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Factors affecting career orientation: indigenous ethnic minority students in Vietnam's Central Highlands

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ABSTRACT

Career orientation competency (COC) plays a crucial role in preparing students for lifelong learning and labor market adaptability. However, existing research has largely overlooked how this competency develops among indigenous ethnic minority students in culturally diverse and educationally disadvantaged contexts such as Vietnam's Central Highlands. Addressing this gap, the present study adopts the social cognitive career theory (SCCT) to examine how personal, contextual, and behavioral factors interact to shape COC in this population. SCCT serves not only as a conceptual lens but also informs the development of the research model and interpretation of findings. A quantitative approach was employed using cross-sectional survey data collected from 669 ethnic minority students. Analytical techniques included reliability analysis (Cronbach's alpha), exploratory factor analysis (EFA) for construct validation, and multiple linear regression to test predictive relationships. Results revealed six key determinants of COC: self-awareness (SA), expectations for results (ER), personal goals (PG), community connection (CC), career exploration (CE), and cultural identity (CI). Notably, CI had the most significant effect (β=0.308), suggesting its central role in guiding career-related behaviors. These findings have important implications for both theory and practice. They extend SCCT by integrating culturally specific constructs relevant to marginalized communities and they highlight the need for context-responsive career guidance programs that recognize and leverage students' cultural identities. The study contributes to the empirical foundation for inclusive education policy reforms targeting ethnic minority youth in Vietnam.

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1. INTRODUCTION

In an era of globalization and the rapid evolution of the knowledge-based economy, career orientation competency (COC) has emerged as a critical skill necessary for preparing younger generations to adapt to the dynamic labor market [1]–[3]. This competency is essential not only for enabling students to recognize their strengths, interests, and developmental potential but also for guiding them toward career pathways that align with their aspirations and labor market demands [4]. In Vietnam, the 2018 general education curriculum places significant emphasis on career orientation as a core educational objective, integrating vocational education into various subjects to enhance students' career awareness and skill

development [5]. However, according to reports by the World Bank and UNICEF Vietnam, there remains a significant gap in access to career education, particularly among ethnic minority students living in remote and disadvantaged areas such as the Central Highlands [6], [7]. Barriers such as socio-economic hardship, limited educational infrastructure, language differences, and a lack of career counseling resources have hindered students in these areas from recognizing their personal strengths and formulating appropriate career plans.

Although many international and domestic studies have emphasized the importance of COC, empirical research in Vietnam remains limited with respect to ethnic minority students, especially within their unique cultural contexts [8]. Notably, few studies have explored in depth the influence of cultural identity (CI), community ties, and traditional social structures (e.g., village elders, kinship systems) on the development of COC, factors that play a central role in the social life of ethnic minority students in the Central Highlands. Moreover, existing policies on career education, such as the "project on career education and streamlining orientation for students at the lower and upper secondary levels for the period 2018–2025" [9]. Although acknowledging disadvantaged groups, they still lack targeted solutions for ethnic minority students and fail to account for the cultural diversity and specific learning conditions of local communities [10].

The novelty of this study lies in the integration and extension of the social cognitive career theory (SCCT) within the unique sociocultural context of indigenous ethnic minority students in Vietnam's Central Highlands, an under-researched region characterized by high cultural diversity. This study not only quantifies the roles of factors such as CI, career exploration (CE), community connection (CC), but also incorporates community-level influences, including village elders, kinship structures, and traditional sociocultural institutions, dimensions that have been largely overlooked in prior research in Vietnam. The present study investigates the factors influencing COC among indigenous ethnic minority students in Vietnam's Central Highlands, a region with 13 culturally distinct groups, including the Ê-đê, Gia Rai, Ba Na, and M'nông. The study is grounded in the need to improve educational equity, support sustainable human resource development, and design culturally responsive guidance interventions [11]. This study aims to address the following key research questions:

i) What factors influence the COC of indigenous ethnic minority students in the Central Highlands of Vietnam?
ii) How do these factors impact the COC of indigenous ethnic minority students in the Central Highlands of Vietnam?

2. LITERATURE REVIEW

2.1. Career orientation competency

COC is defined as a set of personal capabilities that enable students to recognize their strengths, interests, and values; to seek out relevant career information; to set realistic career goals; and to make responsible and adaptable decisions [12], [13]. Rather than being a purely individual skill, it is considered a long-term developmental process that integrates self-awareness (SA), CE, goal-setting, and decision-making within specific social contexts. Among contemporary career development models, the SCCT [14] is one of the most widely used frameworks for explaining the formation of COC. SCCT highlights three core components: SE, expectations for results (ER), and personal goals (PG). Numerous studies have shown the model's suitability for understanding career behavior in urban contexts and among high school and university students. However, SCCT reveals limitations when applied to multicultural settings or areas characterized by socio-economic disadvantage, such as ethnic minority regions. Studies have pointed out that SCCT does not fully account for the influence of community factors, cultural norms, and social constraints, elements that play a crucial role in shaping career development in regions such Vietnam's Central Highlands [15], [16].

To address these limitations, several alternative models have emerged. The systems theory framework (STF) by Patton and McMahon [17] conceptualizes career development as a complex interaction between individuals and their social ecosystems. Meanwhile, Hirschi's [13] career resources model (CRM) emphasizes both internal and external resources in the career decision-making process. However, both STF and CRM fall short of incorporating indigenous cultural factors, communal influence, and regional specificities, particularly in developing country contexts. Accordingly, this study proposes an extension of SCCT by integrating three theoretically and empirically grounded variables: i) CC, this variable reflects the extent to which students perceive guidance, support, and connection from surrounding communities, including village elders, extended families, and traditional social networks. STF recognizes CC as a vital contextual factor influencing career behavior, especially in collectivist societies [18]; ii) CE refers to students' engagement in observing, experiencing, and seeking information about possible career paths. As an intermediary competency identified in the CRM, CE promotes proactive career behavior and enhances decision-making confidence [19]. In Vietnam, ethnic minority students often lack opportunities for CE due to informational gaps and inadequate support [8]; and iii) CI captures the degree to which students recognize,

value, and act in accordance with their ethnic cultural traditions. CI can either foster or constrain career orientation depending on the alignment between personal values and community expectations [10], [20].

