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# Shaping choices: factors influencing Vietnamese high school students' transition to higher education

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## Abstract

This mixed-methods study explores the nuanced decision-making processes of Vietnamese high school students when choosing their education pathways after graduation. We utilize the Iloh Model of College-Going Decisions and Trajectories to examine the impacts of its three dimensions—Information, Time, and Opportunity—on students' higher education decisions. Our analysis of 3806 senior (12th grade) survey responses and 40 interviews reveals a strong preference for domestic 4-year universities and highlights the pivotal roles of all three dimensions in shaping college choices among students. In particular, our quantitative analysis demonstrates that advising resources, discussions with parents, participation in orientation sessions, and residential locations significantly impact students' higher education decisions. Moreover, our qualitative analysis uncovers additional influencing factors, including individual passions, anticipated career opportunities, academic preparation, and the desirability of learning environments. These multifaceted influences underscore the complexity of educational decision-making, which is intertwined with individual aspirations and broader socio-educational frameworks. These findings deepen our understanding of factors steering students' academic trajectories and underscore the need for nuanced educational policies and strategies that align with students' varied needs and aspirations, especially in centralized educational systems like Vietnam.

**Keywords** College choice · Higher education transition · Higher education pathways · College access · Vietnamese higher education

## Introduction

Embarking on life's journey leads individuals to pivotal crossroads that shape their futures, one of which is the choice of higher education pathways after high school graduation. Regarding higher education decisions, Daily et al. (2010) underscore four determinants: education, relationships, personal habits, and the perceived value of higher education; among which, career vision stands as the cornerstone, guiding the choice of a university. Consequently, the decision to pursue higher education resonates profoundly as it significantly impacts one's career path. This complexity has garnered significant

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Extended author information available on the last page of the article

scholarly interest in understanding the intricacies and considerations involved in this crucial decision-making process (Woodall et al., 2012).

In Vietnam, students' college decisions have been increasingly molded by the evolving demands of higher education, which now emphasizes a broader range of skills beyond traditional academic knowledge, including critical thinking, problem-solving, and adaptability (Conley, 2007). The National High School Examination (NHSE) stands as a pivotal juncture in the educational trajectory of Vietnamese students, serving a dual purpose that shapes their academic and professional futures. First, the NHSE is an annual, mandatory exam for high school graduation, encapsulating a comprehensive evaluation of students' knowledge and skills accumulated over their 12-year secondary education. Second, for students aspiring to further their education, the NHSE also functions as a critical gateway to higher education institutions (Nguyen, 2024). In the context of Vietnam's educational landscape, there are primarily two types of higher education institutions: (1) 4-year universities (*đại học*) and (2) 2-year colleges (*cao đẳng*).

The competitive nature of the NHSE is profound and well-documented (Goyette, 2012; Nguyen, 2024). This competitiveness can be partly attributed to the rigorous subject clusters encompassed in the exam, such as Mathematics, Physics, and Chemistry (A cluster) or Literature, History, and Geography (C cluster) (General Assembly of Vietnam, 2018; Ministry of Education and Training of Vietnam, 2024a). Furthermore, because the Vietnamese higher education system was heavily influenced by the Soviet and French models, it has a prevalence of specialized universities tailored to specific fields, such as the Banking Academy of Vietnam, Foreign Trade University, and Hanoi University of Science and Technology (Le et al., 2021; Tran, 1999; Vuong et al., 2019). This specialization necessitates that students not only prepare extensively for the NHSE but also make strategic decisions about their subject cluster choices based on their future educational and career aspirations.

Additionally, the NHSE transcends its academic dimensions, holding significant social and cultural weight in Vietnam. It is not just an examination but a societal event that garners widespread attention and discussion among educators, families, and the media (Nguyen, 2021, 2023). The exam period is often marked by heightened societal focus, with community support and media coverage reflecting the collective acknowledgment of its importance. This phenomenon underscores the examination's role not only as an educational milestone but also as a cultural and social barometer, reflecting broader societal values and expectations placed on the youth (Van Le & Tran, 2024). As such, the NHSE is symbolic of both the aspirations and the pressures faced by young Vietnamese, encapsulating the intersection of education, societal expectations, and cultural norms in shaping the futures of the nation's youth (Le et al., 2021).

Despite the wealth of studies on the higher education decision-making process, a notable gap exists in understanding how this process unfolds within the Vietnamese context, particularly in light of the unique challenges the NHSE poses. In particular, the existing literature often overlooks the intricate interplay between a nation's educational policies and cultural nuances vis-à-vis the individual student's decision-making process. This interplay becomes even more critical in Vietnam, where educational choices are deeply intertwined with societal expectations and the rigorous demands of the NHSE (Le et al., 2021; Van Le & Tran, 2024).

This study aims to fill this gap by investigating the specific factors Vietnamese senior students (12th graders) contemplate when choosing their higher education pathways, especially considering the unique academic, societal, and cultural pressures they face. The study addresses two fundamental questions:

**RQ1:** What paths do Vietnamese high school seniors pursue after graduation?

**RQ2:** What factors influence the higher education decisions of Vietnamese high school seniors?

The significance of this study lies in its potential to offer insights into the nuanced decision-making processes of students within a highly centralized education system, advancing a more international and diverse understanding of educational choices. By empirically investigating educational decision-making in the Vietnamese context, the research contributes to broadening postsecondary education research beyond predominantly Western-centric perspectives. The study challenges existing theoretical frameworks by demonstrating how cultural, socioeconomic, and systemic factors uniquely shape student choices in different contexts. These insights are invaluable for educators and policymakers in Vietnam and other countries with similar educational structures seeking to understand and support their students' educational journeys more effectively, providing a robust methodological approach to understanding students' educational journeys.

## Literature review

Extensive research on high school students' transition to higher education has shown that the process of students choosing colleges involves a complex interaction of various factors (Daily et al., 2010; Hossler et al., 2020). Among these, five primary factors are particularly important in understanding this decision-making process: (1) socioeconomic status, (2) academic readiness and achievement, (3) cultural and social influences, (4) access to colleges, and (5) personal motivations and objectives.

### Socioeconomic factors

Students' socioeconomic status (SES) substantially impacts their college choices. Several studies emphasized the influence of family wealth, parental education levels, and resources on students' probability of pursuing higher education (Cabrera & La Nasa, 2001; Hossler & Stage, 1992; Iacopini & Hayden, 2017). Financial limitations frequently provide significant obstacles for low-income households, hindering their access to high-quality education, educational resources, and necessary support networks. These limitations may compel students to prioritize their urgent financial requirements above investing in higher education (Kezar, 2009). In contrast, families with higher SES generally provide a more advantageous setting for achieving educational goals (Álvarez-Rivadulla et al., 2022). For example, they can offer both financial security and access to additional resources essential for academic success, such as private tutoring, specialized courses, and stimulating extracurricular activities (Song & Tan, 2024). This advantageous environment equips students with a stronger academic profile, increasing their likelihood of acceptance into prestigious higher education institutions (Wei et al., 2019).

### Academic preparedness and achievement

Academic performance and preparedness stand as pivotal determinants that profoundly influence students' higher education decisions (Flippo & Bean, 2018; Trusty et al., 2000). High school grades, standardized test scores, and educational aspirations are robust

indicators of a student's inclination to pursue higher education. These metrics reflect students' academic capabilities and mirror their commitment to academic excellence and future goals (Geiser & Santelices, 2007; Yu & Kuncel, 2018).

In test-based education systems like those in China, South Korea, and Vietnam, the emphasis on high-stakes exams—such as *Gaokao* (China), *Suneung* (South Korea), and NSHE (Vietnam)—further accentuates the role of academic preparedness in higher education enrollment. In these countries, performance on these exams often plays a decisive role in determining university admission, making academic preparedness beneficial and essential for students aspiring to higher education. Studies from these countries highlight the intense focus on exam preparation and its significant influence on students' educational trajectories and college choices (Bao & Cho, 2022; Muthanna & Sang, 2016; Rawat, 2020).

