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Dropout Analysis in Davao Oriental State University

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A B S T R A C T

Student dropout remains a critical challenge in higher education, affecting institutional efficiency and student success. This study aims to determine the key predictors of student dropout at Davao Oriental State University (DorSU) through a longitudinal cohort analysis. The research examines undergraduate students who enrolled at the DOrSU Main Campus, San Isidro, Banaybanay, and Cateel campus during the 2019-2020 academic year. Using Binary Logistic Regression within a longitudinal framework, the study evaluates the influence of SUAST scores, Senior High School (SHS) grades, SHS strand, and General Weighted Average (GWA) on student attrition. Findings reveal that GWA is the most significant predictor of dropout (B = 3.023, $p < 0.001$, Exp(B) = 20.562), indicating that students with lower academic performance face a substantially higher risk of leaving the university. In contrast, entrance exam scores and SHS grades were not statistically significant predictors. These results emphasize the need for academic interventions and support programs to improve student retention and reduce dropout rates.

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INTRODUCTION

The academic journey of university students is a complex process, influenced by numerous factors that shape their enrollment pathways. These experiences can significantly impact both individual learners and the institutions they attend. Globally, educational institutions face student dropout challenges (Ameri et al., 2016a; Garrido Silva & Pajuelo Diaz, 2023). Dropout is typically defined as a student's failure to enroll for a specified number of consecutive semesters (Xavier et al., 2022) . However, in this study, a dropout is when a student permanently withdraws their enrollment, with no intent to return. This definition aligns with the need to distinguish temporary academic delays from permanent academic withdrawal.

University dropouts have significant economic and educational impacts (Nurmalitasari et al., 2023). It leads to lost opportunities, wasted resources, and inefficiencies in the educational system. Furthermore, since education is essential for national development and socio-economic mobility (Choudhary AI, 2015), addressing student dropout is crucial, especially within the Philippine Public Higher Education Institutions (PHEIs), where tuition and other fees are subsidized or entirely waived. In addition, the issue of students dropping out of school is a significant problem that impacts a nation's educational system and economy, considering governments' considerable investment in education (Sandoval-Palis et al., 2020).

Despite these efforts, dropout remains a persistent issue. Many students leave without completing their programs, raising questions about the underlying factors contributing to their decision to disengage. While existing literature has explored various reasons for student dropout, there is still a limited understanding of how specific academic predictors contribute to it, especially in the local context.

Most existing studies focus on broad or general factors influencing student dropout but lack longitudinal, cohort-based analyses that assess the impact of specific academic indicators. In particular, there is a limited examination of academic variables such as:

a. General Weighted Average (GWA) during college
b. Senior High School average
c. Senior High School strand
d. State University Aptitude and Scholarship Test (SUAST)

This study identified the key predictors of student dropout and provided a data-driven understanding of dropout behavior within a public higher education institution. Using a longitudinal cohort analysis of institutional records, the study offered empirical insights into the patterns and trends of student attrition. Through this approach, it contributed to a deeper understanding of how academic indicators influenced students' decisions to permanently withdraw from the university.

THEORETICAL REVIEW

In higher education (HE), dropout rates are a serious issue in many nations(Faizuddin & Noor, 2023). The retention of students in colleges and universities has been a longstanding concern for educators (Ameri et al.,

2016b). The study of student dropout in higher education has gained significant interest among the academic community, government, and social stakeholders due to the high prevalence of this issue(Guzmán et al., 2021). Identifying the key predictors of dropout would significantly help the institution to make the most use of its resources, enhance planning techniques, streamline administrative processes, and fortify methodical ways.

College Entrance Exam

In the result of a study, it indicates that college entrance exams like the SAT or ACT have differing levels of predictive accuracy in terms of student outcomes in college. For example, research has shown a significant correlation between standardized test scores and college performance, indicating that higher scores may be linked to better academic results and reduced dropout rates (Maruyama et al., 2024; Tesema, 2013).

In addition, a study revealed that for every point increase in university entrance exam scores, the likelihood of dropping out dropped by 2.3%. This demonstrates a strong link between exam performance and student retention, especially during the crucial early years of college when dropout rates tend to be the highest (Buenaño et al., 2023).

Moreover, a study found out that gaining admission to a first-choice college greatly boosts overall student satisfaction, which is closely linked to lower dropout rates. This emphasizes the critical role of entrance exam scores in securing admission to preferred institutions (Huang et al., 2023).

Furthermore, dropout rates differ across academic disciplines, often influenced by entrance exam performance. For example, engineering programs typically experience higher dropout rates compared to fields such as psychology or human sciences. This indicates that the intensity and demands of certain programs may require higher entrance exam scores to support student success (Çerkini et al., 2023).

Senior High School General Average

High school GPA is consistently recognized as the strongest indicator of college dropout rates. Findings reveal, students with lower high school GPAs are at a higher risk of discontinuing their college education within their first year. For instance, one study found that even after accounting for factors such as mental health and family background, GPA remained the most significant predictor of whether a student would leave college after their freshman year (Busch et al., 2014).