In the original SCCT model, such cultural elements are only indirectly referenced and have yet to be conceptualized as independent, influential variables. In summary, the inclusion of CC, CE, and CI represents not only a theoretical expansion of SCCT but also a response to documented practical needs within Vietnam's multi-ethnic educational landscape. This study contributes to the advancement of career development theory in culturally diverse settings and offers practical implications for designing equitable and contextually responsive career education programs tailored to the unique needs of disadvantaged student populations.

2.2. Educational support policies and structural challenges for indigenous ethnic minority students in the Central Highlands of Vietnam

The Central Highlands of Vietnam are home to various indigenous ethnic minority groups such as the Ê-đê, Gia Rai, Ba Na, and M'nông, each with distinct social structures, matriarchal traditions, and rich cultural identities [21]. Despite this diversity, these communities face socioeconomic, social, and educational structural challenges that hinder equal access to opportunities and long-term development [22]. In recent years, the Vietnamese government has introduced multiple policies aimed at promoting educational equity among ethnic minorities. These include tuition waivers, financial aid programs, targeted scholarship schemes, and the establishment of boarding and semi-boarding schools in remote areas [23]. Decree No. 05/2011/ND-CP and related legal frameworks seek to enhance vocational training, human resource development, and inclusive education for ethnic communities [24].

While the Vietnamese government has implemented policies to promote educational equity, such as financial aid and boarding schools, critical gaps remain. For instance, these policies primarily address basic access to education but fail to adequately foster COC among ethnic minority students. On the one hand, financial support policies primarily address basic access to education, yet fail to adequately attend to the meaningfulness and relevance of educational content for learners. Specifically, the existing curriculum remains highly standardized and urban-centric, with minimal adaptation to the cultural contexts, lived experiences, or occupational aspirations of ethnic minority groups [25]. On the other hand, policy documents lack clear provisions or targeted strategies for developing regionally responsive career guidance systems. For instance, teachers in remote areas are rarely provided with systematic training in career counseling, there is a scarcity of instructional materials that integrate career education, and no career orientation framework has been designed to align with the cultural realities of ethnic minority communities.

Moreover, the current policy approach tends to overlook the critical role of families, communities, and cultural value systems in shaping students' career development. It neglects the influence of factors such as gender roles within matriarchal societies, familial expectations regarding culturally appropriate occupations, or whether students perceive their future careers as aligned with their ethnic identity and community values. This disconnect contributes to a misalignment between the aims of career education and the actual needs for workforce development in local contexts.

Therefore, this study demonstrates clear novelty and scientific contribution in three key aspects. Firstly, it is the first to simultaneously integrate cultural, social, and psychological factors into a model for assessing COC specifically designed for indigenous ethnic minority students, a group that has often been overlooked in traditional career development theories. Secondly, the study not only applies but also extends the SCCT by incorporating the STF of Patton and McMahon [17] and the CRM proposed by Hirschi [13], thereby constructing a multidimensional career orientation model that is responsive to Vietnam's unique cultural contexts. Lastly, the study proposes an empirically grounded theoretical framework that can serve as a foundation for improving current career education policies, contributing to educational equity, and sustainable development in ethnic minority regions.

3. RESEARCH METHOD

3.1. Proposed research model

Building upon the established theoretical foundation, this study adopts a quantitative, cross-sectional survey design to examine the relationships among psychological, social, and cultural factors influencing the COC of indigenous ethnic minority students in Vietnam's Central Highlands. The research design is grounded in the SCCT and further extended through the integration of key components from the STF of Patton and McMahon and the CRM of Hirschi [17]–[19]. Based on this foundation, the proposed research model includes six independent variables: SA, ER, PG, CC, CE, and CI. The latter three variables are integrated to reflect the unique sociocultural characteristics of ethnic minority students, which are often underrepresented in conventional career development models. The hypothetical model, as shown in Figure 1, posits that all six variables exert direct influence on students' COC.

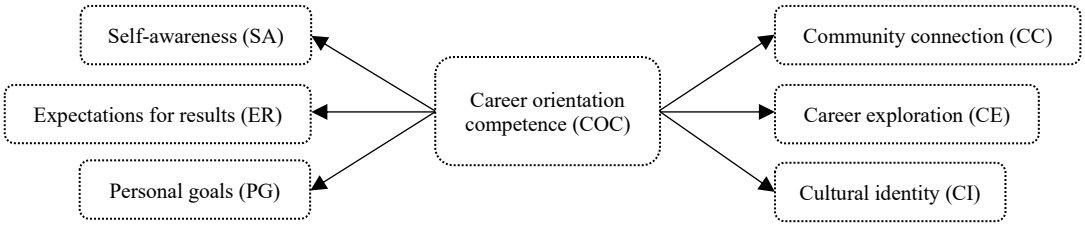

Figure 1. Proposed research model

Using the proposed research model, we conducted a study to test the hypotheses as: i) SA factors influence the career orientation competence of indigenous ethnic minority students in the Central Highlands of Vietnam (H1); ii) expectation for results factors influence the career orientation competence of indigenous ethnic minority students in the Central Highlands of Vietnam (H2); iii) PG factors influence the career orientation competence of indigenous ethnic minority students in the Central Highlands of Vietnam (H3); iv) CC factors influence the career orientation competence of indigenous ethnic minority students in the Central Highlands of Vietnam (H4); v) CE factors influence the career orientation competence of indigenous ethnic minority students in the Central Highlands of Vietnam (H5); and vi) CI factors influence the career orientation competence of indigenous ethnic minority students in the Central Highlands of Vietnam (H6).

