RESEARCH ON THE DETERMINANTS INFLUENCING THE INNOVATION OPPORTUNITY RECOGNITION OF UNIVERSITY STUDENTS IN VIETNAM

The 13th International Conference on Emerging Challenges: Business Dynamics in Disruptive Economy

Nguyen Thi Thu Hien[1*]

[1] Faculty of Management, School of Economics and Management, Hanoi University of Science and Technology, Hanoi, Vietnam

[*]Corresponding author: hien.nguyenthithu1@hust.edu.vn

Abstract

Innovation opportunity recognition (IOR) is a critical element of the entrepreneurial process, yet little examination has been made on what causes this among students in countries emerging into a market economy. This study looked at the factors influencing IOR among Vietnamese students from three aspects: personal innovation (PI) and teamwork skills; and external innovation support (EIS). A survey on 374 students from the leading universities around Vietnam was made between June and August 2025. Covariance-Based SEM (CB SEM) was employed to validate the scale and carry out tests of the study's hypotheses. Results suggest that PI is the most important factor affecting IOR (β=0.926). This highlights that the recognition of opportunity in innovation requires creativity, proactivity, persistence and other factors which can only come from within a person. EIS has a good much less significant but recognized effect on IOR (β=0.174) This shows that although institutional policies, mentoring and resources can all support and amplify a student's inherent innovative capacity (competency), they do not replace it. TWS on the other hand has a negative effect of IOR (β=-0.260), suggesting that collaboration without structure may hinder creative thinking and lead instead to a herd mentality. The findings make a significant contribution to the literature by bringing forward more clearly how individual, social and institutional factors interact in the recognition of business opportunities. The study suggests that universities should strengthen students' personal innovation competencies, restructure teamwork practices and create more supportive ecological environments. Simultaneously it is recommended in this study that policy makers should draw up comprehensive frameworks for innovation-driven entrepreneurship.

Research purpose

- Examine determinants influencing innovation opportunity recognition (IOR) among Vietnamese university students.
- Assess the relative effects of personal innovation (PI), teamwork skills (TWS), and external innovation support (EIS).

Research motivation

- Address limited empirical evidence on IOR in emerging economies.
- Respond to Vietnam’s policy priority of promoting entrepreneurship and innovation.
- Provide theoretical and practical insights for higher education and policymakers.

Research design, approach, and method

- Quantitative survey of 374 students from major Vietnamese universities.
- Applied Covariance-Based Structural Equation Modeling (CB SEM).
- Ensured validity through reliability testing, confirmatory factor analysis (CFA)

Main findings

- PI is the strongest predictor of IOR (β = 0.926).

- EIS has a modest but positive effect (β = 0.174).
- TWS negatively influence IOR (β = –0.260), indicating risks of conformity and reduced creativity.

Practical/managerial implications

- Universities should prioritize personal innovation skill development.
- Teamwork activities must be restructured to encourage individual creativity.
- Institutional support (mentoring, funding, incubators) should act as enablers, not substitutes.
- Policymakers should create integrated innovation ecosystems and support student-led initiatives.

Keywords: *Personal innovation, teamwork skills, external innovation support, opportunity recognition, Vietnamese University students*

1. INTRODUCTION

Innovation opportunity recognition (IOR) is broadly recognized as the fundamental cognitive process that forms entrepreneurial behavior (Shane & Venkataraman, 2000). It represents a person's ability to recognize, interpret and generate ideas that can be used create value in an economic and social context. This capacity thereby is the "source" of entrepreneurial action, determining whether people see that there are perhaps worthwhile opportunities out there (Ardichvili et al, 2003). From an educational perspective, IOR is particularly important for students in higher education as it influences university students' decisions on entrepreneurship among other things, improves employability and promotes flexibility to changing labor markets (Kim et al 2018). However, relatively little is known about mechanisms that influence students' capacity to recognize opportunities for innovation particularly in emerging economies.