### **Cultural and social influences**

Cultural and social influences play a crucial role in shaping students' readiness and choices regarding higher education (Bell et al., 2009; McDonough, 1997). Under Confucian cultural influence, which prioritizes the authority of senior family members in major decision-making processes, Vietnamese parents assume a critical, even decisive, role in shaping their children's choice of university (Iacopini & Hayden, 2017). The influence of familial expectations, peer pressure, and community norms can serve as motivating factors or act as deterrents in a student's journey toward higher education attainment (Dearden et al., 2017; Perna & Titus, 2005). Additionally, racial and ethnic backgrounds intersect with these cultural factors, further complicating the decision-making process for college attendance (Hossler et al., 2020). For instance, in Chicana communities, where family unity is highly valued, students might prefer institutions closer to home to maintain familial connections (Ceja, 2006), whereas Asian students often experience a strong cultural emphasis on educational achievement, where success in higher education is seen as a crucial aspect of family honor and success (Zhou & Kim, 2006).

### **College access and information**

Access to information about college options, financial aid, and personal motivations are also influential factors affecting college enrollment decisions (Chapman, 1981; McPherson & Schapiro, 1991). Students with comprehensive information and guidance on various college options, financial assistance opportunities, and application procedures are more likely to embark on higher education pathways (Dynarski & Scott-Clayton, 2013; Verghese & Kamalanabhan, 2015). Furthermore, the availability of rigorous coursework and competent guidance counselors in high schools plays a fundamental role in shaping students' readiness for college (Piepenburg & Fervers, 2022; Tieken, 2016). These factors not only aid in academic preparation but also provide crucial guidance in navigating the complex college application process.

Geographic location plays a key role in access to higher education in Vietnam, particularly due to significant urban–rural disparities (Nguyen, Nguyen, 2024). Rural students face several systemic disadvantages compared to urban students: limited access to information about college options, fewer resources at their schools, and less encouragement from parents (Nguyen, 2024). These challenges make it harder for rural students to navigate college applications and can dampen their educational aspirations. They also face unique barriers

like family responsibilities and financial pressures that make accessing higher education even more difficult (Nguyen, 2021, 2024).

## Personal motivation and goals

Personal motivations, aspirations, and perceived benefits of higher education significantly influence students' decisions to pursue college (DesJardins et al., 2019; Lent et al., 1994). Individuals driven by intrinsic motivations, such as a passion for learning, career aspirations, and personal development goals, are more inclined to pursue higher education despite potential obstacles or challenges (Eccles & Wigfield, 2002). Understanding these multifaceted influences aids in devising targeted interventions and support systems that foster greater access and equitable opportunities for all students seeking higher education.

Despite this extensive research on students' decision-making processes, significant gaps remain. Specifically, research focused on developing countries has been very limited—with notable exceptions being studied by Aleshkovski et al. (2020) and Silwal and Baral (2021). In particular, there is a paucity of research on this topic within the Vietnamese context. Vietnam's unique position at the crossroads of modern secularism and enduring Confucian values presents an important yet underexplored context for examining the determinants of college choice among students. Furthermore, existing studies have predominantly employed a single methodological approach. Meanwhile, our study adopts a mixed-methods approach, integrating statistical analyses with in-depth personal accounts, thereby providing a more comprehensive understanding of how Vietnamese students navigate their educational and career choices. Our approach addresses the urgent need for contextually and culturally relevant insights, contributing both theoretically and methodologically to the global discourse on higher education.

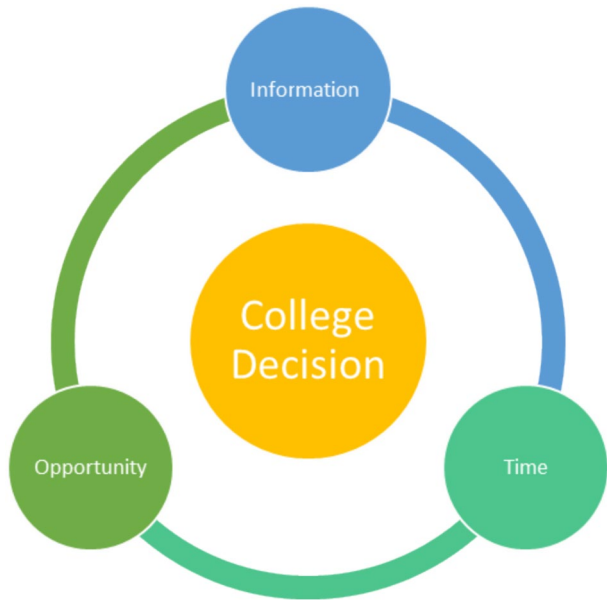
## Theoretical framework

Constance Iloh's (2019) College-Going Decisions and Trajectories framework offers a comprehensive approach to understanding higher education decisions. This framework has been instrumental in analyzing how students from diverse backgrounds—varying in socioeconomic status, race, and academic majors—navigate their educational pathways (e.g., Bettencourt et al., 2022; Emmanuel, 2023; Iloh, 2021). The framework identifies three essential dimensions: Information, Time, and Opportunity (see Fig. 1).

The first dimension, Information, plays a vital role in a student's college choice as it focuses on the nature, quality, volume, and dissemination of information critical to college decision-making and pathways. This dimension considers the distinct qualities of general and/or institutional college information, alongside advice and cautions received. The information dimension also considers the context and source of information and how it coexists and interacts with the other two dimensions in essential ways.

The Time dimension is fundamental to understanding students' college-going decisions and trajectories. Time is a continuum that encompasses simple to more complex forms. This ranges from measuring someone's age to observing "macro-time," which refers to societal changes in education-related expectations (Iloh, 2019, p. 6). It serves to anchor our understanding of an individual's life phase at the time of higher education decision-making. This aspect probes into the individual's age, family circumstances, and significant life events, emphasizing how these temporal factors collectively shape educational pathways.

**Fig. 1** College decisions framework (adapted from Iloh, 2019)



The Opportunity dimension explores how resources and constraints influence individuals' paths to higher education. It looks at social and cultural capital's role and the advantages of available support resources in shaping the college selection process. This aspect highlights the important relationship between an individual's access to supportive networks and resources and their educational decisions and opportunities.

The coexistence and interaction of the Information, Time, and Opportunity dimensions are crucial within the framework. These dimensions do not operate in isolation but are interwoven, influencing and being influenced by one another. Information is shaped by the temporal and opportunity contexts within which decisions are made. Similarly, the perception and utilization of time are influenced by the information available and the opportunities that can be accessed. Opportunities, in turn, are identified, evaluated, and leveraged based on the information at hand and the time-specific circumstances of individuals. This dynamic interplay ensures that the college-going process is a multifaceted and profoundly contextual experience, reflecting the complexity of individual life situations and societal structures.

The Iloh framework has been applied in various contexts, particularly in countries with test-based higher education systems or those influenced by Confucianism, similar to Vietnam. For example, several studies conducted in China and South Korea have borrowed the Iloh framework to explain the intense preparation process leading to the college entrance exam, significant societal pressure, and familial expectations that shape students' decisions (Lee & Stewart, 2022; Li, 2020; Stewart, 2020, 2021). In addition, studies in Russia and Nepal, whose educational systems are centralized and test-based like Vietnam, have also used Iloh's Information, Time, and Opportunity dimensions to explore the societal emphasis on education for social mobility (Aleshkovski et al., 2020; Silwal & Baral, 2021). Research in these countries demonstrates the relevance of Iloh's framework across diverse educational contexts.

Vietnam's educational landscape, characterized by the pivotal NHSE, necessitates the application of the Iloh Model to understand students' higher education choices. Because the NHSE serves as both a high school graduation exam and the primary gateway to higher education institutions, information about exam preparation, college options, and career pathways—the Information dimension—is crucial for students (Nguyen, 2023). The timing of the NHSE (annually toward the end of the senior year) also dictates students' academic and professional futures, with immense societal pressure to perform well. This pressure is compounded by the expectation to choose a major and career path early (Nguyen, 2024; Nguyen & Tran, 2017), reflecting the significant role of the Time dimension. The Opportunity dimension highlights the disparity between urban and rural educational resources in Vietnam. Urban students have better access to information, tutoring services, and extracurricular activities, while rural students often seek higher education to “escape” socioeconomic conditions (Nguyen, 2021, 2023, 2024). The Iloh Model accommodates the complex interplay between societal expectations, cultural norms, and individual aspirations that have been observed in the Vietnamese educational context. Applying this framework throughout the conceptualization, data analysis, and interpretation process of the study, we explore and explain how Vietnamese students leverage information, manage time constraints, and navigate the opportunities and challenges presented by the NHSE and societal pressures.