3.2. Research samples

In conducting exploratory factor analysis (EFA), the minimum required sample size was determined using the formula n=50+8 m, where m represents the number of independent variables [26]. Based on this criterion, the study required a minimum of 258 participants. The target population comprised indigenous ethnic minority students currently enrolled in 12th grade (aged 17–18) across five provinces in the Central Highlands of Vietnam. To ensure the samples' representativeness and account for demographic and regional diversity, the study utilized a stratified multistage sampling method. Stratification was based on province and school size, followed by random selection of schools and classes within strata. Prior to data collection, permissions were obtained from school administrators, and informed consent was gathered from participants.

A total of 768 questionnaires were distributed through face-to-face administration by trained research assistants fluent in local languages and familiar with ethnic minority cultural contexts. After rigorous data cleaning, which involved removing incomplete responses, surveys with missing values, and responses from students not belonging to the designated indigenous ethnic minority groups, the final valid sample consisted of 669 students, as shown in Table 1. According to Table 1, there is no significant gender disparity among the surveyed participants. Additionally, students were sampled from five provinces in the Central Highlands region, with a well-balanced distribution adhering to scientific sampling principles. This ensures the representativeness of the study population. Therefore, the surveyed participants can be considered a valid representation of the target research sample.

3.3. Research instrument and pilot study

The research instrument was a 30-item structured questionnaire built upon existing theoretical models (SCCT, STF, and CRM) and tailored to the Vietnamese ethnic minority context. Each item was measured using a 5-point Likert scale (1=strongly disagree to 5=strongly agree). A pilot study was conducted in August 2024 with 30 indigenous ethnic minority students who were not part of the main sample. These students were recruited from two schools in Dak Nong and Gia Lai Provinces. The pilot aimed to assess linguistic clarity and cultural appropriateness of the questionnaire items; to identify ambiguous or potentially culturally insensitive terms; and to evaluate initial reliability using Cronbach's alpha. After the pilot, several items were revised based on participant feedback and input from two education experts familiar with ethnic minority schooling. The final questionnaire reflected these adjustments, ensuring improved face validity and comprehension across diverse linguistic backgrounds. The content and theoretical foundations underlying the construction of the measurement scales are synthesized and presented in Table 2.

Table 1. Information on surveyed students

Sample	Gender		Survey regions				
	Male	Female	DakLak	DakNong	GiaLai	LamDong	KonTum
Quantity (students)	323	346	98	132	133	107	199
Percentage (%)	50.51	49.49	18.34	18.88	19.02	15.3	28.46

Table 2. Factors influencing the COC of indigenous ethnic minority students in the central highlands

Classification of variables	Group of factors	Notation	Description	Reference
Independent variable	SA	SA1	I am self-aware of my strengths and weaknesses.	The statements were selected based on the three core constructs of SCCT [14]. These factors have been validated in previous career guidance studies in both secondary and higher education contexts [27], [28].
		SA2	I clearly identify my areas of interest and feel enthusiastic when pursuing my passions.	
		SA3	I have defined my core values (such as loving my family and aspiring to contribute to the community…).	
		SA4	I have the ability to envision the necessary knowledge and skills required to pursue a specific career.	
	ER	ER1	I believe in myself and my ability to achieve the career I desire	
		ER2	I am able to balance stability, career advancement, and contributions to the community.	
		ER3	I can anticipate the challenges that may hinder me in pursuing my chosen career.	
		ER4	I can envision my career path in my chosen profession (5-10 years) after completing my studies.	
	PG	PG1	I have planned which field of study or profession I want to pursue after graduating from high school.	
		PG2	I have a specific career aspiration (such as doctor, teacher, engineer, tour guide…) or at least a clear preference for a specific industry (such as economics, tourism, technology…).	
		PG3	I am willing to overcome challenges and develop a long-term study plan to achieve my desired career.	
		PG4	I am willing to adjust my career goals if I encounter significant obstacles.	
	CC	CC1	My parents and family support and provide favorable conditions (financially and emotionally) for my education and career pursuits.	CC reflects perspectives from the STF of career development by Patton and McMahon [17].
		CC2	My school organizes regular career orientation activities, invites experts for guidance, and provides ethnic minority students with opportunities for real-world experiences.	
		CC3	In my local community, there are scholarship programs, educational support funds, and projects aimed at supporting education in highland areas.	
		CC4	I am inspired and encouraged to overcome regional and language barriers by successful former ethnic minority students who have achieved success in specific careers.	
	CE	CE1	I know how to find resources to learn about different careers.	CE is based on empirical studies of CE during adolescence [19].
		CE2	I regularly participate in high-quality experiential activities (such as company visits, career clubs, and career orientation fairs).	
		CE3	I can assess and compare different careers with my abilities and interests.	
		CE4	I have experienced career assessment tests and found them useful in guiding my career choices.	
		CE5	I am proficient in using information technology to research career information.	
	CI	CI1	I take pride in my language, traditional clothing, customs, and heritage professions, and I recognize how to incorporate these values into my future career.	CI is grounded in recent research on career development and ethnic identity [29]–[31].
		CI2	My career orientation is influenced by gender stereotypes (e.g., which jobs are suitable for men or women, the appropriate age for marriage) and the belief that 'starting work early is better than pursuing higher education'.	
		CI3	I do not see my mother tongue as a barrier to career development but rather as an opportunity to expand my career prospects.	
		CI4	I see myself as capable of preserving the beauty of my ethnic heritage while remaining open to the changes and demands of modern society.	
		CI5	I feel that the curriculum I study in class is closely connected to my ethnic culture.	
Dependent variable	COC	COC1	I have the ability to self-reflect on my career choices.	The statements align with the structure of career competencies proposed in OECD documents on developing career competencies for secondary school students [32] and Savickas [33]
		COC2	I have the ability to experience and simulate careers.	
		COC3	I have the ability to gather and process career information.	
		COC4	I have the ability to make informed career decisions.	

