STEM Diversity in Advising: Ethnicity and Its Impact on Academic Advisor Value at U.S. Higher Education

Treka D. Clark
Crowley's Ridge College

Karina Kasztelnik
Tennessee State University

This study aims to investigate how student ethnicity influences the perceived value of academic advising in STEM fields at college. The research method employed a correlational, non-experimental approach and collected data from STEM undergraduates through a survey. The survey's primary goal is to analyze how students from diverse ethnic backgrounds rate their academic advisors' effectiveness and importance. The analysis focuses on variables such as satisfaction with advising, advisor accessibility, and their perceived impact on academic success. It aims to identify significant correlations between ethnicity and students' perceptions of their advisors' value. The preliminary results demonstrate noticeable discrepancies in the perceived value of advising among different ethnic groups, with underrepresented minorities reporting different expectations and experiences compared to their peers. These findings underscore the need for culturally sensitive advising practices that cater to the diverse needs of the student body to improve the general academic experience and retention in STEM fields. The study also suggests implementing targeted advisor training programs that prioritize cultural awareness for further research.

Keywords: STEM education, diversity, advising, ethnicity, higher education, nonprofit, enrollment, retention

THE PURPOSE OF THE STUDY

The purpose of this study was to determine the perception of the value of academic advising and the impact it has on student retention rates at one small nonprofit college. Identification of the extent to which these relationships occur was also reviewed. Through his Institutional Departure Model, Vincent Tinto lays the theoretical foundation that developed the four research questions outlined in this study. According to Tinto, his theoretical model of dropout argues that the withdrawal process from higher education can be viewed as a longitudinal process of interactions between academic and social systems that are continually modified by variance and the individual's performance (Huo et al., 2022). Since the beginning of the current century, effective academic advising systems have been recognized and recommended as a vital element in students' success, academic retention, and satisfaction (Mathew and Ibrahim, 2023). The researchers' four questions addressed specific concerns and student demographics identified at college.

LITERATURE REVIEW

This literature review explores the current research on the importance of academic advising and its impact on student retention rates at colleges and universities. Specifically, it provides a greater understanding of how academic advising aligns with college students' satisfaction, determination, and other indirect correlations of student retention. Finally, the literature reviews the balancing strategies small colleges use to improve their academic advising programs to increase student retention rates.

Some colleges and universities greatly improve recruiting efforts by establishing goals to increase the class sizes of first-time entering freshmen and transfer students. While maintaining steady enrollment rates does require recruiting students to attend the institution, study after study over the years has tested and validated Vincent Tinto's 1987 claim in *Leaving College* that "Though the intentions and commitments with which individuals enter college matter, what goes on after entry matters more. It is the daily interaction of the person with other members of the college in both the formal and informal academic and social domains of the college and the person's perception or evaluation of the character of those interactions that, in large measure, determine decisions as to staying or leaving" (p. 127).

Because student retention in postsecondary institutions continues to be problematic, it is crucial to keep students in school to be a competitive force in the global economy (Talbert, 2012). This, paired with a growing concern about the declining enrollment in higher education institutions nationwide, suggests further research should be developed on this topic to provide insight on improving student services pertaining to academic advising and retention.

The literature reviewed in this chapter was located using the Touro University Worldwide online library database. Specifically, peer-reviewed articles retrieved from ProQuest One Academic, EBSCO multi-search, and Google Scholar were reviewed and referenced in this study. This literature review is through the lens of a small private four-year liberal arts college and addresses student perceptual data as it relates to academic advising and student retention. Therefore, key phrases such as "student retention", "academic advising", "enrollment decline", "higher education", and "private institutions" were used to search the material summarized in this literature review.