## Methodology

This study was part of larger mixed-methods research conducted in greater Hanoi, Vietnam, from late 2016 to early 2017 (Nguyen, 2021, 2023, 2024). The data collection coincided with a transformative period in Vietnam's educational system. In 2015, the Ministry of Education and Training (MOET) made a significant change by combining the high school graduation and university entrance exams into a single NHSE (Ministry of Education and Training of Vietnam [MOET], 2014, 2015). While newer data may reveal additional insights, the patterns observed during this period remain relevant today. Recent MOET reports (2024b) indicate that key trends persist—including student preferences, geographic disparities, and the importance of national exam results—with NHSE scores continuing to determine 50% of university admission quotas. This period captured fundamental changes in higher education that influence current practices. By focusing on this critical timeframe, our dataset allows a comprehensive analysis of students' decision-making processes, revealing broader patterns in Vietnam's education system.

## Research design

A mixed-methods design refers to research that entails the collection, analysis, and interpretation of both quantitative and qualitative data within a single study or across a series of studies exploring the same core phenomenon (Creswell & Creswell, 2017). In this study, we adopted this approach to gain more insights into our research questions, ultimately striving for a comprehensive understanding of higher education decisions among Vietnamese high school seniors. To achieve this goal, we employed the convergent parallel design wherein both qualitative and quantitative data were gathered concurrently and independently analyzed before merging them during the integrative phase (Creswell & Plano Clark, 2017). This design allowed us to effectively collect a large amount and wide range



of data within a limited time during fieldwork. It also provided us an opportunity to analyze quantitative and qualitative data separately before interpreting their results together, developing a nuanced understanding of the topic.

### Research site, sampling, and data collection

Hanoi was particularly chosen as the research site because of its diversity in geographic regions, which has strong indications for college access (Nguyen, 2021, 2024). The Vietnamese MOET divides Hanoi into three regional categories: “Region 1” encompasses remote, mountainous, rural districts, and communities; “Region 2” represents suburban areas and towns; “Region 3” comprises all urban districts (MOET, 2016). This unique site allowed us to simultaneously explore multiple socioeconomic, cultural, personal, and geographical factors affecting students’ higher education decisions. This diversity reflects Vietnam’s pronounced urban–rural disparities in access to education, as rural students face systemic challenges, such as lower socioeconomic status and limited resources, compared to their urban peers (Nguyen, 2024).

Before starting, the study received Institutional Review Board (IRB) approval from the principal investigator’s institution in the United States and an official letter of support from the MOET-Hanoi Office. A stratified sampling technique was employed to select participating schools. Initially, using a list of high schools and districts provided by the MOET, ten districts covering all three designated regions in Hanoi were identified. Then, 12 high schools within these districts (3 rural, 4 suburban, and 5 urban) were randomly selected and invited to participate in the study via mail, phone, and in-person recruitment visits. All 12 school leaders agreed to participate and provided the necessary consent and permissions for us to carry out the study at their schools.

Data collection at each school was completed within a day. At the beginning of each visit, a paper-based survey was distributed to *all* senior-year students (12th graders) who were present at the school that day. A total of 4182 surveys were collected at all research sites (91.9% response rate).<sup>1</sup> The survey asked students to provide information about their background, their plans for higher education, and the factors that either motivated or discouraged them from pursuing further education. After taking out surveys failing to meet the stringent criteria ensuring the integrity of the research (e.g., incomplete responses, missing answers to questions on postsecondary educational and career paths), the final number included in our analysis was 3806.

A sign-up sheet was passed along with the survey for any students who wanted to participate in the follow-up interview round. From this sign-up sheet, students were randomly recruited and interviewed either in person on the same day or by phone the next day. In some cases, students who expressed their strong desire to participate in the study or were recommended by their teachers or principals were also recruited. Ethnographic semi-structured interviews were conducted between 45 min to an hour in Vietnamese and either individual or group interview format, depending on participants’ preference. In total, there

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<sup>1</sup> There were approximately 189,456 high school students in Hanoi between 2015 and 2017 (General Statistics Office of Vietnam, n.d.). Based on this population size, the minimum required sample size, calculated using the finite population correction formula, is 384 (Cochran, 1977; Sagra, 2021). Our sample size significantly exceeds this requirement, ensuring a high level of statistical reliability and representativeness for our study’s objectives. Moreover, focusing exclusively on senior students enhances the relevance and specificity of our findings.

were 12 individual and 7 group interviews with 40 students.<sup>2</sup> These interviews centered on students' backgrounds, higher educational plans, and the rationales driving their choices.

## Data analysis

### Quantitative data analysis

To examine the students' college readiness, we focused on the following survey question: *Do you plan to apply to a college/university in your senior year?* Students' answers were coded 1 = Yes, 0 = No in the outcome variable. To further understand student college choice, students who decide to go to college will be asked two additional questions: (1) *Where do you want to pursue higher education?* (Vietnam or abroad) and (2) *What type of college/university are you planning to apply to?* (4-year university or 2-year college).

We used three logistic mixed-effects regression models, with students' GPA as the control variable (continuous), to understand students' college decisions (outcome variable—categorical) and the predictors based on each dimension mentioned in the framework. We opted to use the mixed-effects model instead of the standard logistic regression model to account for the nested structure of students under schools. Drawing on Iloh's (2019) framework, we sequentially included each of the three dimensions in our models. In particular, Model 1 consists of the control variable and Information dimension predictors. Model 2 extends Model 1 by adding Time dimension predictors. Model 3 further enhances Model 2 by incorporating Opportunity dimension predictors, creating a comprehensive analytical framework.

**Dimensions** Information dimension: (1) Amount of advice sources that the student receives (continuous), as well as the student's frequency of discussion (categorical) with their (2) parents, (3) siblings, (4) relatives, (5) peers, (6) teachers, and (7) school principal about their higher education plans. Time dimension: (8) Student's family income (categorical), (9) student's father's job (categorical), (10) student's mother's job (categorical). Opportunity dimension: (11) Student's gender (categorical), (12) student's residential region (categorical), and (13) student's frequency of participation in orientation programs (categorical).

**Logistic mixed-effects regression models** This model accounts for both the variance of sampling from the Vietnamese high school student population and the clustering of students under schools. Define  $\beta_0$  as the intercept,  $\beta_k$  as the fixed-effects coefficients (shown in Table 1),  $u_j$  as school  $j$ 's random effect, and  $\epsilon_{ij}$  as the residual error. The probability of student  $i$  from school  $j$  going to college is.

$$\text{logit}(p_{ij}) = \beta_0 + \sum_{k=1}^K \beta_k X_{ijk} + u_j + \epsilon_{ij}.$$

**Handling missing data** To tackle missing data, we conducted comprehensive checks for data patterns and performed a series of analyses to test the robustness of our assumptions

<sup>2</sup> Although the larger dataset included interviews with teachers and school leaders, in this study, we decided to use only student interviews to home in our focus on students' higher education choices.

**Table 1** Logistics regression analysis results

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
Intercept	− 6.831*** (0.984)	− 7.155*** (1.005)	− 8.438*** (0.996)
GPA	1.102*** (0.116)	1.064*** (0.118)	1.036*** (0.119)
Number of helpful advice sources	0.219*** (0.041)	0.222*** (0.041)	0.208*** (0.041)
Frequency of education plan discussion with			
Parents	0.331** (0.104)	0.294** (0.106)	0.274* (0.106)
Siblings	0.061 (0.083)	0.065 (0.084)	0.056 (0.084)
Relatives	0.089 (0.092)	0.081 (0.093)	0.074 (0.093)
Peers	− 0.042 (0.096)	− 0.054 (0.096)	− 0.059 (0.099)
Teachers	0.028 (0.104)	0.044 (0.104)	0.033 (0.105)
Principal	− 0.119 (0.085)	− 0.114 (0.086)	− 0.161 (0.088)
Family's income		0.070 (0.082)	0.052 (0.082)
Father's job		0.025 (0.129)	0.022 (0.131)
Mother's job		0.284* (0.132)	0.283* (0.134)
Female <sup>^</sup>			0.096 (0.169)
Region 2—suburban <sup>+</sup>			1.648*** (0.451)
Region 3—urban <sup>+</sup>			1.556** (0.481)
Orientation participation			0.240** (0.076)

Compared to <sup>+</sup>Region 1—rural, <sup>^</sup>Male

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

about missing data mechanisms. In particular, we first did Little's (1988) test and ruled out that our data was missing completely at random (MCAR). We continued with the assumption that the data is missing at random (MAR) based on Schafer (1997) and used the Multiple Imputation by Chained Equations (MICE) approach to handle MAR, as it can offer flexibility in modeling (Rubin, 1987; van Buuren, 2007).