3.4. Data collection and analysis procedure

Data collection took place from September to November 2024. Research assistants—trained in ethical research practices and fluent in both Vietnamese and relevant local dialects—administered the questionnaires in person. All participants were provided with an explanation of the research purpose, and written informed consent was obtained. To ensure confidentiality, all data were anonymized and participants were assured of their voluntary right to withdraw without penalty. The data were processed using SPSS version 26 following these steps: i) reliability testing using Cronbach's alpha; ii) EFA using principal component extraction and varimax rotation; iii) correlation analysis between independent and dependent variables; and iv) multiple linear regression to determine the relative influence of each factor on COC.

4. RESULTS

4.1. Reliability of scale

The reliability of the seven measurement scales was assessed using the guidelines of Hair *et al.* [34]. Items with a Cronbach's alpha below 0.6 or a corrected item-total correlation below 0.3 were excluded to ensure the robustness of the measurement model. The initial Cronbach's alpha for the CE scale was 0.742; however, item CE5 showed a Cronbach's alpha if item deleted of 0.803, indicating that its removal would enhance internal consistency. Theoretically, the CE scale was constructed based on the conceptualization of CE as a process that includes behaviors such as seeking career-related information, self-assessing one's competencies, and engaging with potential future career options. However, item CE5 (I am proficient in using information technology to research career information) tends to assess information technology skills rather than the core behaviors and cognitive engagement typically associated with comprehensive CE. While this item is tangentially related to information-seeking behavior, it does not adequately capture the internal reflective and goal-directed dimensions that are central to the theoretical construct of CE in the context of this study.

From both statistical and theoretical perspectives, item CE5 reduces the content coherence of the scale and does not fully align with the original conceptual structure. Therefore, its removal was not solely based on the Cronbach's alpha values but was also theoretically justified to ensure alignment between the measurement instrument and the underlying construct in the model. After this adjustment, all remaining scales met the recommended reliability thresholds, demonstrating strong internal consistency and supporting the reliability and quality of the measurement instruments used in the analysis.

4.2. Relevance of observed variables and factors in the model

The measurement scales were developed and evaluated to ensure alignment between the empirical data collected and the underlying theoretical framework of the study. In the initial EFA, two observed variables (CE4 and CI5) had factor loadings below 0.5, indicating limited contribution to the overall conceptual structure. The exclusion of these 2 items was based not only on statistical criteria but also on theoretical considerations. Specifically, CE4 reflects students' personal experiences with career assessment tools, an activity that remains relatively uncommon in the educational context of ethnic minority students. As such, this item does not adequately represent the typical behaviors or universally shared experiences associated with CE among the target population. Conceptually, CE in this study is understood as a reflective and proactive process that is culturally and contextually grounded, rather than dependent on exposure to specialized assessment tools. Similarly, CI5 addresses the cultural relevance of the formal school curriculum. Although this is related to the broader learning environment, it does not directly capture the individual's competence in identifying and choosing a career, which is central to the construct of career orientation competence. CI5 leans more toward assessing external factors or institutional policy rather than the personal agency and decision-making capacity necessary for career development. Therefore, the removal of CE4 and CI5 not only improved the content consistency of the scales but also enhanced the conceptual alignment and structural validity of the measurement model within the specific context of this study.

The second EFA, conducted with the remaining 23 observed variables, identified six theoretical factors as expected: SA, ER, PG, CE, CC, CI. The statistical indicators met acceptable thresholds, namely: Kaiser-Meyer-Olkin (KMO)=0.9, indicating sampling adequacy; Bartlett's test of sphericity was significant (Sig.=0.000), confirming linear correlations among observed variables; the minimum eigenvalue was 1.211, and the total variance explained was 67.037%, demonstrating that the model accounted for a substantial proportion of the variance in the data. The lowest factor loading was 0.702, as shown in Table 3, exceeding the 0.5 threshold, indicating strong convergence between the observed variables and their respective theoretical factors.

Table 3. Rotated matrix of independent variables

No.	Observed variables	Component					
		SA	ER	CC	CI	PG	CE
1.	SA3	0.817					
2.	SA4	0.796					
3.	SA2	0.774					
4.	SA1	0.769					
5.	ER1		0.794				
6.	ER2		0.788				
7.	ER3		0.778				
8.	ER4		0.775				
9.	CC2			0.796			
10.	CC1			0.759			
11.	CC3			0.756			
12	CC4			0.726			
13	CI4				0.796		
14	CI3				0.759		
15	CI2				0.756		
16	CI1				0.726		
17	PG1					0.752	
18	PG4					0.751	
19	PG2					0.705	
20	PG3					0.702	
21	CE2						0.817
22	CE1						0.797
23	CE3						0.733

Subsequent analysis showed that all independent variables loaded most strongly on their intended constructs, with differences exceeding 0.3 from other factors, confirming clear discriminant validity among the theoretical structures. The six factors were designed based SCCT by Lent *et al.* [14], STF of Patton and McMahon [17], CRM of Hirschi [13], ensuring consistency between theoretical foundations and actual data within the context of ethnic minority students. Each factor reflects a distinct dimension of career orientation competence, such as SA, the ability to formulate and adjust PG, and CI, a particularly influential factor for ethnic minority students in career decision-making processes.

For the dependent variable COC, the measurement scale was developed based on studies by Hirschi [13], Savickas [33], and guidance from OECD [32]. The scale items reflect four core domains: i) career self-reflection; ii) career simulation and experience; iii) career information processing, and iv) career decision-making. When included in the extended validation model, the COC scale continued to meet statistical criteria: KMO=0.818, Bartlett's test Sig.=0.000, total variance explained=68.760%, and the lowest factor loading=0.810. These results not only confirm the statistical adequacy of the model but also demonstrate a strong alignment between the measurement structure and the proposed theoretical framework, thereby enhancing the conceptual validity and overall reliability of the study.

