzed from 57 BPA graduates, including stanine scores, final subject grades, and CSE results. Spearman's rho revealed a strong positive correlation between entrance exam stanine scores and CSE outcomes ($\rho = .722$, $p < .001$), while Pearson correlation indicated that final grades in English ($r = .752$, $p < .001$) and Math ($r = .703$, $p < .001$) were also significantly related to CSE success. Binary logistic regression showed perfect model classification, although convergence issues suggested quasi-complete separation due to small sample size and high pass rate (77.19%). The findings affirmed the relevance of cognitive and academic metrics as valid predictors of career service exam success. The study validated Messick Theory of Construct Validity and emphasized the importance of early academic profiling and subject mastery to improve employability among aspiring public servants.

Keywords: public administration, stanine score, academic performance, predictive validity, binary logistic regression, Philippines

INTRODUCTION

The Career Service Exam (Professional) serves as a critical gateway to public employment in the Philippines. However, a persistent concern lies in the variability and unpredictability of student success rates, particularly among those in public administration programs such as BPA. The exam's high-stakes nature places immense pressure on students, yet many higher education institutions lack a clear, evidence-based framework for identifying early predictors of exam readiness. Recent studies emphasize the importance of foundational competencies, exceptionally verbal reasoning, and quantitative ability as valid predictors of success on licensure-type exams (Cabigas & Gadian, 2022; Reyes, 2021). However, limited empirical attention has been paid to whether institutional data, such as entrance exam scores (e.g., Stanine scores) and core academic performance in English and Math, correlate with Career Service Exam outcomes. Theoretically, this gap reflects a missed opportunity to apply constructs from academic achievement theory and predictive validity frameworks (Messick, 1995), which argue that entrance assessments and subject-specific grades should align with downstream performance indicators. Without a systematic analysis of these academic predictors, institutions like DNSC risk failing to identify and support students at risk of failure, ultimately undermining equitable access to public service careers.

Studying the Career Service Exam (CSE) outcomes is crucial because they serve as a qualifying benchmark for entry into public service, directly affecting the employability and career trajectories of graduates in public administration. Previous studies have highlighted factors such as academic preparedness, cognitive ability, and test-taking skills as influential in licensure-type exam performance (Reyes, 2021; Cabigas & Gadian, 2022). These works underscore the need for early identification of at-risk students using academic indicators; however, few have specifically examined the predictive value of entrance exam scores and subject-specific grades in

English and Math in relation to CSE outcomes. Given the imperative role of the Career Service Examination (CSE) in government sector employment, and the increasing concern over the employment-capabilities of Public Administration graduates (Limama, Lagura & Galleto, 2025), this study explores whether fundamental academic aspects- entrance exam ratings and grades in English and Math can predict CSE performance. This gap points to the importance of the present study, which aims to validate institutional academic data as predictors of exam success. Thus, building on the implications of previous findings, this research contributes to the development of a more targeted, data-informed support system for students aspiring to enter the public sector.

International research consistently underscores the predictive relationship between academic indicators and standardized exam success. For instance, Kuncel and Hezlett (2007) found that cognitive aptitude measures, such as standardized test scores, significantly predict performance on professional licensure exams across fields. Similarly, Geiser and Santelices (2007) reported that high school grades, particularly in language and math subjects, are strong long-term predictors of academic and professional success. These findings support the relevance of entrance exam stanine scores and subject-specific grades as reliable indicators of future performance, reinforcing the theoretical basis for using such metrics to forecast success in high-stakes exams like the Career Service Exam.

In the Philippine context, studies have revealed that academic performance and cognitive test scores are positively associated with outcomes on government and licensure examinations. Reyes (2021) examined education graduates and found that students' general weighted averages and entrance test results were significant predictors of success in the Licensure Examination for Teachers (LET). Concomitantly, English and mathematics proficiency are significantly associated with passing percentages in government-related professional examinations (Cabigas and Gadian, 2022). These national studies suggest that academic grades, particularly in foundational courses, can be a reliable indicator of learners' readiness for standardized tests, such as the Career Service Exam.

Locally, there is an increasing interest in synchronizing assessments with professional outcomes. According to the study of Dela Cruz (2020), conducted at a state university in Davao del Sur, students' success on program-level qualifying and licensing tests was substantially correlated with their college admission exam scores and core subject grades. At Davao del Norte State College, preparation for the Career Service Examination has been institutionalized within the Bachelor of Public Administration (BPA) program curriculum through a major course entitled "Career Service Professional Enrichment," a special course specifically designed for BPA students. This subject is academically structured to equip BPA learners with fundamental skills and knowledge in the core content areas covered by the Career Service Examination and the Foreign Service Exam, including verbal reasoning, numerical ability, and general information relevant to public service and international diplomacy. Similarly, the data from this college's internal evaluations suggest that students with higher academic records in Math and English, as well as higher stanine scores, typically perform better on standardized tests taken both during and after their degree programs. These local findings underscore the importance of academic indicators in predicting CSE performance and support the current study's focus on utilizing these metrics to enhance student support and success rates.