To ensure the robustness of our findings, we compared the model results on imputed data using three methods: the classical parametric MICE, MICE with Classification And Regression Trees (CART), and the dual imputation method (Jolani et al., 2014). The classical parametric MICE method uses predictive mean matching, logistic regression, and proportional odds models for numeric, binary, and ordered categorical data, respectively. Meanwhile, MICE with CART is nonparametric and can account for nonlinearity and interactive effects, making it robust to outliers and complex data (Doove et al., 2013). Finally, the dual imputation method combines the ease of use from MI and the robust protection from the doubly robust method, in which estimations can be asymptotically correct, even if the outcome model of interest or the missingness mechanism is misspecified (Bang & Robins, 2005; Jolani & van Buuren, 2014).

Under each of these methods, we created five different imputed datasets and pooled the model results on these datasets using Rubin's (1987) rule. Overall, we found that our conclusions stay consistent across different imputation methods, so we only reported results from the dual imputation method, which is the most robust against violations of assumptions, in Table 1. Finally, based on Robins et al. (2000), we performed a sensitivity analysis to confirm the robustness of our MAR assumptions and, consequently, our findings.

## Qualitative data analysis

Audio-recorded interviews were first transcribed in Vietnamese by a professional transcriber. Then, data were coded inductively and deductively by our research team using MAXQDA 24, a data analytical software. Coded data were then analyzed using the thematic analytical approach (Braun & Clarke, 2012). First, following our research questions, we conducted open coding to delve into prominent themes concerning factors impacting students' educational decisions. Then, drawing on our theoretical framework, we renamed these codes and reorganized them into three major elements—Time, Opportunity, and Knowledge—to conceptually analyze our codes and themes. At this stage, we noted major themes emerging from (re)coding and (re)categorizing process. To ensure the credibility and trustworthiness of our qualitative data analysis, the second and third authors independently conducted open coding before merging their initial codes and categories. Discrepancies between their analyses were addressed through frequent discussions with the fourth author (the field researcher), who conducted all interviews and fieldwork for this project. Together, they resolved differences, refined the codes, and interpreted the data, integrating both the theoretical framework and the contextual nuances observed in the field. These discussions enhanced the triangulation of interpretations from the transcripts, maintaining credibility and trustworthiness throughout the analytical process.

After finalizing the themes, we selected interview excerpts that best illustrate and/or explain each theme. The excerpts were then translated into English by our research team of five Vietnamese native speakers with full professional proficiency in English. Our team held bi-weekly meetings and regular discussions throughout the analytical and writing process to ensure the accuracy and integrity of the translation.

After completing the qualitative analytical phase, we thoroughly examined and compared the qualitative themes with the statistically significant findings identified in the quantitative analytical phase. This process aimed to identify any corroborating or contrasting patterns between the two research methods. By integrating these findings, we were able to develop a nuanced and comprehensive understanding of the factors influencing students' higher education decisions.

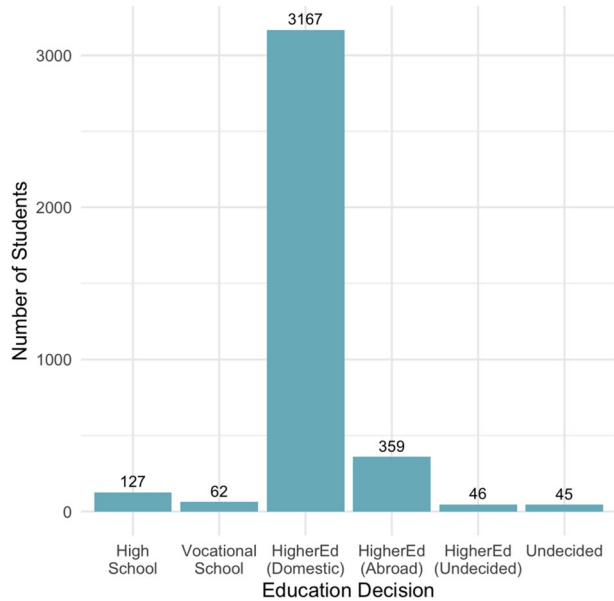
## Findings

We are presenting our findings in two parts: (1) answers to the first research question regarding students' higher education decisions from both quantitative and qualitative data and (2) findings in accordance with the three dimensions of Iloh's (2019) framework—Information, Time, and Opportunity—to address the second research question. We will also introduce and discuss new elements from our qualitative data, highlighting our theoretical and empirical contributions.

### Students' higher education decisions

Among 3806 senior students' survey responses included in this study, the vast majority—93.9% ( $N=3572$ )—indicated their intention to pursue higher education; meanwhile, only 6.1% ( $N=234$ ) opted against it. Specifically, 3.3% ( $N=127$ ) of students

**Fig. 2** Students' higher education decisions



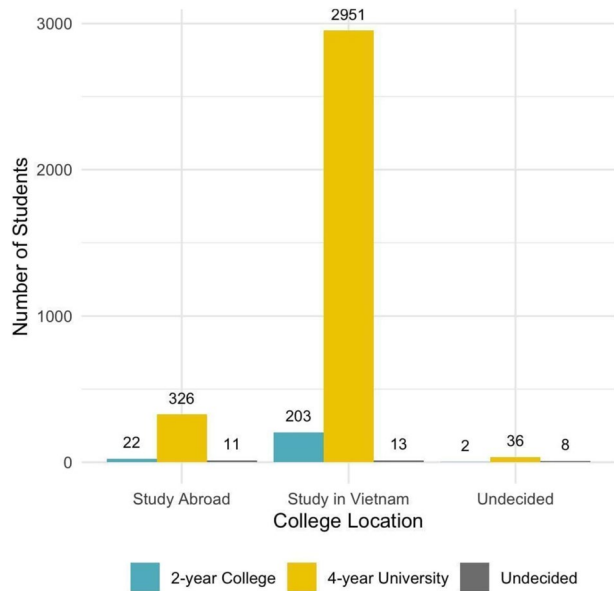
chose to conclude their education at high school, and 1.6% ( $N=62$ ) opted for vocational school. A small portion, 1.2% ( $N=45$ ), remained undecided about their college plans (see Fig. 2).

Delving deeper into the preferences of college-bound students, it was found that 88.7% ( $N=3167$ ) preferred to enter college in Vietnam, whereas only 10.1% ( $N=359$ ) chose to study abroad. Among 3167 students opting for domestic higher education, a substantial 93.2% ( $N=2951$ ) were inclined toward 4-year universities, with only 6.4% ( $N=203$ ) choosing 2-year colleges. Similarly, among 359 students choosing international higher education, a significant majority, 90.8% ( $N=326$ ), selected 4-year universities, while 6.1% ( $N=22$ ) preferred 2-year colleges. Only a small fraction, 1.3% of students ( $N=46$ ), remained undecided about their higher education decisions (see Fig. 3).

Similar to quantitative results, qualitative findings revealed four educational pathways: (1) 4-year university in Vietnam, (2) 2-year college in Vietnam, (3) college abroad, and (4) not going to college. Among students who decided to study in Vietnam, most interviewees shared that they would like to attend a 4-year university program (*đại học*). Meanwhile, a few expressed a keen interest in enrolling in a 2-year college (*cao đẳng*) or a vocational school (*trường nghề*) where they could acquire specific skills (e.g., working in a machinery factory or becoming a craftsman) and make money right away.

For those who planned to study abroad, some interviewees did not indicate a clear plan of either attending a 4-year university or a 2-year college. For them, studying abroad is their ultimate goal, regardless of the college type. Most of these students were from financially privileged families in urban areas. They showed a keen interest in exploring novel educational systems, experiencing modern lifestyles and new cultures, and developing skills in foreign countries. For instance, Huy<sup>3</sup> expressed that his parents just want him to

<sup>3</sup> All names of participants are pseudonyms.

**Fig. 3** Students' college choice by location and type

study abroad at any college in Western countries. Notably, those with siblings pursuing education in foreign lands tended to follow a similar path. For example, Thao and Hong said “I decided to go to college in Australia since my brother is studying there” and “I loved the Australian atmosphere and lifestyle when I visited my brother there, so I decided to apply to the University of Wollongong. My family also supports my choice, and we are preparing for my studies this year,” respectively. Students’ plans to attend college in a foreign country were also influenced by their relatives, for example, Huy stated “I have decided to study in Japan right after high school since I have lots of relatives there.” Similarly, Long shared, “My uncle wants me to study in France and live with his family, but I opted for the U.S. since I have more relatives there.”