4.3. Correlation and regression analysis

To examine the relationship between the independent and dependent variables in the theoretical model, the study employed Spearman correlation analysis. The results indicated that all independent variables (SA, ER, CC, CI, PG, and CE) were positively and significantly correlated with the dependent variable, COC. This provides preliminary evidence supporting the association between personal, social, and informational factors and the career orientation competence of ethnic minority students.

Subsequently, multiple linear regression analysis was conducted to test the research hypotheses. As shown in Table 4, the overall regression model was statistically significant (Sig.=0.000), with an R^2 value of 0.685, indicating that approximately 68.5% of the variance in the dependent variable (COC) is explained by the six independent variables. The adjusted R^2 (0.682) and the Durbin–Watson statistic (1.869) suggest a high degree of model fit and the absence of first-order autocorrelation in the residuals. These indicators confirm the stability and appropriateness of the theoretical model within the research context.

Table 4. Model summary

Model	R	R Square	Adjusted R Square	Std. error of the estimate	Durbin-Watson
1	0.828[a]	0.685	0.682	0.31458	1.869

a. Predictors: (constant), CI, ER, CC, CE, SA, and PG

b. Dependent variable: COC. The letter 'b' here signifies the dependent variable in the regression model, for which approximately 68.5% of the variance is explained by the independent variables.

The results presented in Table 5 show that all standardized regression coefficients (Beta) are positive and statistically significant (p<0.001). Additionally, all variance inflation factor (VIF) values are below 2, indicating no signs of multicollinearity. The regression model is expressed as:

$$COC = 0.18 \times SA + 0.106 \times ER + 0.299 \times CE + 0.09 \times PG + 0.213 \times CC + 0.308 \times CI + \varepsilon$$

The analysis revealed that CI exerted the strongest influence on COC (β=0.308). This finding carries significant theoretical implications, as it affirms that among ethnic minority students, CI is not merely a form of self-recognition but a core determinant in how individuals evaluate, select, and pursue career pathways. In this context, CI encompasses traditional values, gender roles, native language, and local social norms, all of which strongly shape the career decision-making process. CI reflects the dynamic tension between preserving cultural heritage and adapting to the demands of the modern labor market, an ongoing socio-cultural process unique to ethnic minority youth.

Table 5. Regression analysis results

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.242	0.090		2.701	0.007		
	SA	0.131	0.019	0.180	7.019	0.000	0.726	1.377
	ER	0.080	0.019	0.106	4.306	0.000	0.791	1.265
	CE	0.232	0.019	0.299	11.963	0.000	0.763	1.310
	PG	0.069	0.022	0.090	3.193	0.001	0.602	1.662
	CC	0.161	0.020	0.213	7.913	0.000	0.654	1.528
	CI	0.234	0.020	0.308	11.812	0.000	0.699	1.431

a. Predictors: (constant), CI, ER, CC, CE, SA, and PG. The letter 'a' indicates the independent variables used in the regression model.

In addition, CE and CC were also found to be significant predictors of COC, highlighting the critical importance of access to career information and encouragement from family, school, and peers. In practice, these are precisely the resources often lacking among ethnic minority students living in remote and underserved areas. The prominence of CE and CC in this model contributes to an expanded understanding of SCCT, particularly when applied to populations with limited career guidance infrastructure.

By contrast, PG showed the weakest effect (β=0.09), suggesting that many students in the target group have yet to establish clear career aspirations. This may be attributed to limited exposure to occupational information, insufficient guidance from school and family, and a lack of confidence in their ability to shape future career outcomes. The finding highlights a pressing need for targeted interventions to help students formulate career goals aligned with their capabilities and socio-cultural realities. Taken together, the acceptance of all six hypotheses (H1–H6) not only confirms the validity of the adapted SCCT model, but also underscores the necessity of integrating cultural and social dimensions into career guidance research and practice, especially for marginalized groups such as ethnic minority students. This study contributes not only empirical validation but also theoretical advancement by clarifying that career orientation competence is a product of multi-dimensional interaction between personal factors, social support systems, and cultural context.

5. DISCUSSION

The findings of this study provide critical empirical evidence on the factors influencing COC among ethnic minority students in Vietnam's Central Highlands. By applying and extending the SCCT, the results not only reinforce the core assumptions of the model but also highlight the importance of contextual variables, offering theoretical and practical implications. A key empirical contribution is the demonstration that CI exerts the strongest influence on COC (β=0.308). This finding underscores the centrality of sociocultural context in shaping career development, particularly in collectivist communities with limited resources. While traditional SCCT emphasizes self-efficacy, PG, and agency, this study reveals that the career choices of ethnic minority students are deeply embedded in cultural norms, gender roles, language identity, and communal expectations. This aligns with Nguyen *et al.* [35], who argue that CI functions as a structural-cultural foundation that powerfully directs career behavior. In this light, CI is not merely a psychological variable but a sociostructurally determinant that must be integrated into culturally responsive and localized career guidance interventions [35].

Conversely, PG exhibited the weakest influence on COC (β=0.09). Although goal-setting is a key motivational driver in SCCT, this result reflects the reality that many ethnic minority students lack clearly

defined career goals due to limited access to information, role models, and institutional support. This finding echoes Do *et al.* [36], who argue that in under-resourced educational environments, career goals are often externally constrained rather than autonomously formed. As such, this calls into question the universality of SCCT and suggests a need to reconceptualize the construct of "goals" through a more context-sensitive lens.

The study also reveals that CE and CC are significant predictors of COC. Notably, the influence of CE reflects the critical need to provide students with opportunities for real-world experiences and access to diverse, contextually relevant career information. In regions like the Central Highlands, where students rarely encounter formal career guidance programs, promoting CE is not simply a developmental phase but a form of structural intervention that supports educational equity, consistent with previous research by Do *et al.* [36]. Similarly, CC underscores the salience of communal social support networks, where career decisions are not driven purely by individual agency but are shaped by local social structures such as kinship systems, village communities, and traditional hierarchies. Unlike urban contexts, where peers and personal interests often dominate, ethnic minority students' vocational trajectories are influenced by collective norms and hierarchical traditions. This observation aligns with Truc *et al.* [37], who advocate for embedding SCCT within the specific sociocultural structures of indigenous communities.