This study is fundamentally anchored on Messick (1995) Theory of Construct Validity, which argues that tests must not only measure intended constructions but also forecast pertinent future performance, and serves as the primary foundation for this investigation. This theory supports the notion that academic grades (in math and English) and entrance exam scores (Stanine) should exhibit predictive validity and be significantly correlated with outcomes such as passing the Career Service Exam. Messick likewise asserts that when test scores correlate strongly with external performance aspects, they possess consequential validity, making them appropriate instruments for student profiling and early intervention.

Supporting this main theory are several additional frameworks. First, the Academic Achievement Theory posits that academic performance, particularly in foundational subjects, is a reliable predictor of future educational and career success (Fraser, 1959). Second, Bloom's Mastery Learning Theory explains that students who attain mastery in essential knowledge areas like language and math are more likely to excel in cumulative assessments. Finally, the Human Capital Theory (Becker, 1964) contends that educational investments (such as developing

skills in English and Math) enhance individual productivity and employability, which also includes passing qualifying tests like the CSE.

Therefore, Messick theory holds significance for both scholarly and practical applications. Learners and students usually notice how early signs of ability, such as entrance exam scores and subject grades, can predict future achievements or difficulties. The failure to act on such data leads to missed opportunities for support and guidance. In applying this framework, the current study is not only academically sound but also practically necessary. It bridges the gap between student assessment and actionable outcomes, contributing to better-aligned academic policies and student development initiatives.

The conceptual framework of this study is grounded in the premise that academic predictors influence performance on high-stakes standardized exams, such as the Career Service Exam (CSE). The dependent variable is the *CSE result* (Pass/Fail), defined in the context of the Civil Service Commission's evaluation criteria, where examinees must meet a minimum competency score to qualify for public service eligibility (Civil Service Commission, 2023). The independent variables include: (1) *Stanine score* from the DNSC College Admission Test, defined as a standardized measure of cognitive ability with scores ranging from 1 to 9, adapted from the instrument by Thorndike (2005), with the indicator being *general mental ability*, described as the individual's overall capacity to reason, learn, and solve problems; (2) *Final Grade in English*, adapted from the DNSC student academic records system based on the standard grading scale, defined as the student's demonstrated ability to comprehend, write, and analyze academic English; and (3) *Final Grade in Math*, sourced from the same academic records, defined as the student's capacity to apply mathematical reasoning in problem-solving. These variables collectively form the foundation for exploring their predictive validity on CSE performance.

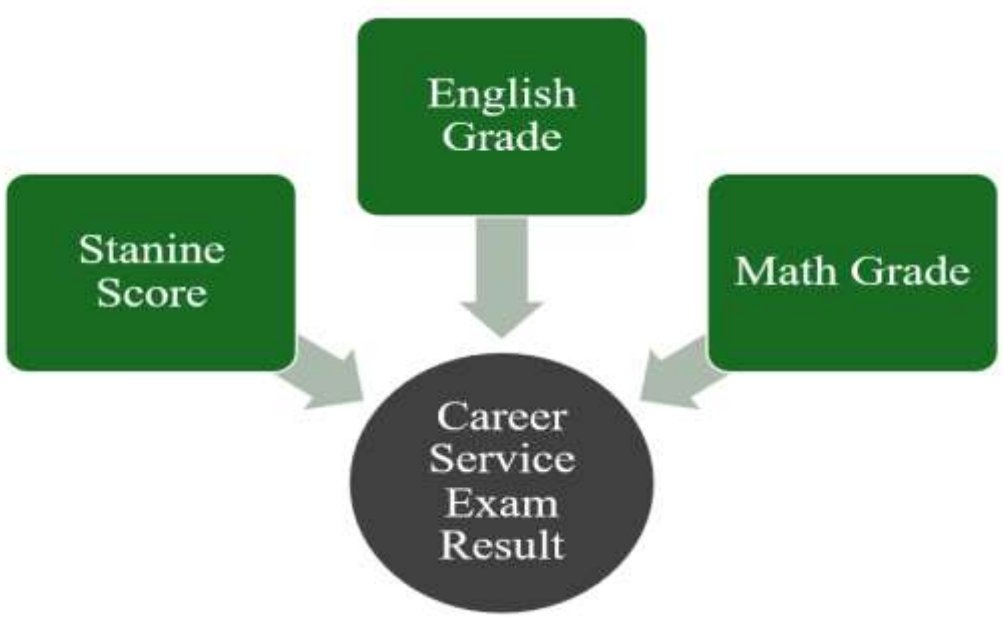

Figure 1. Conceptual framework of the Study

Despite the recognized importance of academic performance and cognitive aptitude in predicting licensure exam outcomes, limited research has specifically examined the predictive value of entrance exam stanine scores and core subject grades, particularly in English and Math, on the Career Service Exam (CSE) success among Bachelor of Public Administration (BPA) students. Existing studies have primarily focused on national licensure exams for teachers and health professionals, leaving a gap in evidence-based predictors for civil service eligibility in public administration contexts. This study uniquely addresses that gap by integrating institutional academic data from Davao del Norte State College to evaluate their relevance in forecasting CSE outcomes. Given the CSE's role as a prerequisite for government employment, the urgency of this research lies in its potential to inform targeted interventions and academic support strategies within the local educational system, ultimately improving graduate employability and public service readiness in the region.