Many students who decided not to pursue higher education cited concerns about their academic preparedness to pass the NHSE. For example, Xuan said: “I am afraid that I am unable to take the test.” Notably, a few indicated their preference for entering the workforce immediately due to a lack of motivation to continue with higher education. This tendency was observed among students who lived in rural areas, had financial difficulties, or lacked parental support.

### Factors influencing students' higher education decisions

Using logistic regression, we identified and analyzed factors impacting students’ college decisions indicated in the quantitative survey. In our logistic regression models, we created dummy variables for each category within the Gender and Region variables to facilitate more meaningful comparisons. Concerning the Region variable, Region 2 denoted students residing in suburban areas, while Region 3 represented students living in urban areas (see Table 1).

With a comprehensive understanding of the logistic regression results established, we may now advance our analysis to elucidate the relationships between these factors and

the three dimensions that intricately mold student trajectories toward college enrollment: Information, Time, and Opportunity (Iloh, 2019).

## Information

Our logistic regression models revealed that the Information dimension played a pivotal role in shaping students' higher education decisions, most notably, the number of advice sources students receive and the frequency of their communication with parents and peers. Specifically, a higher number of advice sources significantly increased the likelihood of students enrolling in college ( $p < 0.001$ ). Furthermore, more frequent communication with parents enhanced these chances ( $p < 0.01$ ). However, it is noteworthy that the frequency of discussions with peers, siblings, relatives, teachers, and principals did not significantly influence students' decisions.

Our qualitative analysis revealed that students sought information from their parents, peers, siblings, relatives, and teachers as sources to make their decisions. Similar to quantitative findings, parents had a significant influence on students when it came to (1) making college decisions—for instance, Yen shared, “My parents encourage me to apply to college based on my academic performance”; (2) choosing a major—Kim and Hong, for example, recalled “Since my childhood, my parents have steered me toward becoming a doctor or a police officer” and “My mother sees the potential in a teaching career thanks to its stability, attractive salary, and allowance for family commitment,” respectively; and (3) determining their future trajectory—as noted by Kim: “My parents have given me the freedom to choose any field of study, provided that it offers competitive job opportunities in the future.” In some cases, parents explicitly prescribed to students which major to study, which university to apply to, and what job to take upon graduation. Other sources of information, including peers, siblings, and relatives, were mentioned, but they were not as significant as parents.

Although our quantitative analysis demonstrated that the frequency of discussions with teachers and principals did not statistically impact students' college decisions, several students mentioned that school was their primary source of information regarding (1) major selection—for example, Duc stated, “Initially, I considered applying for a foreign language major. However, my teacher recommended foreign trade, which combines economic knowledge and language skills, two essential components for a competitive job in the future”; (2) exam preparations—as revealed by the majority of students, especially Long said: “All teachers at my school are not only knowledgeable but also dedicated and caring. They support us daily in our studies and exam preparations. Their dedication and support greatly enhance our knowledge and skills”; and (3) career advice—for example, Duc and Thi mentioned that they typically discuss future careers with their teachers as “My teachers are always willing to provide guidance on selecting suitable careers and universities, based on our potential and performance.” In addition, a significant information source that we discovered from our qualitative analysis was the higher education orientation sessions. Phuong articulated: “School leaders and teachers often invite representatives from local universities to help us make informed decisions about higher education. These representatives share information about the majors their universities offer and their admission requirements.” These sessions may present as part of both the Information and Opportunity dimensions. Within the former, they make up a source of information about different colleges, majors, and careers; whereas in the latter dimension, these sessions present access to information for better decision-making.

## Time

Within the Time dimension, our statistical analysis revealed that the mother's occupation significantly and positively affected these choices ( $p < 0.05$ ). Students with mothers engaged in high-skilled occupations exhibit a heightened inclination to opt for college enrollment. In contrast, the father's occupation and family income did not emerge as a statistically significant determinant.

These quantitative results were further explained by the qualitative findings. Interviews with students revealed that they were deeply affected by their parents' jobs, which were often referred to as their models and road maps for career aspirations. For example, as recalled by Thi, "I wish to study law and accounting because these are my parents' professions." However, there was no clear tendency across all interviews as to whether students are more influenced by their mothers or fathers.

Although family income was not a statistically significant determinant of college enrollment in our quantitative analysis, some students mentioned their families' financial circumstances in our interviews. They expressed the will to study hard and secure a well-paid job to support their family in the future. For instance, Phuong shared, "I am determined to enter the School of Medicine to become a doctor and aid my family's health." Furthermore, most parents expected that their children would have stable and well-paid jobs after graduation. However, it is worth noting that parents working in manual labor jobs tended to show little or no interest in their children's college choices, as claimed by Duc, "My parents are street vendors and they don't place much emphasis on pursuing a specific field of study or higher education. They guide me toward valuing freedom and independence." Ha also shared: "My family lives in a village. All three of my siblings are attending schools, so my parents are unable to afford my higher education. Thus, I decided to work for a few years to save money for college." Family socioeconomic backgrounds, therefore, matter greatly to low-income students in choosing their postsecondary educational pathways.

## Opportunity

Our quantitative analysis revealed that students' residential location and participation in orientation programs are key determinants of the Opportunity dimension. Specifically, students residing in suburban and urban areas demonstrated a higher propensity for college enrollment compared to their rural counterparts. Additionally, students actively engaging in orientation programs were more likely to choose to enter college ( $p < 0.01$ ). In our quantitative analysis, gender did not have a significant impact on the college-going decisions of students.

In alignment with the quantitative results, the qualitative findings showed that students' decisions to attend college were independent of their gender. Additionally, orientation events organized by schools were extremely informative in helping students to make informed choices about college. As disclosed by Phuong, "Orientations were usually conducted biannually, starting from the 10th or 11th grade. Information from teachers and school representatives helps us to choose suitable majors and levels." These orientation events provided them with exhaustive knowledge about the strengths of various colleges, enrollment procedures, eligibility criteria, and major prerequisites.

In our interviews, rural students who planned to continue their education expressed a desire to attend colleges in urban, developed areas in order to "escape" (*thoát ly*) their rural



hometowns. Some aimed for greater independence from their families, the acquisition of diverse skills, and the exploration of new places and lifestyles. For instance, Tu expressed, “I chose construction because I want to live away from my family, explore new places, and develop more skills.”

One component of the Opportunity dimension that was discovered in our qualitative analysis, but not in the quantitative findings, was the after-school tutoring classes organized by principals and teachers in schools. These classes were commonly mentioned by those who attended non-urban schools. They explained that the after-school tutoring program was an initiative by the school leaders to bridge the opportunity gap. Held after school hours, these classes aimed to supplement students’ content knowledge and prepare them for recent changes in the NHSE. As noted by Ha, “Extra classes are typically divided by subject areas, including social and natural sciences. Since I struggle with Math and English, I registered for these two classes to better prepare for my exam.” This initiative was done to ensure a level playing field for students from disadvantaged regions and backgrounds.

### **Influential factors beyond the Iloh Model**

Our qualitative analysis also revealed additional factors influencing Vietnamese students’ higher education decisions that are not included in Iloh’s (2019) Model of College-Going Decisions and Trajectories. These factors encompassed students’ passions and characters, future job opportunities, knowledge preparation, and learning environments. First, students’ decisions to attend college were significantly shaped by their passions and in alignment with their character traits. For example, Diem recalled: “I made decisions on my own, based on the books I read and my hobbies.” Similarly, Hong said: “I have not yet decided on my field of study. I plan to first consider my future career goals and my passion, then identify schools that offer programs in this field. At present, I am inclined toward marketing.” Many students chose the colleges and fields of study that resonated with their career interests, for example: “I want to be a teacher so I go for an Education program.” Other students sought to follow paths that best fit their passions and personalities. For example: “I am applying to International Studies/Relations because I love communication in English.”

Second, students’ decisions to attend college were influenced by their perceptions of potential career opportunities. As they navigated the pivotal juncture between high school and college, many considered the long-term prospects that college may offer. They often weighed in various factors, including (1) job opportunity—as noted by Hong, “It is easier to look for a job after graduating from this college”; (2) earning potential—for example, Thi recalled “I will enroll in a law program because being a lawyer allows me to earn a high salary and work overtime for additional income”; (3) job stability—as shared by Thanh, “My parents want me to pursue college for a stable job in the future when I become a wife and mother”; and (4) the demand for specific professions in the job market—as Le revealed, “I aspire to become a highly skilled lawyer with expertise in many fields, writing, and communication. From my observations, many lawyers are knowledgeable and intelligent, guiding people’s decisions with their insights.” Students mentioned some positions requiring a college degree within a particular field.