Although GPA is a key factor, it is shaped by external influences like socioeconomic status, mental health, and family support. Findings indicate that students dealing with issues like depression or family instability tend to have lower GPAs and higher dropout rates. Even when these factors are considered, GPA continues to be a significant predictor of dropout risk (Willging & Johnson, n.d.).

In STEM (Science, Technology, Engineering, and Mathematics) majors, high school GPA has been found to positively correlate with college

performance in related courses. Analysis reveal that students' high school GPAs in math and science are especially important for their success in college-level STEM subjects. This points out the advantage of having a strong GPA when entering demanding academic programs (Al Hazaa et al., 2021).

In community colleges, high school GPA remains an important factor affecting students' success in credit-bearing courses. Data indicates that students with higher GPAs are more likely to successfully move into college-level coursework, whereas those with lower GPAs often need developmental education (Allensworth & Clark, 2020).

In public colleges, the predictive ability of high school GPA is generally strong because of the larger and more diverse student bodies. Academic literature supports that public institutions often exhibit different levels of academic rigor, influencing how GPA correlates with graduation rates. For example, students at less selective public colleges may find that their high school GPA is a better indicator of their readiness for college-level coursework (Denning et al., 2022).

College General Weighted Average

Students with lower grades are more prone to disengagement and a lack of motivation, which contributes to higher dropout rates (Buenaño et al., 2023). Students with higher GPAs are generally more academically engaged. One study indicated that GPA is the academic outcome most closely linked to various dimensions of engagement (Casuso-Holgado et al., 2013). Reports illustrate that students with lower GPAs are more likely to withdraw from their studies. For example, in a study of 2,472 students, the average GPA of those who dropped out was 2.32, while it was 3.09 for those who continued (Buenaño et al., 2023). This indicates that academic performance is a crucial factor in student retention.

In addition, research across various educational environments consistently shows that academic satisfaction and performance are among the key factors influencing dropout rates. Students who are academically satisfied and perform well are less likely to discontinue their studies (Nurmalitasari et al., 2023; The Danish Evaluation Institute, 2017).

Moreover, the influence of first-year GPA (FYGPA) is especially strong. Students who begin college with low FYGPAs tend to have much lower graduation rates and higher dropout rates. For example, fewer than half of the students with FYGPAs between 2.50 and 2.99 graduate within four years, while those with GPAs above 3.00 graduate at a significantly higher rate (Board et al., 2023).

Similarly, the first semester is crucial for student engagement and integration into the college community. Students who perform well academically are more likely to feel connected and involved, strengthening their commitment to remain in college. On the other hand, poor academic performance can result in feelings of isolation and disengagement, which raises the risk of dropping out (Blanchet et al., 2016; Stewart et al., 2007).

Furthermore, certain institutions have policies requiring students who fail particular courses multiple times to exit their programs. This establishes a clear connection between academic performance (GPA) and retention strategies (Buenaño et al., 2023).

Senior High School Strand

The relationship between Senior High School strands and college dropout rates is significant, as the educational track chosen can influence academic preparedness and success in higher education. Research indicates that students from specific strands, particularly those aligned with their college programs, tend to perform better academically, which may reduce dropout rates.

Students from the Technical Vocational Livelihood (TVL) strand showed strong academic performance in college, suggesting that alignment between high school education and college programs enhances readiness (B. Manugas et al., 2022).

In addition, a study found that STEM graduates outperformed peers from other strands in science-related programs, indicating that the choice of strand can significantly affect college success and retention (Rubas, 2023).

Furthermore, a literature supports that students who choose SHS strands aligned with their intended college courses tend to perform better academically in university. This alignment fosters a smoother transition and higher academic self-efficacy, which can reduce the likelihood of dropping out (Perez & Rioja, 2020).

METHODOLOGY

Research Design

This study employed a longitudinal cohort analysis research design to explore dropout among students at Davao Oriental State University (DOrSU). The research focused on a cohort of undergraduate students who enrolled at the Davao Oriental State University Main Campus, as well as at the San Isidro, Banaybanay, and Cateel campuses, during the 2019-2020 academic year.

Longitudinal cohort analysis is a research approach that entails tracking a particular group of individuals over an extended duration. By tracking a cohort of students over time, this design allows to monitor when and why students disengage from their studies (Teague et al., 2018). The longitudinal cohort design provided greater insight into how students move through their academic pathways over time. This approach allowed for the identification of trends and patterns related to dropout within the cohort.

Data Collection

A single cohort of students was tracked over a four-year period, spanning from the 2019-2020 academic year to the completion of their program in 2023-2024. The researcher coordinated with university management to secure official enrollment records for previous cohorts, thereby facilitating a comprehensive analysis.