The primary goal of this study is to determine which variable (stanine scores or academic grades) predicts the likelihood of passing the Career Service Exam. Specifically, this sought to measure the following objectives: (1) to assess the passing rates in the Career Service Exam among BPA students from 2018-2024; (2) to assess the relationship between entrance exam stanine scores and Career Service Exam outcomes; and (3) to analyze the correlation between English and Math grades and Career Service Exam results; (4) to determine the combined and relative predictive power of entrance exam stanine scores, English grades, and Math grades on Career Service Exam outcomes. The null hypothesis, stanine scores, and academic grades do not significantly predict passing the Career Service Exam, was tested at the 0.05 level of significance.

This study holds both global and local significance by contributing to the growing body of literature on predictive validity in educational assessments, particularly in the context of public service qualification exams such as the Career Service Exam (CSE). Globally, it contributes to academic discourse by providing empirical evidence on the relationship between cognitive aptitude (Stanine scores) and academic performance (English and Math grades) and high-stakes exam success, thereby filling a gap in research concerning non-licensure, government-mandated assessments. Socially, the study supports efforts toward inclusive and equitable quality education (UN Sustainable Development Goal 4) by identifying early academic indicators that can help institutions tailor interventions for at-risk students, ultimately increasing their access to public service employment. Direct beneficiaries include Davao del Norte State College (DNSC) as the implementing institution, the Civil Service Commission, and the Commission on Higher Education, as the findings may inform academic policy and student support programs. Moreover, students in public administration programs, as well as their instructors and guidance counselors, stand to benefit through data-informed mentoring. Future researchers can also build upon this study as a foundation to explore similar predictors across disciplines or regions, thereby promoting a more evidence-based approach to student development and employability.

METHOD

This section outlines the research method, participants, location, data sources, instruments, procedures, and statistical treatments used in the study. It clarifies how the quantitative, correlational approach, regression analysis were utilized to assess the predictive validity of entrance exam stanine scores and academic grades in English and Math on Career Service Exam results.

Research Respondent

The study population consists of Bachelor of Public Administration (BPA) students from Davao del Norte State College (DNSC) who participated in the Career Service Exam (Professional Level) from 2018 to 2024. These students display multiple shared traits, including being in the same program, finishing necessary English and Math classes, and taking the DNSC College Admission Test, which recorded their stanine scores. The sample size of this study comprises 57 individuals, gathered through a comprehensive enumeration of all available records of BPA students who fulfilled the specified criteria and possessed corresponding results from the Career Service Exam within the designated period. Choosing a census-based method is justified due to the population's small size and the availability of detailed data, as highlighted by Creswell and Creswell (2018), who advocate for complete enumeration in research where the total participant count is feasible and data are accessible.

The sample spanned seven academic years, the number of examinees varying from 3 to 15 each year. The data distribution ensured that each cohort was represented proportionally to its size, facilitating long-term observation of performance trends. The sampling technique used in this research was census sampling, which encompassed all BPA students from Davao del Norte State College who took part in the Career Service Exam (Professional Level) from 2018 to 2024. This method was utilized since the overall count of qualified individuals was relatively limited and readily accessible via institutional records. Census sampling enables the inclusion of the entire population that satisfies the defined criteria, thus minimizing sampling errors and ensuring that the findings accurately represent all significant cases. As emphasized by Creswell and Creswell (2018), census sampling is appropriate when the objective is to obtain complete data from a clearly defined and finite population, especially in studies that utilize existing records to conclude.

In terms of inclusion criteria, only BPA students from DNSC with complete and verified data sets for stanine scores, English and Math grades, and CSE outcomes from 2018 to 2024 were included. Exclusion criteria eliminated students with incomplete records, missing grades, or absent exam results. Since the data used were secondary and archival, no withdrawal criteria were applicable; however, data anonymization and the ethical use of institutional records were strictly observed to ensure research integrity and respondent confidentiality.

The study was conducted at Davao del Norte State College (DNSC), a public higher education institution situated in Panabo City, Davao del Norte, Philippines. Geographically, Panabo lies in the southeastern region of Mindanao and serves as a growing urban center within the Davao Region, characterized by a mix of agricultural and industrial development. DNSC caters to a diverse student population, many of whom come from nearby rural municipalities and aspire to enter public service upon graduation.