Although SA and ER also show positive relationships with COC, their predictive power is relatively modest. This reflects the structural constraints faced by ethnic minority students, particularly in economically disadvantaged regions. Drawing from the family stress model, financial hardship tends to reduce the psychological and behavioral support provided by parents, indirectly affecting adolescents' career development [38], [39]. In remote, highland ethnic communities, where parents often have limited education and little access to formal career information, ER plays a minimal role in guiding students' occupational decisions. OECD [40] further emphasizes that in disadvantaged populations, the lack of parental involvement in career orientation stems from limited knowledge, resources, and informational access, issues that are especially prevalent in rural ethnic minority contexts.

Based on the findings, several practical implications are proposed. First, the prominent roles of CI and CE underscore the urgent need to design localized career guidance programs that integrate cultural and regional characteristics, such as organizing career fairs within villages, deploying mobile counseling services, or incorporating traditional occupations into school curricula. Second, the significance of CC and communal influence suggests that support programs must be co-designed with influential community figures (e.g., village elders, clan leaders, and parents) to ensure cultural compatibility. Third, the study highlights the potential for aligning career development efforts with the sustainable development goals (SDG), particularly SDG 4 (quality education) and SDG 8 (decent work and economic growth) [41]–[44]. Revitalizing traditional and artisanal vocations as viable and sustainable career paths offers a dual benefit: preserving cultural heritage while fostering local livelihoods.

To enhance COC among indigenous ethnic minority students in the Central Highlands, this study proposes a set of culturally grounded, context-sensitive, and pragmatically actionable recommendations:

- Integrate culturally responsive SA programs into school curricula: educational authorities should mandate the use of bilingual (Kinh and indigenous language) career self-assessment tools embedded within the life skills and citizenship education modules. These tools can be administered during village-based cultural festivals or "career storytelling circles," where students explore personal interests through traditional folktales linked to occupations. Teachers should receive training on culturally responsive pedagogy, using ethnographic case studies and community role models to facilitate student reflection. This approach respects collective values while fostering individual career agency.
- Develop community-based mentoring and outcome modeling initiatives: provincial education departments should coordinate with ethnic alumni networks to establish on-site mentorship programs. Successful professionals (e.g., ethnic minority teachers, local entrepreneurs, and agricultural innovators) return to their villages periodically for career talks and mentoring circles in schools. In addition, mobile documentary units can record these mentors' stories in their native languages and screen them in remote schools. To reinforce long-term planning, ethnically targeted scholarships (e.g., for forestry, sustainable agriculture, and tourism) should be embedded in district-level vocational promotion schemes.
- Launch structured and visualized goal-setting workshops: schools should adopt a "career pathway canvas" approach, where students map future aspirations using pictorial timelines and localized career ladders. These activities should be held in "career orientation days", co-facilitated by teachers and respected community members. Materials must be provided in both Vietnamese and the indigenous languages. To align with policy, local departments of education should include these workshops in their annual school counseling evaluation metrics.
- Institutionalize village-based career support councils: the Ministry of Education and Training (MOET) can pilot a "community career advisory board" model in ethnic communes, where elders, parents, and school staff co-develop guidance plans. These boards meet quarterly to advise students and mediate

between school expectations and cultural norms. Career counseling should involve intergenerational dialogues, where students, parents, and elders openly discuss occupational plans with structured facilitation by trained school staff.

- Expand CE via blended technological and community-based platforms: in partnership with EdTech startups and non-governmental organizations (NGO), mobile-friendly platforms should offer career videos, quizzes, and virtual tours in ethnic languages. Local schools can host "village career exploration days", where artisans, farmers, and traders offer hands-on demos of their work. These events, sponsored by district labor departments, make career exposure practical and cost-effective without requiring travel to urban centers.
- Align CI with modern economic development in school programs: MOET and local vocational institutes should jointly develop curricula in community-based entrepreneurship, integrating traditional skills like brocade weaving, herbal medicine, or eco-farming into formal STEM and economics subjects. These should be tied to regional economic plans under SDG 4 (quality education) and SDG 8 (decent work). For example, schools can create "innovation from tradition" clubs, where students apply science to improve local livelihoods while preserving cultural heritage.

6. CONCLUSION

This study represents a first attempt to measure and analyze the career orientation competence of indigenous ethnic minority students in Vietnam's Central Highlands, systematically integrating three theoretical frameworks. The findings indicate meaningful associations between key constructs such as SA, social support, outcome expectations, and career readiness, thereby demonstrating the contextual applicability of these models to underrepresented indigenous populations. However, these results should be interpreted within the limitations of a cross-sectional quantitative design, which does not permit conclusions about causal relationships. Furthermore, context-specific factors such as linguistic diversity, traditional cultural values, and limited exposure to career pathways remain underexplored in the current analysis.

Given the unique sociocultural characteristics of indigenous communities in the Central Highlands, future research should adopt longitudinal approaches to capture the developmental trajectory of students' career orientation over time and implement culturally sensitive interventions to assess the practical utility of these theoretical models in real-world educational contexts. These directions are essential not only for improving the theoretical validity of SCCT in marginalized settings but also for informing the design of equitable, community-informed career guidance strategies that honor indigenous identity, intergenerational knowledge systems, and localized aspirations.

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AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

ETHICAL APPROVAL

The Ethical Committee of the Tay Nguyen University, Buon Ma Thuot City, Vietnam has granted approval for this study on 30 December 2023 (Ref. No T2024 – 13CB).

DATA AVAILABILITY

The data that support the findings of this study will be available in [https://drive.google.com/file/d/178zPESlS7SNFVt38xyD_jnebkBzI0CE-/view?usp=drive_link] following a [6-month] embargo from the date of publication to allow for the commercialization of research findings.