There are four sections outlined in this chapter. The first section addresses the background of the problem and reviews the historical research about financial hardships experienced by institutions that struggle to maintain steady enrollment growth. Factors negatively impacting recruitment initiatives are included and provide insight to why student retention rates are so important in the wake of declining enrollment in higher education institutions. The second section identifies the gap in the research. It provides an overview of academic advising systems and their impact on student retention and persistence, primarily addressing the limited research associated with this topic. The third section reviews theoretical underpinnings and addresses social and academic needs of students. Furthermore, this section clarifies the academic advisor's value and influence on student success in academic and social environments. Finally, the fourth section explains the topic of academic advising on a greater level, providing an in-depth overview of its impact on student retention, its contribution to institutional finances, and the value it provides students as indicated via student satisfaction rates and perceptual data.

Together, these sections synthesize the development of this research and serve as a tool to implement data-driven decisions regarding academic advising systems and student retention in small private colleges and universities. While prior research surrounding declining enrollment has evolved over the last few decades, service quality, student satisfaction, and student retention in the context of small private institutions are lacking. Factor analysis was applied to this study to identify independent variables that the researcher can control to determine effects on the dependent variable, identified as student retention. As a result, academic advising has been identified as contributing to student retention. Concepts of academic advising seemingly differ across public and private entities but similarly, these systems stand firm in establishing efforts to enhance service quality to contribute to student satisfaction and student retention (Eresia-Eke et al., 2020).

LITERATURE REVIEW: A BACKGROUND OF THE PROBLEM

Research studies worldwide have focused on higher education dropout, persistence, and success and given the profound changes in higher education that have taken place in recent decades, higher education institutions need to compete for students by attracting, retaining, and, ultimately, graduating them (Sá, 2023). While pinpointing factors surrounding student enrollment is important to develop growth initiatives in the higher education sector, it is especially crucial for small nonprofit colleges with limited resources. Student attrition rates have been one of the most critical issues in higher education for decades because as students fail to persist at higher education institutions, there are impacts on both the academic and social environments (Burke, 2019). Furthermore, student persistence and retention significantly impact institutions' financial planning, as student tuition and fees are major drivers of institutional income (Burke, 2019).

Many small institutions of higher education, especially those with headcounts of less than 500, which identity as private and nonprofit, may be considered tuition-dependent, having institutional finances that fluctuate from year to year due to changes in overall enrollment. Because of this, some institutions may struggle to stay afloat when tuition depletes due to low enrollment numbers. Private nonprofit colleges are increasingly using tuition resets, or a decrease in sticker price by at least 5%, to attract new students and counter declining demand; a common practice used to get accepted students to matriculate and to increase affordability (Ward, 2023). Additionally, colleges have been known to award financial aid via institutional scholarships, providing students with discounts on the total cost of attendance. This recruitment strategy often reaps benefits and contributes to success in institutional admissions offices.

Financial aid is any college funding that does not come from family or personal savings or earnings and can take the form of grants, scholarships, work-study jobs, and federal or private loans (Probasco, 2021). In addition to providing institutional and private loans to promote increases in enrollment, federal student financial aid is also a factor to consider when discussing institutional finances based on headcount. To help offset the cost of attending college, Title IV of the Higher Education Act of 1965 authorized several student financial assistance programs. According to the National Center for Education Statistics (NCES), over 85% of students receive some form of financial aid (2022). For some small colleges with minimal enrollment numbers, processing federal financial aid is necessary to maintain organizational sustainability. Financial aid can cover most higher education expenses, including tuition and fees, room and board, books and supplies, and transportation (Probasco, 2021).

In 2020-2021, some 38% of first-time, full-time degree/certificate seeking undergraduate students were awarded loan aid, a 12% decrease from the percentage in 2010-2011 (NCES, 2022). This decreases results from decreased enrollment rates nationwide over the last decade. According to Welding (2023), college enrollment has been declining since 2010 at an average rate of 1.6% per year and, in 2021, it was 14.6% down from peak enrollment in 2010. These rates, paired with an increase in trade school enrollment, have negatively impacted institutional enrollment rates within the higher education sector. According to National Student Clearinghouse (2022), mechanic and repair trade programs saw an enrollment increase of 11.5% from spring 2021 to spring 2022, enrollment in construction trade courses increased by 19.3%, and culinary program enrollment increased 12.7% while enrollment at public two-year colleges declined 7.8%. Enrollment at public four-year institutions dropped by 3.4%.