The selection of DNSC as the study locale is justified by the relevance and prevalence of the Career Service Exam (CSE) among its students, particularly those enrolled in the Bachelor of Public Administration (BPA) program. Over the years, the institution has consistently encouraged BPA students to pursue the CSE as a pathway to careers in the public sector.

Materials and Instrument

All study variables were assessed using established instruments and documented sources, while secondary data were obtained from official certification outcomes and institutional academic records. The entrance exam score was determined using the standardized college admission test from Davao del Norte State College (DNSC). This cognitive ability assessment employs the Stanine (Standard Nine) scale, which ranges from 1 to 9. A score between 1 and 3 reflects below-average ability, a score from 4 to 6 signifies an average level, and a score ranging from 7 to 9 represents above-average achievement. This data originated from the DNSC Admissions Office

The final Math and English grades were compiled using the official academic records kept by the DNSC Registrar's Office. Based on the institution's numerical grading scheme and in accordance with the Commission on Higher Education's (CHED) guidelines, these grades fall between 1.00 and 5.00. The interpretation of the scale is as follows: 1.00 (98–100%) = *Excellent*, 1.25 (95–97%) = *Outstanding*, 1.50 (92–94%) = *Very Good*, 1.75 (89–91%) = *Good*, 2.00 (86–88%) = *Very Satisfactory*, 2.25 (83–85%) = *Satisfactory*, 2.50 (80–82%) = *Moderately Fair*, 2.75 (77–79%) = *Fair*, 3.00 (75–76%) = *Passing*, 4.00 (72–74%) = *Conditional*, and 5.00 (71 and below) = *Failure*. An “INC” mark, indicating *Incomplete*, is assigned to students who did not fulfill course requirements within the term due to valid reasons and must be completed within a prescribed period.

The Career Service Exam (CSE) result, the study’s dependent variable, was taken from the official records of the Civil Service Commission (CSC). This result was categorized on a binary scale, with a score of 1 representing a *Pass* and 0 indicating a *Fail*. This outcome signifies whether a student has met the minimum qualifications for eligibility in government employment.

Since all instruments used in this study are institutionally developed and standardized (not researcher-made), there was no need for pre-testing, pilot testing, or internal consistency reliability measures such as Cronbach’s alpha. The grading system used by DNSC has already undergone institutional validation and approval, aligned with CHED guidelines. The CSE is a national-level standardized examination administered and validated by the Civil Service Commission.

Design and Procedure

This study employed a quantitative, correlational research design, which is appropriate for examining the relationships and predictive power among variables based on numerical data. According to Creswell and Creswell (2018), a correlational design is well-suited for studies that aim to determine the extent to which two or more variables are related, without manipulating the variables themselves. In the context of educational research, this design enables the assessment of predictive validity between academic indicators, such as entrance exam scores and course grades, and performance outcomes, including the Career Service Exam result. The

perspective of the study lies within higher education and public sector employability, making the design relevant for evidence-based academic and institutional decision-making.

The study utilized a criterion-based census approach, incorporating all BPA students from Davao del Norte State College (DNSC) who took the Career Service Exam (CSE) between 2018 and 2024 and had complete records for entrance exam scores, English and Math grades, and exam results. The analysis techniques employed include Pearson correlation to measure the strength of association between variables and binary logistic regression to determine the predictive power of the independent variables (Stanine score, English, and Math grades) on the dependent variable (pass/fail result in the CSE). This approach aligns with the study's objective to determine which academic indicators are stronger predictors of CSE success. In terms of research typology, the study is descriptive-correlational in the objective dimension and retrospective or longitudinal in the time dimension, as it examines existing records over a span of seven academic years.

The data collection process involved several key steps. Formal permission to access academic records was requested from the DNSC Registrar's Office and the Office of Student Affairs through a letter of request approved by the Research Ethics Committee. Similarly, students' Career Service Exam results were verified through either student-submitted official CSC results or through authorized institutional records. The data collection was conducted between January and March 2025, during which the researcher personally coordinated with department heads and registrars to ensure data accuracy and completeness. One notable personal experience during this phase was the challenge of validating older records from earlier cohorts (2018–2019), where physical files had to be manually cross-referenced due to limitations in digital archiving during those years. Nevertheless, consistent cooperation from the registrar's office facilitated a successful and comprehensive data collection process. After validation, data were encoded and tabulated using Microsoft Excel and later analyzed in IBM SPSS Statistics, ensuring accuracy, reliability, and reproducibility of results across datasets derived from institutional records.

To address each research objective, the following statistical treatments were employed: *Descriptive Statistics,* which utilized frequencies and percentages to summarize the passing and failure rates of Bachelor of Public Administration (BPA) students in the Career Service Examination from 2018 to 2024. This descriptive approach was operationalized to provide a baseline overview of performance trends over seven academic years and to highlight fluctuations that may indicate underlying academic or institutional factors.