In theoretical terms, to understand the phenomenon of opportunity identification we can consider it from three complementary approaches. First, Entrepreneurial Cognition Theory suggests that individuals possess different cognitive structures and mental models for interpreting market and environmental information (Baron, 2006). Students who are more creative, proactive and open to experience are better at "connecting the dots" and seeing opportunities that others miss. Secondly, the Resource-Based View (RBV) posits that opportunity identification depends both on individual cognition and access to strategic resources and institutional arrangements (Alvarez and Barney 2007; Barney 1991). University-level resources - like mentoring, incubation and innovation-supportive atmospheres - can be therefore perceived as being valuable enablers that supplement but not replace individuals' cognitive assets. Third, Human Capital Theory posits education, skill and previous experience as important antecedents to entrepreneurial competence (Becker, 1993; Davidsson & Honig, 2003). Individual creativity and 'working with others' are particular types of human capital, which in aggregate determine the extent to which students have the capacity to recognize and exploit entrepreneurial opportunities.

However, the current evidence base is largely based on Western or developed economies (Dyer et al, 2008; West, 2002). This geographical distribution results in a theoretical blind spot when it comes to understanding how cultural, institutional and social context shape actions in emerging economies. Vietnam, an emerging economy transforming rapidly towards an innovation-based economy, offers a suitable environment for such an inquiry. Vietnamese higher education has recently begun to foster entrepreneurship education and innovation ecosystems nationally, like project 844 ("Supporting Innovative Startups"), but no empirical evidence is available to understand how these extra-supports help in respect to individual-and team level.

To fill the gap, it is the purpose of this research to investigate factors affecting IO among university students in Vietnam. It concentrates on three major antecedents arising from the synthesized theoretical framework: personal innovation (PI), teamwork skills (TWS) and external innovation support (EIS). PI is indicative of the person's creativity, proactivity and persistence in producing and implementing ideas (Chell & Athayde, 2009; De Jong & Den Hartog, 2010). TWS is also able to represent social skills like communication, coordination and conflict management in order to support cooperation (O'Neil et al, 1997). Within the IE perspective, EIS refers to institutional endowments that might exist as innovation friendly environments and university innovation policies that establish favorable conditions serving entrepreneurial learning (Guerrero & Urbano, 2012; Rasmussen & Wright, 2015).

Drawn from this conceptual footing, the present study seeks to evaluate the following questions:

1. How do individual innovation, teamwork skills and external innovation support affect the innovation opportunity recognition of students in Vietnamese universities?

2. Which of these predictors is most explanatory of the data?

The main purpose of this paper is to construct and empirically test a structural model that explains how individual, social and institutional determinants collectively influence the process of innovation opportunity recognition in university students in emerging economies. Drawing on entrepreneurial cognition, human capital, and resource-based theories, this study makes contributions to the theoretical refinement as well as policy-relevant insights regarding how higher education institutions can nurture innovation mindsets. The article is divided in six sections: literature review and development of hypotheses (section 2), methodology (section 3), results (section 4), theoretical and practical implications and suggestion for further research (section 5) conclusion, limitations, recommendations for future research are discussed in section 6.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Conceptual Framework and Theoretical Foundations

Innovation opportunity recognition (IOR) is the cognitive process through which individuals identify potential ideas or changes that can create value in the market or within organizations (Shane & Venkataraman, 2000; Ardichvili et al, 2003). Drawing on extant entrepreneurship literature, IOR is conceptualized as a function of 3 key antecedents: personal innovation (PI), teamwork skills (TWS) and external innovation support (EIS). The model is based on three underlying theories: Entrepreneurial Cognition Theory, Human Capital Theory, and the Resource-Based View (RBV).