REFERENCES

[1] M. A. C. T. Kuijpers, A. J. Draaisma, J. H. Semeijn, and B. I. J. M. van der Heijden, "Towards a career perspective on lifelong development: applying a multiple-stakeholder approach to explore the concept," *Employee Relations: The International Journal*, vol. 47, no. 9, pp. 45–62, Feb. 2025, doi: 10.1108/ER-04-2024-0253.

[2] M. A. C. T. Kuijpers, "Career competencies, preparing students for the future," *Social Sciences*, vol. 14, no. 5, p. 291, May 2025, doi: 10.3390/socsci14050291.

[3] R. D. Duffy, H. J. Kim, G. Perez, C. G. Prieto, C. Torgal, and M. E. Kenny, "Decent education as a precursor to decent work: an overview and construct conceptualization," *Journal of Vocational Behavior*, vol. 138, p. 103771, Oct. 2022, doi: 10.1016/j.jvb.2022.103771.

[4] S. Oh, "Does identity affect labor supply?" *American Economic Review*, vol. 113, no. 8, pp. 2055–2083, Aug. 2023, doi: 10.1257/aer.20211826.

[5] K. T. Pham, X. Van Ha, N. H. Tran, and Y. T. X. Nguyen, "Curriculum reform in Vietnam: primary teachers' views, experiences, and challenges," *Education 3-13*, vol. 51, no. 3, pp. 440–451, Apr. 2023, doi: 10.1080/03004279.2022.2162829.

[6] World Bank, "2022 Vietnam poverty and equity assessment – from the last mile to the next mile," www.worldbank.org/. Accessed: Jul. 24, 2024. [Online]. Available: https://www.worldbank.org/en/country/vietnam/publication/2022-vietnam-poverty-and-equity-assessment-report

[7] UNICEF, "Vietnam, Country Office Annual Report 2021," Hanoi: UNICEF Vietnam, 2021. [Online]. Available: https://www.unicef.org/media/116496/file/Vietnam-2021-COAR.pdf

[8] B. N. Tuan, "Research on Factors Affecting the Career Choice Decision of High School Students in Thai Nguyen Province," *Jurnal Teknologi Informasi dan Pendidikan*, vol. 17, no. 2, pp. 383–397, Dec. 2024, doi: 10.24036/jtip.v17i2.857.

[9] D. N. Thi, "The Assessment for Career Counseling Skill for Teacher at High School: A Case Study in Vietnam," in *Research Anthology on Rehabilitation Practices and Therapy*, Information Resources Management Association, Ed., Hershey, PA: IGI Global, 2020, pp. 96–108, doi: 10.4018/978-1-7998-3432-8.ch006.

[10] B. M. Tam, "Management of experience activities and career guidance according to competence-based approach for high school pupils in Ho Chi Minh City," *Journal of Social Review and Development*, vol. 4, no. 3, pp. 1–9, 2025, doi: 10.64171/JSRD.4.3.1-9.

[11] Đ. T. Kiên, "The challenges of education development of ethnic minorities in Vietnam and handling solutions," *Asian Journal of Legal Education*, vol. 10, no. 2, pp. 190–203, Jul. 2023, doi: 10.1177/23220058231178727.

[12] M. L. Savickas *et al.*, "Life designing: a paradigm for career construction in the 21st century," *Journal of Vocational Behavior*, vol. 75, no. 3, pp. 239–250, Dec. 2009, doi: 10.1016/j.jvb.2009.04.004.

[13] A. Hirschi, "The career resources model: an integrative framework for career counsellors," *British Journal of Guidance & Counselling*, vol. 40, no. 4, pp. 369–383, Aug. 2012, doi: 10.1080/03069885.2012.700506.

[14] R. W. Lent, S. D. Brown, and G. Hackett, "Contextual supports and barriers to career choice: a social cognitive analysis.," *Journal of Counseling Psychology*, vol. 47, no. 1, pp. 36–49, Jan. 2000, doi: 10.1037/0022-0167.47.1.36.

[15] R. D. Duffy and E. A. Klingaman, "Ethnic identity and career development among first-year college students," *Journal of Career Assessment*, vol. 17, no. 3, pp. 286–297, Aug. 2009, doi: 10.1177/1069072708330504.

[16] G. V. Gushue and M. L. Whitson, "The relationship among support, ethnic identity, career decision self-efficacy, and outcome expectations in African American high school students," *Journal of Career Development*, vol. 33, no. 2, pp. 112–124, Dec. 2006, doi: 10.1177/0894845306293416.

[17] W. Patton and M. McMahon, *Career development and systems theory*. Rotterdam: SensePublishers, 2014, doi: 10.1007/978-94-6209-635-6.

[18] M. E. Kenny, D. L. Blustein, R. F. Haase, J. Jackson, and J. C. Perry, "Setting the stage: career development and the student engagement process," *Journal of Counseling Psychology*, vol. 53, no. 2, pp. 272–279, 2006, doi: 10.1037/0022-0167.53.2.272.

[19] A. Hirschi, "Career adaptability development in adolescence: multiple predictors and effect on sense of power and life satisfaction," *Journal of Vocational Behavior*, vol. 74, no. 2, pp. 145–155, Apr. 2009, doi: 10.1016/j.jvb.2009.01.002.

[20] J. E. Helms, *Black and white racial identity: theory, research, and practice*. Westport, CT: Praeger, 1993.

[21] R. Giacchino-Baker, "Educating Ethnic Minorities in Vietnam: Policies and Perspectives," *Kappa Delta Pi Record*, vol. 43, no. 4, pp. 168–173, Jul. 2007, doi: 10.1080/00228958.2007.10516476.

[22] World Bank, *Drivers of Socio-Economic Development Among Ethnic Minority Groups in Vietnam*. Washington, D.C.: World Bank, 2024.