Spearman's Rank-Order Correlation (ρ) - Spearman's rho was employed to determine the relationship between entrance exam stanine scores (ordinal scale ranging from 1 to 9) and CSE results (binary scale: 0 = Fail, 1 = Pass). Given that both variables are either ordinal or dichotomous in nature and do not satisfy assumptions of normality or interval-level measurement, Spearman's correlation was the appropriate non-parametric alternative to Pearson's *r*. This method measured the monotonic association between cognitive aptitude at admission and success in a high-stakes national qualifying exam.

Pearson Product-Moment Correlation (r) - Pearson's *r* was used to assess the linear relationship between academic grades in English and Math (interval data based on percentage equivalents) and the Career Service Exam result (coded dichotomously as 0 or 1). The decision to use Pearson's correlation assumed that the percentage grades approximate continuous data, and the dichotomous dependent variable is permissible under point-biserial logic (a special case of Pearson's *r*). These analyses provided evidence for the linear association between subject-specific academic performance and success in standardized exams.

And *Binary Logistic Regression Analysis* – To determine the combined and relative predictive power of entrance exam Stanine scores, English grades, and Math grades on Career Service Exam (CSE) outcomes, binary logistic regression analysis was employed. This statistical technique is appropriate given the dichotomous nature of the dependent variable (CSE result: Pass = 1, Fail = 0) and the continuous or ordinal scale of the independent variables (stanine scores, final grades in English and Math). The model estimates the probability of passing the CSE based on students' cognitive aptitude and academic performance, providing coefficients (B), odds ratios [Exp(B)], significance values (p), and overall model fit indices such as Nagelkerke R^2. The logistic regression was selected over linear regression to satisfy assumptions related to the categorical outcome and to produce interpretable predictive probabilities.

Through triangulating descriptive frequency analysis with non-parametric and parametric correlational methods, the study provided a nuanced understanding of how early academic indicators, such as Stanine scores and subject grades, predict performance in the Career Service Examination. This multi-method analytical strategy reinforces the theoretical grounding of the study in Messick (1995) Theory of Construct Validity, while simultaneously offering practical implications for academic interventions and student support systems.

In terms of research ethics, all protocols were adhered to as required by the DNSC Research Ethics Committee. The study did not involve direct interaction with human participants, as it utilized secondary data from institutional records. Nonetheless, data were anonymized to protect the identity and privacy of student respondents. The final dataset does not contain names, student IDs, or identifying identifiers. Only the researcher had access to the data, and the results were presented in aggregate form. Prior to data collection, ethical clearance was obtained, guaranteeing that the study adhered to the values of integrity, confidentiality, and responsible data use.

RESULTS AND DISCUSSION

The examined data are presented in this section, along with an interpretation of the results that considers the goals and theoretical framework of the study. It contains both inferential statistics, which evaluate the connections between entrance exam results, academic grades, and Career Service Exam outcomes, and descriptive data, which provide an overview of the passing rates and educational profiles of the respondents.

BPA students' Career Service Exam passing rates from 2018–2024

The Career Service Exam (CSE) passing percentages for Davao del Norte State College (DNSC) Bachelor of Public Administration (BPA) students from 2018 to 2024 are shown in Table 1. Over the seven years, a total of 57 students took the exam, of which 44 passed, yielding an overall passing rate of 77.19%. The passing rate fluctuated from year to year, reaching its maximum point in 2020 (100%) with only four examinees. 2021 had the lowest rate, at 60.0%, and 2019 had the second-lowest rate, at 66.67%. With 15 students each, 2018 and 2022 had the highest numbers of examinees; significantly, 2022 also had a high passing rate of 86.67%, showing both performance and participation peaks in that year.

Table 1. BPA students' Career Service Exam passing rates from 2018–2024

Year	Total Examinees	Passed	Failed	Passing Rate (%)
2018	15	11	4	73.33%
2019	3	2	1	66.67%
2020	4	4	0	100.00%
2021	5	3	2	60.00%
2022	15	13	2	86.67%
2023	10	7	3	70.00%
2024	5	4	1	80.00%
Overall	**57**	**44**	**13**	**77.19%**

Although the relatively high overall passing rate indicates that DNSC's BPA program is successfully preparing students for the CSE, which is necessary for employment eligibility in the Philippine public sector, the variation across years also highlights the need for targeted academic interventions to maintain consistency in student performance. The notably lower rates in some years highlight the potential influence of cohort-specific factors, such as differences in academic support, curriculum delivery, or even external factors like exam conditions and scheduling. The observed fluctuation in passing rates may be attributed to several contextual factors, including changes in academic preparation, faculty interventions, or institutional support across cohorts.

A vital framework for assessing the predictive value of academic markers, such as entrance exam scores and final grades in math and English, this descriptive analysis offers fundamental insight into the performance trends of BPA students. Comprehending these patterns reinforces the study's justification by highlighting the significance of detecting early success predictors, which in turn informs evidence-based support systems for subsequent examinees.