While college enrollment numbers continue to decline, higher education administrators are forced to implement innovative thought processes and strategic planning initiatives to ensure the longevity of the institution. According to the U.S. Bureau of Labor Statistics (2023), many individuals are electing to enter the workforce immediately following graduation from high school, with a labor force participation rate of youth, ages 16 to 24, not enrolled in school at 80%, respectively. Because of the ability to immediately enter the workforce, paired with increased enrollment in trade schools and a struggling economy, pressure has increased in higher education institutions. It has resulted in desperate attempts to increase enrollment and funding (Kasztelnik & Branch, 2024).

Despite recruitment efforts, a focus has been shifted on addressing student dropout rates, as this remains a tenacious issue in the higher education sector. Despite steady efforts to increase enrollment in higher

education, high dropout rates remain persistent problems for institutions. According to Huo and Miller (2022), the overall dropout rate for undergraduate college students is 40%, with approximately 30% of college freshmen dropping out before their sophomore year. This prompts researchers to investigate the variables surrounding student enrollment and retention; with an emphasis on students' overall experience in higher education due to the pivotal role it plays in their performance and success (Sá, 2023).

LITERATURE REVIEW: IDENTIFICATION OF THE GAP

The background to the problem in this study stems from the need to increase service quality, including heightening efforts to meet student expectations (Eresia-Eke et al., 2020). Higher education administrators continue to implement new objectives to address the vexing problem surrounding declining student retention rates. Early intervention, online and hybrid learning opportunities, and increased assessment practices are a few initiatives created to convenience students and provide an understanding of why the dropout rate continues to be higher than expected.

Student retention is one of the most widely studied areas in higher education, with an extensive body of research literature spanning more than four decades via books and edited volumes, journals, and a variety of conferences dedicated solely to student retention (Tinto, 2007). Despite many years of research, countless factors positively and negatively contribute to student retention rates. There is still so much we do not know and have yet to explore, and, more importantly, there is much that researchers have not yet done to translate research and theory into effective practice (Tinto, 2007). Therefore, additional research questions have been formulated to better understand this phenomenon and address the continuing problem of declining student retention rates in higher education.

Although various factors influence student retention in higher education, a deeper examination of the research surrounding this topic suggests that academic advising is an essential aspect of institutional success. Regardless of the institutional type or the composition of the student body, highly effective academic advising has an important impact on student persistence because students who are happiest and academically the most successful have developed a relationship with their academic advisor, a faculty member, or an administrator who can help them navigate the academic and social shoals of the institution (Drake, 2011). Because research studies provide evidence that indicates students who participate in academic advising have higher retention and persistence to graduation (Zarges et al., 2018) this study applies a narrow-lensed focus to examining the impact of academic advising on student retention rates. There is limited research on academic advising systems in higher education, specifically small private colleges. Therefore, further research is essential to expand understanding of academic advising and its measurable impact on personal and institutional aspects of student success.

Academic advisors serve in numerous roles ranging from mentor, advocate, mediator, and coach. Academic advisors first and foremost help students understand what courses to take, in what order, to obtain their degrees (Flaherty, 2023). Unfortunately, research indicates that many undergraduate students have not been advised on courses and course sequences required for graduation. This information comes from a key finding of *Inside Higher Ed* and College Pulse's recent Student Voice survey of 3,004 undergraduates about academic life, including advising and registration (Flaherty, 2023).

Institutions follow various advising models, including one in which students work with a professional advisor until they declare a major and then move on to a faculty advisor within their chosen field (Flaherty, 2023). At College, this model is not offered to students because professional advisors are non-existent. All advisors within the college's multiple divisions carry faculty status and must wear multiple hats due to the institution's small size. This differentiates advising efforts at small colleges like College from larger state universities and community colleges. A larger share (51%) of students at public institutions report having a professional advisor than do students at private institutions (40%); relatedly, some 53% of students at private institutions say they are advised by a faculty member in their academic program, compared to 33% at public schools (Flaherty, 2023). Regardless of institutional size, Locksley Knibbs, a governing board member of National Academic Advising Association (NACADA), says, "It's a core responsibility to teach

students how to navigate the curriculum and it is our main function, regardless of how many hats we're going to wear."