Third, the educational foundations that students have received, prepared, and accumulated during their high school years significantly influenced their higher education decisions. In particular, their academic records and extra coursework were pivotal in determining their choices and eligibility for college admissions. For instance, one student was very confident with her college choice and said: “I study English very well and I scored high

on this subject during my 10th and 11th grades.” Similarly, another student expressed: “I scored 9.8/10 in History, so I do not feel stressed when I apply for college.”

Fourth, students’ college choices were also determined by the learning environment and facilities offered by higher education institutions. Students considered various factors, such as campus resources, technology, and overall infrastructure. For example, a student mentioned, “I chose this college because it has many trees on campus and offers high-quality training programs.” Some were more inclined to choose colleges that provide conducive learning and personal growth settings. For instance, “I will attend a college in the center of Hanoi because of the high quality of life and advanced knowledge.” In general, most students were looking for the best possible education within their capacity and a fulfilling experience for their higher learning journey.

## Discussion and conclusion

This mixed-methods study explores Vietnamese high school students’ higher education decisions and factors influencing their choices. Overall, most student participants indicated that they planned to pursue higher education, particularly attending 4-year universities in Vietnam. A smaller number of participants wanted to attend 2-year colleges in Vietnam or study abroad. Various aspects influenced these decisions, including family socioeconomic status, academic preparation and achievement, cultural and social influence, available resources from schools and teachers, and personal passions and objectives.

Part of our findings align with Iloh’s (2019) three-dimensional framework: Information, Time, and Opportunity. In our study, students sought information from many sources, such as parents, siblings, relatives, peers, teachers, school leaders, and orientation sessions to make college decisions—similar to previous studies on the same topic (e.g., Bell et al., 2009; Dearden et al., 2017; McDonough, 1997; Perna & Titus, 2005; Vergheze & Kamalanabhan, 2015). Among these sources, parents had the biggest influence on our students. This can be explained through the lens of Confucian values (Iacopini & Hayden, 2017). Central to Confucian philosophy is the concept of respect for authority (*tôn trọng người bề trên*) and filial piety (*hiếu kính*), which mandates respect and obedience to parents and elders (Nguyen et al., 2012; Taylor, 2011). Regarding higher educational decisions, this value manifests as our students prioritizing their parents’ wishes and guidance, making their parents proud. This compliance is often viewed as children’s fundamental duty in Vietnamese families. Parental influence over children’s college choices can also be deeply understood through the importance of education within Vietnamese culture (Pham, 2012). Education, especially higher education, is highly esteemed in Vietnamese society and seen as critical for family honor. Parents often hold strong opinions about their children’s future educational paths, believing these choices will help secure a stable job with a lucrative salary. Our findings are supported by previous studies (Ashwill & Diep, 2005; Iacopini & Hayden, 2017; Vu & Yamada, 2023), showing that students’ college decisions are shaped by parental guidance. These interconnections between Confucian key tenets and Vietnamese cultural factors offer a comprehensive explanation for the significant parental influence on our students’ college choices.

Within the Time dimension, our findings indicated the roles of family income, parental education, and parental occupation in shaping students’ college decisions, which aligns with previous studies (e.g., Cabrera & La Nasa, 2001; Wei et al., 2019). In particular, we found fathers and mothers, particularly those with high degrees or in high-skilled jobs,

were perceived as role models for their children to look up to in making education and career decisions. Some students who lack financial stability choose to forgo college and start working immediately after high school graduation. Others feel compelled to pursue college majors that promise future financial returns. In the Vietnamese context, the high values placed on education drive parents to offer the best educational opportunities and learning resources for their children (Pham, 2012; Sun et al., 2019). As shown in our findings, parents with advanced educational backgrounds often hold strong respect from their children, who are consequently more likely to follow their parents' advice and expectations regarding college selection. Parents with high professions and social status recognize the long-term benefits of higher education and possess specific preferences for various higher education options. Their informed guidance, along with their belief toward children's future success plays a crucial role in shaping their children's college decision-making process.

Regarding the Opportunity dimension, contrary to previous studies suggesting that rural students do not want to leave for college because of their attachment to rural life (Demi et al., 2009; Howley, 2006), our study indicated a strong desire among rural students to leave their villages to gain independence, learn new skills, and experience city life (Nguyen, 2024). In Vietnamese culture, higher education is highly valued and seen as a pathway to success and social mobility (Nguyen et al., 2012). Therefore, influenced by Confucian values and the high regard for education in Vietnamese society, students and their families view education as a critical means to escape poverty and improve their socio-economic status. This belief in education as a transformative tool underscores the profound impact of familial expectations, support, and cultural values on students' college decisions.

Going beyond Iloh's (2019) framework, our study highlights some novel individual aspects, contributing to a more nuanced understanding of students' college expectations. Students emphasized the crucial role of their strengths and passions which can lead to more purposeful and fulfilling educational journeys. Those who are intrinsically motivated by their aspirations and personal achievements and extrinsically inspired by professional career development goals are more determined to seek higher education (DesJardins et al., 2019). Also, students heightened their awareness of the evolving landscape of the labor market. They are acutely attuned to the need for specialized skills and knowledge in today's competitive global economy. They recognized that attending college can provide the necessary training and credentials to access a broader range of career options. Finally, throughout their high school journey, students not only accumulated subject-specific knowledge but also developed essential academic and critical thinking skills. The rigor of their coursework, their grades, and their participation in extra classes and standardized exam modeling are often crucial factors in determining if they can gain college admissions (Bao & Cho, 2022; Trusty et al., 2000). These novel findings on the individual aspects of students' decision-making process reflect the secular-rational half of the cultural duality in Vietnam, which places less emphasis on family, respect for authority, and filial piety as under the traditional Confucian values (Inglehart & Welzel, 2005). Thus, such a rise of individualism amongst Vietnamese youths signifies the country's unique position on the traditional-secular continuum and further stresses the need for context-based research.

Although our work provides both empirical and theoretical contributions to the field, the study has a few limitations due to its scope and time constraints. First, the study is geographically limited to Hanoi. Despite having a large sample size that allows for generalization (Cochran, 1977; Sapa, 2021), caution is needed when extending the findings to the entire country. Future research should include samples more representative of the broader Vietnamese population to enhance generalizability. Second, the study's temporal scope is limited. Conducted within a single timeframe in 2016–2017 and without follow-up data,

it remains uncertain if the students will follow through with their initial plans. Longitudinal studies are recommended to address this limitation and provide a more comprehensive understanding of the decision-making process over time.

Regardless of these limitations, our study has significant implications for understanding the complex interplay of socio-cultural, economic, and individual factors influencing Vietnamese high school students' college-going decisions. These insights are particularly relevant for educational policymakers, school administrators, and families in Vietnam. The strong influence of family and socio-cultural expectations, highlighted in this research, suggests the need for more nuanced and culturally sensitive counseling services and information campaigns. Additionally, recognizing the disparity in access to higher education based on socioeconomic status calls for targeted financial support and resource allocation for underprivileged students. This is especially critical in rural areas where higher education is seen as a pathway to social mobility (Bathmaker et al., 2016). Furthermore, the emphasis on personal passions and labor market trends indicates that higher educational institutions should provide personalized guidance and career counseling to align students' educational choices with their interests and evolving job market demands. By addressing these critical factors, educational stakeholders can better support Vietnamese students in making informed and fulfilling educational dreams, ultimately contributing to the development of a more equitable and dynamic higher education system in Vietnam.

Our research also contributes significantly to the international and diverse context of educational choices through several key dimensions. We provide an in-depth analysis of Vietnamese high school students' educational decision-making by bridging quantitative survey data with qualitative interview insights. This integrated mixed-methods approach offers a nuanced perspective beyond traditional single-method studies. This contextual and methodological specificity unveils critical insights into centralized educational systems, with direct relevance to countries like China, South Korea, Russia, and Nepal that share similar structural characteristics (Aleshkovski et al., 2020; Silwal & Baral, 2021). Additionally, our study demonstrates how local socio-cultural dynamics profoundly influence educational trajectory choices, demonstrating the intricate complexity of educational decision-making across different cultural and structural environments. This study not only enriches international educational scholarship but also encourages comparative studies across varied national educational systems, highlighting the importance of contextual understanding in global educational research.