The relationship between results from the Career Service Exam and entrance exam Stanine scores

Table 2 presents the Spearman's rho correlation coefficient assessing the relationship between students' entrance exam stanine scores and their Career Service Exam (CSE) results. A strong positive correlation was found ($\rho = .722$, $p < .001$, $N = 53$), indicating that higher stanine scores are significantly associated with passing the CSE. The correlation is statistically significant at the 0.01 level (2-tailed).

Table 2. The relationship between entrance exam Stanine scores and Career Service Exam results.

Variable		**Entrance Exam Stanine (1-9)**	**Career Service Exam Result (Pass/Fail)**
Entrance Exam Stanine (1-9)	Correlation Coefficient	1.000	.722**
	Sig. (2-tailed)	.	.000
	N	53	53
Career Service Exam Result (Pass/Fail)	Correlation Coefficient	.722**	1.000
	Sig. (2-tailed)	.000	.
	N	53	57

The findings affirm a statistically significant and strong positive association between entrance exam stanine scores and Career Service Exam outcomes. Students who achieved higher Stanine scores (7–9), a proxy for cognitive aptitude, were more likely to pass the CSE, a national qualifying examination for public service employment.

This result aligns with Messick (1995) Theory of Construct Validity, which emphasizes that test scores must not only measure current competencies but also forecast future performance. In this case, the Stanine scores, designed initially as a college entrance screening tool, demonstrate strong predictive validity for CSE success. The positive correlation supports the instrument's consequential and external validity within the context of public administration education.

Moreover, the strength of the correlation ($\rho = .722$) reinforces the role of cognitive aptitude as an early indicator of high-stakes testing performance, consistent with Kuncel and Hezlett (2007) and Geiser and Santelices (2007), who found that standardized test scores significantly predict licensure and professional exam success across domains.

Institutionally, the finding underscores the utility of Stanine scores not only for admissions but also for academic profiling, mentoring, and early intervention. It enables the identification of at-risk students who might benefit from enrichment programs focused on cognitive and test-taking strategies.

The relationship between scores on the Career Service Exam and grades in math and English

Table 3 presents the Pearson correlation coefficients, which show the relationships between students' final grades in English and Mathematics (expressed in percentage equivalents) and their performance in the Career Service Examination (CSE). A strong positive correlation was observed between English grades and CSE results

(r=.752, p=.000r = .752, p = .000r=.752, p=.000), as well as between Math grades and CSE outcomes (r=.703, p=.000r = .703, p = .000r=.703, p=.000). These correlations are statistically significant at the 0.01 level, indicating a meaningful association between academic performance and CSE success.

Table 3. The correlation between English and Math grades and Career Service Exam results

Variable		**Final Grade in English**	**Final Grade in Math**	**Career Service Exam Result (Pass/Fail)**
Final Grade in English	Pearson Correlation	1	.623**	.752**
	Sig. (2-tailed)		.000	.000
	N	57	57	57
Final Grade in Math	Pearson Correlation	.623**	1	.703**
	Sig. (2-tailed)	.000		.000
	N	57	57	57
Career Service Exam Result (Pass/Fail)	Pearson Correlation	.752**	.703**	1
	Sig. (2-tailed)	.000	.000	
	N	57	57	57

Given that the grading scale adopted in this study uses percentage equivalents where higher values represent better academic achievement (e.g., 98–100 = Excellent), a positive correlation implies that students with stronger performance in English and Math are more likely to pass the Career Service Exam. This suggests that mastery of foundational subjects contributes to performance in standardized assessments, such as the CSE.

In addition, a moderately strong positive correlation between English and Math grades (r=.623, p=.000r = .623, p = .000r=.623, p=.000) indicates that students who perform well in one subject are likely to perform similarly in the other. This supports the premise of the Academic Achievement Theory (Fraser, 1959), which posits that consistent academic performance across core subjects plays a critical role in succeeding in more complex cognitive assessments.

Notably, English proficiency yielded the highest correlation with CSE performance, reinforcing the importance of language skills in reading comprehension, critical thinking, and written communication—key competencies evaluated in civil service examinations. While both subjects are important, this finding suggests that English may exert a stronger predictive influence on CSE outcomes than Math.

These findings emphasize the value of academic performance as a predictor of standardized exam success and support early academic monitoring to identify students who may need targeted interventions. For educators and school administrators, these results advocate for enhanced instructional strategies in English and Math, not only to improve subject-specific learning but also to increase students' readiness for national qualifying examinations such as the CSE.

The combined and relative predictive power of entrance exam stanine scores, English grades, and Math grades on Career Service Exam outcomes

As reflected in Table 4, the overall model demonstrated excellent fit statistics (as reported separately in the Model Summary and Omnibus Tests of Model Coefficients). Still, the individual predictors failed to reach statistical significance. Specifically, Entrance Exam Stanine Scores had a regression coefficient (B) of 1.421

with an extremely high standard error (SE = 3652.094), resulting in a non-significant Wald test (p = 1.000). Similarly, the Final Grade in English (B = 5.289, SE = 3353.962, p = .999) and the Final Grade in Math (B = 5.300, SE = 3441.188, p = .999) also exhibited non-significant results, despite large odds ratios (Exp(B) = 198.127 and 200.268, respectively). The constant term was also not significant (B = -835.572, p = .993).