Based on Entrepreneurial Cognition Theory which postulates that people naturally use cognitive scripts, heuristics and pattern recognition processes to find opportunities others fail to recognize (Baron, 2006). This suggests that cognitive and psychological characteristics at the individual level (e.g., creativity, proactiveness, risk-taking) are the precursors of opportunity recognition for innovation. Human Capital Theory (Becker, 1993; Davidsson & Honig, 2003) also considers knowledge and experiences learned at an educational institution as contributing positively to the individual's ability to process information and engage in entrepreneurial behavior. Finally, RBV (Barney, 1991; Alvarez & Barney, 2007) takes this logic a step further into the institutional context by asserting that access to unique non-substituta ble resources such as university policies, mentoring and innovation labs can enhance opportunity recognition capabilities.

In accordance with the hierarchical latent construct approach (Jarvis et al., 2003), we treat Personal Innovation (PI) and External Innovation Support (EIS) as second-order reflective constructs in this study. PI includes two first-order factors, innovative generic skills (IGS) and innovative behaviour (IB), IES is composed of innovation-supportive environment (ISE) and university innovation policies (UIP). This multi-layered structure enables the model to incorporate both individual- and institutional-level predictors of IOR.

2.2. Innovation opportunity recognition (IOR)

The identification of innovation opportunities presupposes that potential business ventures are recognized by careful observation and interaction with one's environment. Existing studies have pointed out that there is an individual ability to recognize and take advantage of opportunities, so the recognition and exploitation of good business opportunities need person with this special firm while mobilizing cognitive resources are needed to obtain innovative products (Manev et al., 2005). According to Dyer et al. (2008), good opportunity recognition has to do with taking up a proactive stance and actively trying to find and accumulate new information. Likewise, Kim (2018) characterises the process of this recognition as a cognitive ability to notice things that could create new economic value. This involves keen thinking and acting in order to notice, evaluate and make the most of new opportunities.

Entrepreneurship and innovation education is crucial in this context. These educational programs contribute to the development of cognitive preparedness and proactive abilities, helping students detect early signals of changes in their living conditions and transform them into entrepreneurial opportunities. In the end, having an eye for opportunities–which I believe in is the heart of what drives innovation and fuels continued entrepreneurial success.

2.3. Personal Innovation (PI)

Personal Innovation (PI) refers to the personality trait of an individual's tendency to generate new ideas, be proactive and seek unconventional solutions when faced with ambiguous conditions (Chell & Athayde, 2009; De Jong & Den Hartog,

2010). In the entrepreneurial cognition logic, this set of characteristics represents the cognitive base upon which it is possible to identify and exploit opportunities (Baron, 2006).

Innovative generic skills (IGS)

The concept of innovative generic skills refers to a set of soft skills and personal attributes that are fundamental and transferable across diverse professional contexts. These skills represent the core capabilities that enable individuals, particularly younger generations, to adapt, innovate, and remain creative in constantly changing environments.

According to Chell and Athayde (2009), the key components of innovative generic skills include:

- **Creativity:** The ability to generate and connect novel ideas, solve problems in a flexible manner, demonstrate curiosity, and engage in independent thinking.
- **Proactiveness:** A tendency to take initiative, seek solutions, and challenge the status quo rather than passively waiting for opportunities.
- **Risk Propensity:** The willingness to confront and manage uncertain situations, and the courage to experiment with new ideas.
- **Leadership:** The capacity to guide, influence, and direct oneself and others toward innovative goals.
- **Motivation:** The internal drive to sustain commitment, perseverance, and enthusiasm in pursuing innovative endeavors.
- **Self-efficacy:** The belief in one's own ability to accomplish tasks and achieve desired outcomes.

Prior research has shown that individuals with higher creative self-efficacy and proactive problem-solving capabilities are more adept at identifying entrepreneurial opportunities (Chell et al, 2009).

Innovative behavior (IB)

Innovating is typically viewed as a lifelong process, which includes the generation, furtherance, implementation and communication of novel ideas that benefit individuals, teams or organizations. According to Yuan et al. (2015), is to go into more details than just generate ideas, also modify them according to the specific context. This perspective is similar to the view that innovative behavior is always a dynamic expression, inextricably related to creativity and adaptation.