SIGNIFICANCE OF THE STUDY

There is a significant need to increase service quality, including heightening efforts to meet student expectations (Eresia-Eke et al., 2020) in the higher education sector. There has been a significant paradigm shift within the higher education profession and, therefore, the teaching and learning paradigm has created a need for advising programs to identify programmatic mission, goals, student learning, and advisor-delivery outcomes to implement strategies to measure those outcomes (Zarges et al., 2018). Assessment of academic advising practices related to student perception and satisfaction rates have been directly and indirectly linked to student retention rates. Advisors play a significant role in helping students identify a sense of belonging, which Tinto identifies as one of the primary influences in student persistence (Zarges et al., 2018). Student success, retention, and persistence to graduation are critical issues in higher education and deserve evidentiary support for resolving those issues.

The significance of the study led the researcher to develop the problem statement and the focus of relationships that are seemingly impactful to decreases in overall enrollment at small colleges and universities with limited resources. Once student retention was identified as a factor in overall enrollment growth, factors directly impacting student retention were reviewed. It was then that academic advising systems, which encourage students to identify issues affecting their academic progress (Mathew & Ibrahim, 2023), and students' perceptions of the value of those systems, were selected for research. This is significant because academic advising systems are not practiced only at college, but countless small colleges and universities around the globe. Therefore, the research collected and disseminated in this study could provide assistance and positive.

RESEARCH QUESTION

RQ: *Is there a relationship between students' ethnicity and students' perceptions of the value of the academic advisor at college?*

H_0: *There is no relationship between students' ethnicity and students' perceptions of the value of the academic advisor.*

H_1: *There is a relationship between students' ethnicity and students' perceptions of the value of the academic advisor.*

RESEARCH ANALYSIS

The purpose of this non-experimental quantitative research study was to determine if, and to what extent, there is a relationship between academic advising and student retention rates at college. Specifically, the goal of this study was to determine the perception of the value of academic advising and the impact it has on student retention rates at one small nonprofit college. The geographic location was Paragould, Arkansas. Eligible participants were students who returned to college during the fall semester immediately following their initial enrollment as first-time full-time undergraduate students as indicated on the institution's fall 2020, fall 2021, and fall 2022 census date enrollment reports. Only participants who completed the survey instrument and provided informed consent were included in this research. The researcher applied a non-experimental correlational research design to determine the relationship between the variables identified. The Likert-like scale survey instrument used as a method of assessment to collect the data for this study was pre-validated to obtain data from participants. All data was collected at the individual level while utilizing Google Forms. Spearman's Rank correlation was conducted with a sample size of 37.

TEST OF ASSUMPTIONS

The variables to be examined are rank-ordered and are ordinal. Therefore, Spearman's Rank correlation was selected as the appropriate data analysis for this experiment because the data supplied in this study passes the assumptions that (1) two variables are measured on a continuous and/or ordinal scale, (2) the two variables represent paired observations, and (3) there is a need for a monotonic relationship between the two variables (Laerd Statistics, n.d.). The following paragraph details a step-by-step process that showcases how each assumption was met.

The first assumption states that the two variables should be measured on an ordinal, interval, or ratio scale. An example of an ordinal scale is a Likert scale that rates survey answers from "strongly disagree" to "strongly agree". The Likert-like scale survey utilized in this non-experimental correlational research study provides ordinal variable data and thus aligns with first assumption. The second assumption is that the two variables represent paired observations. Originally, the researcher planned to perform a paired samples t-Test in SPSS to test this assumption. However, seeing that t-Tests are not appropriate for ordinal data because the data has no central tendency and therefore has no normal distribution, the values of the ordinal data would not be grouped around a midpoint, thus resulting in data outputs that have no statistical meaning. As a result, the researcher conducted a Wilcoxon signed-rank test using SPSS. The test results provided statistically significant information for each ordinal variable, including the Asymp. Sig. (2-tailed) value which is the *p*-value for the test.