Table 4. Binary Logistic Regression Analysis Predicting Career Service Exam Results Based on Academic Indicators

Predictor Variable	**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**95% C.I.for EXP(B)**	
							Lower	**Upper**
Entrance Exam Stanine (1-9)	1.421	3652.094	.000	1	1.000	4.143	.000	.
Final Grade in English	5.289	3353.962	.000	1	.999	198.127	.000	.
Final Grade in Math	5.300	3441.188	.000	1	.999	200.268	.000	.
Constant	-835.572	98882.785	.000	1	.993	.000		

These inflated standard errors and non-significant p-values, combined with abnormally large or undefined confidence intervals for the odds ratios, indicate the presence of quasi-complete separation or perfect prediction in the dataset, a situation where the predictors nearly or completely separate the two outcome categories (Pass vs. Fail). This phenomenon often leads to model convergence issues and unreliable coefficient estimation in logistic regression, especially in small samples or when one class dominates the outcome (e.g., very high pass rate, as in this study's 77.19%).

Despite the failure of individual predictors to show statistical significance in the logistic regression model, prior bivariate analysis (using Spearman and Pearson correlations) revealed strong and significant associations between these academic indicators and CSE success. This suggests that the combined model holds both theoretical and practical relevance; however, the limitations of the data, such as a small sample size, an imbalanced pass/fail distribution, and potential multicollinearity, compromise the stability and precision of the coefficient estimates.

Consistent with Messick (1995) Theory of Construct Validity, the results still offer support for the use of institutional academic data as predictors of future performance, though further research is needed. Future studies with larger, more balanced samples and refined modeling strategies (e.g., penalized logistic regression or bootstrapping) are recommended to quantify the relative contribution of each predictor accurately.

The overall model fit of the binary logistic regression was evaluated using several key diagnostics, summarized in Table 5. The Omnibus Test of Model Coefficients yielded a statistically significant result, $\chi^2(3) = 61.200$, $p < .001$, indicating that the inclusion of the predictor variables—entrance exam stanine scores, final grade in English, and final grade in Math—significantly improved the model over a null model with no predictors. This supports the assertion that the set of academic variables collectively contributes to predicting the likelihood of passing the Career Service Exam (CSE).

Table 5. Model Fit and Classification Summary

Test/Statistic	**Value**
Omnibus Test of Model Coefficients	$\chi^2(3) = 61.200$, $p < .001$
-2 Log Likelihood	0
Cox & Snell R^2	0.685

Nagelkerke R^2	1
Hosmer-Lemeshow Test	$\chi^2(4) = 0.000$, p = 1.000
Overall Classification Accuracy	100.00%

The -2 Log Likelihood value of 0 is highly unusual and, alongside the Nagelkerke R^2 value of 1.000, suggests that the model achieved perfect prediction of the outcome in this dataset. While these indicators typically reflect exceptional model performance, they must be interpreted with caution. Perfect prediction, particularly in small or imbalanced samples, can result in overfitting and unstable coefficient estimates—a condition known as quasi-complete separation (Heinze & Schemper, 2002).

The Cox & Snell R^2 of 0.685 and the Nagelkerke R^2 of 1.000 further underscore the model's strong explanatory power, with up to 100% of the variance in CSE results accounted for by the academic indicators. However, this perfect model performance likely stems from data structure rather than true generalizability, as reflected in the inflated standard errors and undefined confidence intervals in Table 4.

Notably, the Hosmer-Lemeshow Test produced a $\chi^2(4) = 0.000$, $p = 1.000$, suggesting excellent goodness-of-fit. This test evaluates whether the observed and predicted frequencies of the outcome align well across deciles of risk. A non-significant result, as in this case, indicates no significant discrepancy between observed and predicted outcomes, further supporting the model's apparent precision.

Lastly, the model achieved 100% classification accuracy, correctly predicting all pass and fail outcomes in the dataset. While this would typically be an ideal result, in the presence of quasi-complete separation, it signals a potential limitation in the dataset's ability to generalize, especially given the small sample size (N = 53) and high pass rate (77.19%).

In alignment with Messick (1995) Theory of Construct Validity, these findings validate the academic indicators as theoretically appropriate predictors of performance. However, the statistical artifacts arising from perfect prediction highlight a methodological caveat. Future studies should address this issue by increasing the sample size, ensuring balanced outcome distributions, and employing robust regression approaches, such as Firth's penalized likelihood estimation.

Decision on the Null Hypothesis

The null hypothesis stated that stanine scores and academic grades do not significantly predict passing the Career Service Exam. Based on the findings, this hypothesis is rejected. The Career Service Exam result was found to have statistically significant relationships with all three independent variables, according to the results of Pearson correlation analyses: entrance exam stanine score (r =.665, p =.000), final English grade (r =.752, p =.000), and final math grade (r =.703, p =.000). These results support the notion that a higher likelihood of passing the CSE is linked to cognitive ability and scholastic achievement in math and English.