## Declarations

**Competing interests** The authors declare no competing interests.

## References

- Aleshkovski, I. A., Moteva, A. I., Savina, N. E., Gasparishvili, A. T., & Krukhtmaleva, O. V. (2020). Educational trajectories of school graduates of the Russian industrial region. *The Education and Science Journal*, 10, 41–60. <https://doi.org/10.17853/1994-5639-2020-10-41-60>
- Álvarez-Rivadulla, M. J., Jaramillo, A. M., Fajardo, F., Cely, L., Molano, A., & Montes, F. (2022). College integration and social class. *Higher Education*, 84(3), 647–669.
- Ashwill, M. A., & Diep, T. N. (2005). *Vietnam Today: A guide to a nation at a crossroads*. Intercultural Press.

- Bang, H., & Robins, J. M. (2005). Doubly robust estimation in missing data and causal inference models. *Biometrics*, *61*(4), 962–973.
- Bao, N. V., & Cho, Y. (2022). How the high-stakes and college entrance exam affects students' perception: Implication on management policy in higher education. *East Asian Journal of Business Economics (EAJBE)*, *10*(1), 83–94.
- Bathmaker, A. M., Ingram, N., Abrahams, J., Hoare, A., Waller, R., & Bradley, H. (2016). *Higher education, social class and social mobility: The degree generation*. Springer.
- Bell, A. D., Rowan-Kenyon, H. T., & Perna, L. W. (2009). College knowledge of 9th and 11th grade students: Variation by school and state context. *The Journal of Higher Education*, *80*(6), 663–685.
- Bettencourt, G. M., George Mwangi, C. A., Green, K. L., & Morales, D. M. (2022). But, do I need a college degree?: Understanding perceptions of college and career readiness among students enrolled in a career and technical high school. *Innovative Higher Education*, *47*(3), 453–470.
- Braun, V., & Clarke, V. (2012). Thematic analysis. In *APA handbook of research methods in psychology, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological*. (pp. 57–71). American Psychological Association.
- Cabrera, A. F., & La Nasa, S. M. (2001). Three critical tasks facing America's disadvantaged. *Research in Higher Education*, *2*(2), 200.
- Ceja, M. (2006). Understanding the role of parents and siblings as information sources in the college choice process of Chicana students. *Journal of College Student Development*, *47*(1), 87–104.
- Chapman, D. W. (1981). A model of student college choice. *The Journal of Higher Education*, *52*(5), 490–505.
- Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). Wiley.
- Conley, D. T. (2007). Redefining college readiness. *Educational Policy Improvement Center (NJ1)*.
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE publications.
- Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research*. SAGE publications.
- Daily, C. M., Farewell, S., & Kumar, G. (2010). Factors influencing the university selection of international students. *Academy of Educational Leadership Journal*, *14*(3), 59.
- Dearden, J. A., Li, S., Meyerhoefer, C. D., & Yang, M. (2017). Demonstrated interest: Signaling behavior in college admissions. *Contemporary Economic Policy*, *35*(4), 630–657.
- Demi, M. A., McLaughlin, D. K., & Snyder, A. R. (2009). Rural youth residential preferences: Understanding the youth development-community development nexus. *Community Development*, *40*(4), 311–330.
- DesJardins, S. L., Toutkoushian, R. K., Hossler, D., & Chen, J. (2019). Time may change me: Examining how aspirations for college evolve during high school. *The Review of Higher Education*, *43*(1), 263–294.
- Doove, L., Van Buuren, S., & Dusseldorp, E. (2013). Recursive partitioning for missing data imputation in the presence of interaction effects. *Computational Statistics & Data Analysis*, *72*, 92–104. <https://doi.org/10.1016/j.csda.2013.10.025>
- Dynarski, S., & Scott-Clayton, J. (2013). Financial aid policy: Lessons from research.
- Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, *53*(1), 109–132.
- Emmanuel, J. N. (2023). Affordability in college access: Improving equitable value for low-income, first-generation, and students of color. *The Vermont Connection*, *44*(1), 17.
- Flippo, R.F., & Bean, T.W. (Eds.). (2018). *Handbook of College Reading and Study Strategy Research* (3rd ed.). Routledge. <https://doi.org/10.4324/9781315629810>
- Geiser, S., & Santelices, M. V. (2007). Validity of high-school grades in predicting student success beyond the freshman year: High-school record vs. standardized tests as indicators of four-year college outcomes. Research & Occasional Paper Series: CSHE. 6.07. *Center for studies in higher education*.
- General Assembly of Vietnam. (2018). Law on Higher Education (Amended) No. 34/2018/QH14. *Thư Viện Pháp Luật*. Retrieved from <https://thuvienphapluat.vn/van-ban/Giao-duc/Luat-Giao-duc-dai-hoc-sua-doi-388254.aspx>
- General Statistics Office of Vietnam. (n.d.). Giáo dục [Education]. General Statistics Office of Vietnam. Retrieved June 28, 2024, from <https://www.gso.gov.vn/px-web-2/?pxid=V1011&theme=Gi%C3%A1o%20d%E1%BB%A5c>
- Goyette, K. A. (2012). Stratification and the emergence of the postsecondary private education sector in Vietnam. *Comparative Education Review*, *56*(2), 197–222.
- Hossler, D., Schmit, J., & Vesper, N. (2020). *Going to college: How social, economic, and educational factors influence the decisions students make*. JHU Press.

- Hossler, D., & Stage, F. K. (1992). Family and high school experience influences the postsecondary educational plans of ninth-grade students. *American Educational Research Journal*, 29(2), 425–451.
- Howley, C. W. (2006). Remote possibilities: Rural children's educational aspirations. *Peabody Journal of Education*, 81(2), 62–80.
- Iacopini, L., & Hayden, M. (2017). The role of parents in university choice: Evidence from Vietnam. *The Asia-Pacific Education Researcher*, 26, 147–154.
- Iloh, C. (2019). An alternative to college “choice” models and frameworks: The Iloh model of college-going decisions and trajectories. *College and University*, 94(4), 2–9.
- Iloh, C. (2021). The broken yellow brick road: A narrative exploration of the college-going decisions and trajectory of a low-income single mother of color. *Education Sciences*, 11(10), 601.
- Inglehart, R., & Welzel, C. (2005). *Modernization, cultural change, and democracy: The human development sequence*. Cambridge University Press.
- Jolani, S., Frank, L. E., & van Buuren, S. (2014). Dual imputation model for incomplete longitudinal data. *British Journal of Mathematical and Statistical Psychology*, 67(2), 197–212.
- Jolani, S., & van Buuren, S. (2014). Doubly robust imputation of incomplete binary longitudinal data. *Journal of Biometrics & Biostatistics*, 5(3).
- Kezar, A. (2009). Change in higher education: Not enough, or too much?. *Change: The Magazine of Higher Learning*, 41(6), 18–23.
- Le, T. T., Nguyen, T. L., Trinh, M. T., Nguyen, M. H., Nguyen, M. P. T., & Pham, H. H. (2021). Adopting the Hirschman-Herfindahl Index to estimate the financial sustainability of Vietnamese public universities. *Humanities and Social Sciences Communications*, 8(1), 1–10.
- Lee, K., & Stewart, W. (2022). Destination, experience, social network, and institution. *Journal of International Students*, 12(4). <https://doi.org/10.32674/jis.v12i4.3662>
- Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, 45(1), 79–122.
- Li, S. (2020). Big frog in a small pond: Undermatching status, college major, and their influence on early career earnings (Order No. 27743759). Available from ProQuest Dissertations & Theses Global; ProQuest Dissertations & Theses Global Closed Collection. (2388055534). <https://www.proquest.com/dissertations-theses/big-frog-small-pond-undermatching-status-college/docview/2388055534/se-2>
- Little, R. J. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, 83(404), 1198–1202.
- McDonough, P. M. (1997). *Choosing colleges: How social class and schools structure opportunity*. SUNY Press.
- McPherson, M. S., & Schapiro, M. O. (1991). Does student aid affect college enrollment? New evidence on a persistent controversy. *The American Economic Review*, 81(1), 309–318.
- Ministry of Education and Training. (2024b). *Conference on summarizing student recruitment work from 2015–2023 and implementing recruitment work for 2024 and 2025*. <https://moet.gov.vn/thong-ke/pages/thong-ko-giao-duc-dai-hoc.aspx?ItemID=9210>. Accessed 2 Mar 2023.
- Ministry of Education and Training (MOET). (2016). “Regional Divisions.” Regional deviations. <http://thi.moet.edu.vn/?page=1.4>. Accessed 2 Mar 2023.
- Ministry of Education and Training of Vietnam. (2014). *Decision No. 3538/QĐ-BGDĐT: On approving the national high school examination reform plan*. Ministry of Education and Training of Vietnam. <https://thuvienphapluat.vn/van-ban/Giao-duc/Quy-yeu-dinh-3538-QĐ-BGDĐT-2014-thi-tot-nghiep-trung-hoc-pho-thong-dai-hoc-cao-dang-tu-2015-248578.aspx>. Accessed 2 Mar 2023.
- Ministry of Education and Training of Vietnam. (2015). *Circular 02/2015/TT-BGDĐT: Providing guidelines on the implementation of the national high school graduation and university entrance exam reforms*. Ministry of Education and Training of Vietnam. <https://thuvienphapluat.vn/van-ban/Giao-duc/Thong-tu-02-2015-TT-BGDĐT-Quy-che-thi-Trung-hoc-pho-thong-quoc-gia-266554.aspx>. Accessed 2 Mar 2023.
- Ministry of Education and Training of Vietnam. (2024a). *Circular 02/2024/TT-BGDĐT amending regulations on the high school graduation exam*. Thư Viện Pháp Luật. <https://thuvienphapluat.vn/van-ban/Giao-duc/Thong-tu-02-2024-TT-BGDĐT-sua-doi-Quy-che-thi-tot-nghiep-trung-hoc-pho-thong-592179.aspx>. Accessed 2 Mar 2023.
- Muthanna, A., & Sang, G. (2016). Undergraduate Chinese students' perspectives on Gaokao examination: Strengths, weaknesses, and implications. *International Journal of Research Studies in Education*, 5(2), 3–12.
- Nguyen, C. (2021). *Vietnamese youth, schools, and communities in transition: A decade after the administrative boundary extension of Hanoi*. Routledge.