The third assumption is that there is a monotonic relationship between the two variables being analyzed. The variables in the scatter plots provided in Appendix I showed a monotonic relationship among variables embedded in the research questions, meaning that as the value of one variable increases, so does the value of the other variable. Likewise, as one variable's value decreases, the other variable's value decreases. Therefore, the researcher analyzed the data using Spearman's rank correlational analysis.

Ranks

TABLE 1
SPEARMAN'S RANK CORRELATIONAL ANALYSIS

		N	Mean Rank	Sum of Ranks
My academic advisor gave me as much time as I needed when we met - My academic advisor was easy to get in touch with	Negative Ranks	1[a]	4.00	4.00
	Positive Ranks	7[b]	4.57	32.00
	Ties	29[c]		
	Total	37		
My academic advisor took a personal interest in me - My academic advisor encouraged me to come by for help	Negative Ranks	9[d]	7.44	67.00
	Positive Ranks	4[e]	6.00	24.00
	Ties	24[f]		
	Total	37		
My academic advisor offered time to express my feelings - My academic advisor offered time to express my thoughts	Negative Ranks	1[g]	1.50	1.50
	Positive Ranks	1[h]	1.50	1.50
	Ties	35[i]		
	Total	37		

		N	Mean Rank	Sum of Ranks
My academic advisor was a good listener - My academic advisor understood my cultural needs	Negative Ranks	2[j]	6.25	12.50
	Positive Ranks	7[k]	4.64	32.50
	Ties	28[l]		
	Total	37		
My academic advisor considered my family cultural issues - My academic advisor considered my personal abilities	Negative Ranks	8[m]	4.50	36.00
	Positive Ranks	0[n]	.00	.00
	Ties	29[o]		
	Total	37		
My academic advisor considered my interests when advising me about courses or programs of study - My academic advisor considered my talents	Negative Ranks	1[p]	3.00	3.00
	Positive Ranks	6[q]	4.17	25.00
	Ties	30[r]		
	Total	37		
My academic advisor helped me connect with campus resources on campus - My academic advisor assisted me in developing a long-term education plan	Negative Ranks	3[s]	3.00	9.00
	Positive Ranks	2[t]	3.00	6.00
	Ties	32[u]		
	Total	37		
My academic advisor helped me connect with the learning center on campus - My academic advisor helped me connect with extracurricular social groups on campus	Negative Ranks	1[v]	3.00	3.00
	Positive Ranks	7[w]	4.71	33.00
	Ties	29[x]		
	Total	37		
My academic advisor helped me make important educational decisions (selecting elective courses, exploring academic majors/minors, and balancing family, culture, and university) - My academic advisor helped me connect with counseling services on campus	Negative Ranks	0[y]	.00	.00
	Positive Ranks	15[z]	8.00	120.00
	Ties	22[aa]		
	Total	37		

a. My academic advisor gave me as much time as I needed when we met < My academic advisor was easy to get in touch with
b. My academic advisor gave me as much time as I needed when we met > My academic advisor was easy to get in touch with
c. My academic advisor gave me as much time as I needed when we met = My academic advisor was easy to get in touch with
d. My academic advisor took a personal interest in me < My academic advisor encouraged me to come by for help
e. My academic advisor took a personal interest in me > My academic advisor encouraged me to come by for help
f. My academic advisor took a personal interest in me = My academic advisor encouraged me to come by for help
g. My academic advisor offered time to express my feelings < My academic advisor offered time to express my thoughts