CONCLUSION AND RECOMMENDATION

Drawing results from both descriptive and inferential studies, this section summarizes the study's main findings.

It assesses these findings in consideration of the study's theoretical framework and emphasizes the predictive significance of entrance exam scores and academic achievement in math and English on Career Service Exam results. The status of the null hypothesis and the broader implications of the findings are also discussed in this section.

Conclusion

The descriptive results of the study revealed that a substantial proportion of Bachelor of Public Administration (BPA) students at Davao del Norte State College (DNSC) passed the Career Service Examination (CSE) between

2018 and 2024, yielding a cumulative passing rate of 77.19%. This outcome suggests that the institution's academic preparation aligns well with the competencies required for public service eligibility. Year-on-year performance analysis showed relatively consistent success rates, although some fluctuations were noted, particularly in smaller cohorts such as that of 2020, which attained a perfect pass rate. These findings suggest the adequacy of the existing academic framework while also indicating the potential influence of instructional practices, cohort characteristics, and support mechanisms on exam outcomes.

Inferential findings from both bivariate and multivariate analyses validated the predictive value of academic indicators. Spearman's rho showed a strong and statistically significant correlation between entrance exam Stanine scores and CSE outcomes ($\rho = 0.722$, $p < 0.001$), highlighting the role of early cognitive ability in predicting exam success. Pearson's correlation further revealed significant associations between final grades in English ($r = .752$, $p < .001$) and Math ($r = .703$, $p < .001$) and CSE results, with English emerging as the strongest individual predictor. Binary logistic regression initially produced a perfect classification of CSE pass/fail outcomes; however, issues of quasi-complete separation and inflated standard errors were observed due to sample limitations. As such, while the model supports predictive relationships, results must be interpreted cautiously. No formal test of mediation or moderation was conducted due to convergence issues in the model. Yet, the strong bivariate results provide foundational insights for future multivariate analysis with a larger sample size.

The findings of the study affirm the theoretical underpinnings rooted in Messick (1995) Theory of Construct Validity, which posits that assessment tools must exhibit both content relevance and predictive utility. The statistically significant relationships between academic metrics and CSE outcomes support this framework, demonstrating that entrance exam scores and grades in core subjects are not merely academic artifacts but valid indicators of future performance on public service examinations. The study also aligns with Bloom's Mastery Learning Theory by confirming that subject mastery, particularly in English and Math, enhances achievement in standardized tests. Similarly, Becker's Human Capital Theory is supported as the results underscore the value of investing in foundational education to improve employability and career advancement in the public sector. These theoretical alignments provide both validation of the academic profiling mechanisms employed at DNSC and direction for strengthening educational strategies in public administration programs.

Recommendation

For the Academic Affairs and Program Chair of the Bachelor of Public Administration (BPA) Program, considering English proficiency emerging as the strongest predictor of CSE success, targeted enhancements in the English curriculum are recommended. Specifically, it is advised to integrate a CSE-focused academic support module within English subjects, emphasizing reading comprehension, vocabulary development, and logical reasoning. Faculty may also be trained to incorporate test-oriented language exercises into major courses to enhance verbal aptitude across the curriculum.

For the Admission and Guidance Office of Davao del Norte State College, given the strong correlation between entrance exam stanine scores and CSE outcomes, the Admissions Office should consider implementing early academic profiling protocols using stanine performance results. Students with low Stanine scores should receive tailored academic advising and be flagged for inclusion in structured remedial or enrichment sessions in English and Math. This early intervention strategy aligns with a data-informed approach to improving long-term exam readiness and student success.

For BPA Faculty Members and Learning Resource Developers, as Math grades were also found to predict CSE outcomes significantly, but to a lesser extent than English, it is recommended that faculty integrate applied quantitative reasoning and numeracy drills in the general education Math subjects. In particular, exercises that simulate CSE-style questions involving data interpretation, percentages, and problem-solving should be incorporated. Learning materials such as review workbooks and online drills can also be co-developed with instructional designers.

For the Office of Student Affairs and Services (OSAS) to holistically support students preparing for the CSE, OSAS should establish a Career Service Exam Readiness Program. This may include mock exams, review

sessions, mentorship initiatives, and alumni talks. Priority participation should be given to academically at-risk students based on Stanine scores and final grades in English and Math. Monitoring tools should be employed to track improvements and outcomes over time.

For Future Researchers and Institutional Research Committees, as limitations such as a small sample size and perfect model prediction were encountered, it is recommended that future researchers expand the dataset to include multiple academic years or replicate the study in other degree programs. Additionally, it is advisable to explore advanced logistic modeling methods (e.g., Firth logistic regression) or structural equation modeling (SEM) for a more robust understanding of causal pathways and indirect effects.

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