- Nguyen, C. (2023). Nationally standardized policy and locally interpreted implementation: How Vietnamese school leaders enact education reform. *International Journal of Leadership in Education*, 26(3), 397–426. <https://doi.org/10.1080/13603124.2020.1722249>
- Nguyen, C. (2024). Going or not going to college? Explaining the college expectations gap between rural and nonrural Vietnamese high school students. *Comparative Education Review*, 68(1), 63–84. <https://doi.org/10.1086/728388>
- Nguyen, N., & Tran, L. T. (2017). Looking inward or outward? Vietnam higher education at the superhighway of globalization: Culture, values and changes. *Journal of Asian Public Policy*, 11(1), 28–45. <https://doi.org/10.1080/17516234.2017.1332457>
- Nguyen, P. M., Terlouw, C., & Pilot, A. (2012). Cooperative learning in Vietnam and the west–east educational transfer. *Asia Pacific Journal of Education*, 32(2), 137–152.
- Perna, L. W., & Titus, M. A. (2005). The relationship between parental involvement as social capital and college enrollment: An examination of racial/ethnic group differences. *The Journal of Higher Education*, 76(5), 485–518.
- Pham, T. H. T. (2012). A framework to implement cross-cultural pedagogy: The case of implementing learning reform at Confucian heritage culture colleges. *Higher Education Review*, 44(3), 27–40.
- Piepenburg, J. G., & Fervers, L. (2022). Do students need more information to leave the beaten paths? The impact of a counseling intervention on high school students' choice of major. *Higher Education*, 84(2), 321–341.
- Rawat. (2020). Preparing for the most important test in a Korean's life. The official website of the Republic of Korea. <https://www.korea.net/NewsFocus/HonoraryReporters/view?articleId=192346>
- Robins, J. M., Rotnitzky, A., & Scharfstein, D. O. (2000). Sensitivity analysis for selection bias and unmeasured confounding in missing data and causal inference models. In *Statistical models in epidemiology, the environment, and clinical trials* (pp. 1–94). New York, NY: Springer New York.
- Rubin, D.B. (1987). *Multiple imputation for nonresponse in surveys*. John Wiley & Sons Inc., New York. <https://doi.org/10.1002/9780470316696>
- Sapra, R. L. (2021). How to calculate an adequate sample size? In *How to practice academic medicine and publish from developing countries?* (pp. 173–186). Springer. [https://doi.org/10.1007/978-981-16-5248-6\\_9](https://doi.org/10.1007/978-981-16-5248-6_9)
- Schafer, J. L. (1997). *Analysis of incomplete multivariate data*. CRC Press.
- Silwal, P. P., & Baral, R. K. (2021). Factors influencing college choice of Nepalese undergraduate students. *Quest Journal of Management and Social Sciences*, 3(2), 229–244.
- Song, Q., & Tan, C. Y. (2024). The relationships between family socioeconomic status, gender inequality, and higher education selection from 1962 to 2018: A secondary analysis of the China General Social Survey data. *Higher Education*, 1–28.
- Stewart, W. H. (2020). The expatriate and transnational distance student phenomenon: A multicase study of western distance students in the Republic of Korea. *Forum for International Research in Education*, 6(2), 167–188. <https://doi.org/10.32865/fire202062195>
- Stewart, W. H. (2021). Determinants of studying at “home” while living “abroad”: A grounded theory study on college-choice among Western expatriate and transnational distance students in the Republic of Korea. *Forum for International Research in Education*, 7(1), 42–67. <https://doi.org/10.32865/fire202171221>
- Sun, Q., Kang, H., Chang, B., & Lausch, D. (2019). Teaching international students from Confucian Heritage Culture countries: Perspectives from three U.S. host campuses. *Asia Pacific Education Review*, 20(4), 559–572. <https://doi.org/10.1007/s12564-019-09604-1>
- Taylor, R. L. (2011). *Confucius, the Analects: The path of the sage : Selections annotated & explained*. Sky-Light Paths Publishing.
- Tieken, M. C. (2016). College talk and the rural economy: Shaping the educational aspirations of rural, first-generation students. *Peabody Journal of Education*, 91(2), 203–223.
- Tran, H. P. (1999). *Vietnamese higher education at the intersection of French and Soviet influences*. State University of New York at Buffalo.
- Trusty, J., Robinson, C. R., Plata, M., & Ng, K. M. (2000). Effects of gender, socioeconomic status, and early academic performance on postsecondary educational choice. *Journal of Counseling & Development*, 78(4), 463–472.
- Van Buuren, S. (2007). Multiple imputation of discrete and continuous data by fully conditional specification. *Statistical Methods in Medical Research*, 16(3), 219–242.
- Van Le, D., & Tran, T. Q. (2024). Economic growth and quality of education: Evidence from the national high school exam in Vietnam. *International Journal of Educational Development*, 104,
- Verghese, A., & Kamalanabhan, T. J. (2015). Attributes influencing information search for college choice: An exploratory study. *International Journal of Business Innovation and Research*, 9(1), 34–51.

- Vu, T. M., & Yamada, H. (2023). The impacts of Confucianism on gender inequality in Vietnam. *The Journal of Economic Inequality*, 1–20.
- Vuong, Q. H., Napier, N. K., Ho, T. M., Nguyen, V. H., Vuong, T. T., Pham, H. H., & Nguyen, H. K. T. (2019). Effects of work environment and collaboration on research productivity in Vietnamese social sciences: Evidence from 2008 to 2017 Scopus data. *Studies in Higher Education*, 44(12), 2132–2147.
- Wei, Y., Zhou, S., & Yang, X. (2019). College expectations and choices: Explaining the gaps in college enrollment for high-and low-SES students in China. *International Journal of Educational Development*, 70.
- Woodall, T., Hiller, A., & Resnick, S. (2012). Making sense of higher education: students as consumers and the value of the university experience. *Studies in Higher Education*, 39(1), 48–67. <https://doi.org/10.1080/03075079.2011.648373>
- Yu, M. C., & Kuncel, N. R. (2018). The importance of standardized tests in college admissions. *Counterpoints*, 517, 317–327.
- Zhou, M., & Kim, S. (2006). Community forces, social capital, and educational achievement: The case of supplementary education in the Chinese and Korean immigrant communities. *Harvard Educational Review*, 76(1), 1–29.

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