Secondary data were collected regarding the number of dropout students with in the cohort. This included obtaining historical records and institutional reports that provided insights into patterns and trends related to dropout. There were a total of 387 students from the studied cohort discontinued their enrollment. In addition, the detailed academic performance of the 387 dropped out students were collected including the high school general point average (GPA), results from the State University Aptitude and Scholarship Test (SUAST), senior high school track, and the college general weighted average. Program enrollment history was based solely on enrollment data.

Data Analysis

Binary Logistic Regression was incorporated into the longitudinal design to determine key predictors of dropout. Binary Logistic regression is a statistical analysis method to describe the relationship between two or more dependent variables (Shedriko, 2021).

RESULTS

Table 1. Binary Logistic Analysis on the Key Predictors of Students' Dropout of DOrSU

Variable	**B**	**SE**	**Wald**	**Sig.**	**Exp(B)**	**Interpretation**
Constant	-4.776	2.454	3.787	.052	.008	Not Significant
SUAST Score	-.004	.003	1.249	.264	.996	Not Significant
SHS Grade	-.015	.022	.463	.496	.985	Not Significant
SHS Strand	-.015	.210	.005	.943	.985	Not Significant
GWA	3.023	.462	42.890	<0.001	20.562	Significant
Chi-square = 132.320; df=4; p<0.001; *Nagelkerke* R^2=0.413						

DISCUSSION

Presented on table 1 are the results for the binary logistic regression analysis which was conducted to determine the key predictors of student dropout at Davao Oriental State University (DOrSU). The model included SUAST Score, Senior High School (SHS) Grade, SHS Strand, and General Weighted Average (GWA) as independent variables. The overall model was statistically significant (χ^2 = 132.320, df = 4, p < 0.001), indicating that the combined effect of these predictors significantly contributes to the likelihood of student dropout. The Nagelkerke R^2 value of 41.3% suggests that the model explains approximately 41.3% of the variance in dropout rates.

Among the predictors, GWA was found to be a significant factor in student dropout (B = 3.023, $p < 0.001$, Exp(B) = 20.562). The odds ratio of 20.562 suggests that for every one-unit increase in GWA, the likelihood of dropping out increases by more than 20 times, holding all other factors constant. This implies that students with lower academic performance (higher GWA) are at a significantly higher risk of leaving the university, emphasizing the critical role of academic standing in student retention.

On the other hand, SUAST Score (B = -0.004, p = .264, Exp(B) = 0.996), SHS Grade (B = -0.015, p = .496, Exp(B) = 0.985), and SHS Strand (B = -0.015, p = .943, Exp(B) = 0.985) were not statistically significant predictors of dropout. These results suggest that students' entrance exam scores, senior high school grades, and academic strand do not have a meaningful impact on their likelihood of dropping out when considered alongside GWA. Also, the constant term (B = -4.776, p = .052, Exp(B) = 0.008) was not statistically significant, indicating that when all predictors are set to zero, the baseline probability of dropout is not meaningful.

A study conducted in Korea firmly establishes the critical role of academic performance metrics, particularly GPA, as a key determinant of student dropout rates (Song et al., 2023). By emphasizing that consistent academic performance directly influences a student's likelihood to persist in their studies, the study underscores GPA as a decisive factor in forecasting dropout risk. The findings convincingly argue that students with lower GPAs face significantly higher risks of leaving their academic programs, positioning GPA as an indispensable predictor in dropout modeling. This evidence reinforces the claim that academic standing is a crucial component in identifying at-risk students and implementing effective retention strategies.

According to (Buenaño et al., 2023)students with lower grades often face disengagement and diminished motivation, which increases the likelihood of dropout. This underscores the idea that academic performance is not just a measure of capability but also a reflection of students' overall commitment and emotional investment in their studies.

Similarly, (Casuso-Holgado et al., 2013) further emphasize this point by identifying GPA as a key indicator of academic engagement. Their study revealed that GPA is strongly associated with various dimensions of engagement, including classroom participation, effort in academic tasks, and persistence. This establishes GPA not only as an outcome of academic performance but also as a predictor of long-term educational success.

However, other factors also play a significant role. Findings indicate that non-academic elements like self-efficacy, adaptability, and resilience substantially influence dropout intentions (Véliz Palomino & Ortega, 2023). While academic performance remains a powerful predictor, integrating these psychological and social variables alongside GPA offers a more comprehensive understanding of student attrition and retention.

CONCLUSIONS AND RECOMMENDATIONS

These findings emphasize the importance of academic performance in student retention. Since GWA emerged as the strongest predictor of dropout, interventions should focus on supporting students who struggle academically. Programs such as academic advising, tutoring, and mentorship initiatives may help at-risk students improve their performance and, in turn, reduce dropout rates. Meanwhile, the non-significance of entrance exam scores and SHS grades suggests that pre-university academic metrics may not be reliable indicators of student persistence at DOrSU.

FURTHER STUDY

Future research could explore additional factors such as financial challenges, psychological well-being, and institutional support services to gain a more comprehensive understanding of student dropout patterns.

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