[23] N. Q. Linh, C. T. Khoa, P. V. Hai, L. T. T. Huong, N. V. Quyet, and N. T. Bich, "Factors Influencing Ethnic Minority Students' Programme Development Capacity: Case Study at Pedagogical Universities in Vietnam," *International Journal of Learning, Teaching and Educational Research*, vol. 22, no. 8, pp. 301–324, Aug. 2023, doi: 10.26803/ijlter.22.8.17.

[24] Government of Vietnam, "Decree No. 05/2011/ND-CP on ethnic affairs," (in Vietnamese). Accessed: Jan. 20, 2025. [Online]. Available: https://vanban.chinhphu.vn/?docid=98691&pageid=27160

[25] J. DeJaeghere, V. Dao, B.-H. Duong, and P. Luong, "Inequalities in Learning in Vietnam: Teachers' Beliefs About and Classroom Practices for Ethnic Minorities," RISE Working Paper Series. 21/061, Feb. 2021, doi: 10.35489/BSG-RISE-WP_2021/061.
[26] B. G. Tabachnick and L. S. Fidell, *Using multivariate statistics*, 6th ed. Boston, MA: Pearson, 2013.
[27] L. E. K. Nguti, A. Osarenkhoe, and R. N. Kiraka, "A study of the relationship between social cognitive factors and career choice satisfaction in the technology career path: a gendered perspective," *Global Business Review*, vol. 22, no. 4, pp. 851–864, Aug. 2021, doi: 10.1177/0972150919840935.
[28] M. E. Rogers and P. A. Creed, "A longitudinal examination of adolescent career planning and exploration using a social cognitive career theory framework," *Journal of Adolescence*, vol. 34, no. 1, pp. 163–172, 2011, doi: 10.1016/j.adolescence.2009.12.010.
[29] L. Martin, J. Gao, T. Köhler, and Y. Zhao, "The interplay of multicultural and career identity development," *The International Journal of Human Resource Management*, vol. 35, no. 8, pp. 1577–1601, Apr. 2024, doi: 10.1080/09585192.2024.2317726.
[30] X. Xing and J. W. Rojewski, "Family influences on career decision-making self-efficacy of Chinese secondary vocational students," *New Waves Educational Research & Development*, vol. 21, no. 1, pp. 48–67, 2018.
[31] S. Kim, M. Hood, P. Creed, and D. Bath, "'New career' profiles for young adults incorporating traditional and protean career orientations and competencies," *Career Development International*, vol. 27, no. 5, pp. 493–510, Sep. 2022, doi: 10.1108/CDI-10-2021-0256.
[32] OECD, *Learning for jobs*. Paris: OECD Publishing, 2010, doi: 10.1787/9789264087460-2-en.
[33] M. L. Savickas, "The theory and practice of career construction," in *Career development and counseling: Putting theory and research to work*, 3rd ed., S. D. Brown and R. W. Lent, Eds., Hoboken, NJ: John Wiley & Sons, 2021, pp. 165–200.
[34] J. F. Hair Jr., W. C. Black, B. J. Babin, and R. E. Anderson, *Multivariate data analysis*, Upper Saddle River, NJ: Prentice Hall, 2009.
[35] H. L. Nguyen, A. T. V. Dam, and L. T. K. Ha, "Evaluation of the organization and effectiveness of career counseling for Vietnamese high school students," *Humanities and Social Sciences Letters*, vol. 12, no. 2, pp. 383–393, May 2024, doi: 10.18488/73.v12i2.3755.
[36] D. N. M. Do, L. K. Hoang, C. M. Le, and T. Tran, "A human rights-based approach in implementing sustainable development goal 4 (quality education) for ethnic minorities in Vietnam," *Sustainability*, vol. 12, no. 10, p. 4179, May 2020, doi: 10.3390/su12104179.
[37] N. T. Truc, V. T. Vuong, P. T. Vy, H. T. Nga, V. X. Hoi, and A. X. Hoa, "Factors affecting the quality of ethnic minority human resources: a casestudy in the central highlands, Vietnam," *Migration Letters*, vol. 21, no. 3, pp. 627–639, 2024.
[38] A. S. Masarik and R. D. Conger, "Stress and child development: a review of the family stress model," *Current Opinion in Psychology*, vol. 13, pp. 85–90, Feb. 2017, doi: 10.1016/j.copsyc.2016.05.008.
[39] T. K. Neppl, J. M. Senia, and M. B. Donnellan, "Effects of economic hardship: testing the family stress model over time.," *Journal of Family Psychology*, vol. 30, no. 1, pp. 12–21, Feb. 2016, doi: 10.1037/fam0000168.
[40] OECD, *The State of Global Teenage Career Preparation*. Paris: OECD Publishing, 2025, doi: 10.1787/d5f8e3f2-en.
[41] N. T. T. Phuong, D. H. Tra, and P. V. Hai, "Cultural and social context-based learning in natural sciences for the development of students' social responsibility in Vietnam," *International Journal of Education and Practice*, vol. 13, no. 1, pp. 127–143, Oct. 2024, doi: 10.18488/61.v13i1.3965.
[42] R. I. Balbuena-Hernandez, M. L. Sampedro-Rosas, A. L. Rodriguez-Herrera, R. Bedolla-Solano, M. de L. Soto-Rios, and K. A. Carrasco-Urrutia, "Education for sustainability toolkit: the new water culture approach," *International Journal of Education and Practice*, vol. 11, no. 1, pp. 59–84, 2023, doi: 10.18488/61.v11i1.3258.
[43] B. van der Heijden *et al.*, "Sustainable careers across the lifespan: moving the field forward," *Journal of Vocational Behavior*, vol. 117, p. 103344, Mar. 2020, doi: 10.1016/j.jvb.2019.103344.
[44] M. Tungtakanpoung and R. Prouska, "Cultural intelligence and sustainable career success in intercultural service encounters," *Journal of Management, Spirituality & Religion*, vol. 21, no. 7, pp. 759–784, Nov. 2024, doi: 10.51327/TOBM3932.

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