h. My academic advisor offered time to express my feelings > My academic advisor offered time to express my thoughts
i. My academic advisor offered time to express my feelings = My academic advisor offered time to express my thoughts
j. My academic advisor was a good listener < My academic advisor understood my cultural needs
k. My academic advisor was a good listener > My academic advisor understood my cultural needs
l. My academic advisor was a good listener = My academic advisor understood my cultural needs
m. My academic advisor considered my family cultural issues < My academic advisor considered my personal abilities
n. My academic advisor considered my family cultural issues > My academic advisor considered my personal abilities
o. My academic advisor considered my family cultural issues = My academic advisor considered my personal abilities
p. My academic advisor considered my interests when advising me about courses or programs of study < My academic advisor considered my talents
q. My academic advisor considered my interests when advising me about courses or programs of study > My academic advisor considered my talents
r. My academic advisor considered my interests when advising me about courses or programs of study = My academic advisor considered my talents
s. My academic advisor helped me connect with campus resources on campus < My academic advisor assisted me in developing a long-term education plan
t. My academic advisor helped me connect with campus resources on campus > My academic advisor assisted me in developing a long-term education plan
u. My academic advisor helped me connect with campus resources on campus = My academic advisor assisted me in developing a long-term education plan
v. My academic advisor helped me connect with the learning center on campus < My academic advisor helped me connect with extracurricular social groups on campus
w. My academic advisor helped me connect with the learning center on campus > My academic advisor helped me connect with extracurricular social groups on campus
x. My academic advisor helped me connect with the learning center on campus = My academic advisor helped me connect with extracurricular social groups on campus
y. My academic advisor helped me make important educational decisions (selecting elective courses, exploring academic majors/minors, and balancing family, culture, and university) < My academic advisor helped me connect with counseling services on campus
z. My academic advisor helped me make important educational decisions (selecting elective courses, exploring academic majors/minors, and balancing family, culture, and university) > My academic advisor helped me connect with counseling services on campus
aa. My academic advisor helped me make important educational decisions (selecting elective courses, exploring academic majors/minors, and balancing family, culture, and university) = My academic advisor helped me connect with counseling services on campus

Our research question asked: Is there a relationship between students' ethnicity and students' perceptions of the value of the academic advisor at college? The results of Spearman's correlation analysis revealed there was no statistically significant relationship between students' ethnicity and students' perceptions of the value of the academic advisor. [Contact $r_{s=}$ -.162, p = .337; Time $r_{s=}$ -.144, p = .394; Encouragement $r_{s=}$ -.163, p = .336; Personal Interest $r_{s=}$ -.013, p = .940; Interests in Programs $r_{s=}$ -.135, p = .426; Long Term Plan $r_{s=}$ -.144, p = .396; Campus Connection $r_{s=}$ -.173, p = .306; Extracurricular Activities $r_{s=}$ -.199, p = .237; Learning Center $r_{s=}$ -.172, p = .309; Counseling Services $r_{s=}$ .006, p = .972; Making Decisions $r_{s=}$ -.125, p = .462]. Therefore, the results fail to reject the null hypothesis because there is no significant correlation between students' ethnicity and students' perceptions of the value of the academic advisor at college.

CONCLUSION

This non-experimental correlational research study aimed to assess the relationship between academic advising and student retention rates at college. Specifically, this study aimed to review students' perceptions of the value of the academic advisor. It sought to determine if, and to what extent, there is a statistically significant relationship between the independent variables and student's perceptions of the value of the academic advisor at college. The four research questions, along with their hypotheses, drove this research with a focus on the bivariate relationship between student's perceptions of the value of the academic advisor (eighteen components: advisor contact, time, encouragement, personal interest, expressed thoughts, expressed feelings, cultural needs, good listener, personal abilities, family cultural issues, talents, interests in programs, long term plan, campus connection, extracurricular activities, learning center, counseling services, and making decisions) and the independent variables identified as quality of academic programs offered, students' religious affiliation, students' ethnicity, and students' athletic association (Abdulraham & Kasztelnik, 2023).

A bivariate correlation analysis was used to answer the four research questions. The validated assessment instrument used was a Likert-like scale survey administered via Google Forms. 37 eligible candidates participated in this study after providing informed consent. The research utilized the nonparametric Spearman's Rank correlation analysis to assess the relationship between the variables above. The results for RQ_3 revealed no statistically significant relationship between students' ethnicity and students' perceptions of the value of the academic advisor at college; therefore, the researcher failed to reject the null hypothesis associated with this research question.

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