De Jong and Den Hartog (2005) go one step further in disaggregating the concept of innovative behavior and make a distinction between self-initiated innovation—i.e., when initiating a change comes from an individual's proactive actions rather than being externally triggered. This progression occurs over a series of stages that comprises the generation of ideas, their conception, experimentation and application, as well as continuous improvements. As such, innovation should be thought of as a chain of events rather than an event.

Consistent with the above, Kim (2018) described innovative behavior as a procedure of generating and implementing new ideas in individual or organizational levels. Those different views all have one thing in common: that creative ideas are made tangible, and make a valuable contribution to growth and to competitive performance at the individual level.

Empirical studies consistently demonstrate that PI positively predicts opportunity recognition (De Jong et al, 2005; Kim et al., 2018). Therefore, the first hypothesis is proposed:

H1: *Personal innovation positively influences innovation opportunity recognition among university students.*

2.4. Teamwork skills (TWS)

Teamwork skills (TWS) comprise a group of non-technical interpersonal and collaborative skills such as communication, team coordination, conflict resolution, and mutual support that facilitate effective team performance (O'Neil et al., 1997). In enterprise learning, teams are frequently a proxy for the Innovation ecosystem and by constructing them as an entity provides an avenue to share knowledge and create synergy etc (West 2002). Previous study suggested that a diverse team has positive effect on innovation and divergent thinking (Kozlowski & Ilgen, 2006; Chen et al, 2024).

However, recalling excessive conformity or cohesion in groups allows teams block out dissenting opinions and negatively impacts on creativity (get references for groupthink here). This problem is exacerbated in Eastern cultures such as East

Asia, where respect for authority and need to maintain harmony could be factors that may also drive down people's perception on opportunity. Therefore, although teamwork may promote mutual learning, it might also constrain cognitive variety that is essential in identifying new opportunities.

H2: *Teamwork skills have a significant effect on innovation opportunity recognition among university students.*

2.5. External Innovation Support (EIS)

External Innovation Support (EIS) are the institutional and environmental conditions created by universities to foster student innovation and entrepreneurship (Guerrero & Urbano, 2012; Rasmussen & Wright, 2015). According to the Resource-Based View, such supports may function as strategic resources that bolster particular capabilities.

External Innovation Support (EIS) are the institutional and environmental conditions created by universities to foster student innovation and entrepreneurship (Guerrero & Urbano, 2012; Rasmussen & Wright, 2015). According to the Resource-Based View, such supports may function as strategic resources that bolster particular capabilities.

Innovation-Supportive Environment (ISE)

ISE comprises physical and social structures such as innovation labs, incubators, mentoring scheme, or funding opportunities forming the environment where opportunities are identified (Etzkowitz 2013). The importance of the context in which students work within a university is also highlighted. Research has shown that factors such as environment conducive to innovation-share, safety, supportive learning facilities and faculty support-enhance students' ability to recognize and seize opportunities (Ritter et al., 2017; Jamali et al., 2019).

University Innovation Policies (UIP)

UIP encompasses formal programs and policies—entrepreneurship curricula, competitions, and national frameworks like *Vietnam's Project 844*—that institutionalize innovation activities. These policies signal institutional commitment and resource allocation that indirectly shape students' opportunity recognition capabilities.

Interventions at the policy level within universities, start-up support programs; soft skills training courses; incentives to experiment with new ideas and incentives for innovation engagement will create supportive ecosystems that foster innovation and entrepreneurship (Rasmussen et al., 2015; Guerrero et al., 2012, OECD, 2018).

H3: *External innovation support positively influences innovation opportunity recognition among university students.*

2.5. Conceptual Model

Based on the literature and hypotheses, the study proposes a hierarchical model in which Personal Innovation (PI) and External Innovation Support (EIS) are second-order constructs influencing Innovation Opportunity Recognition (IOR), while Teamwork Skills (TWS) function as a first-order predictor.

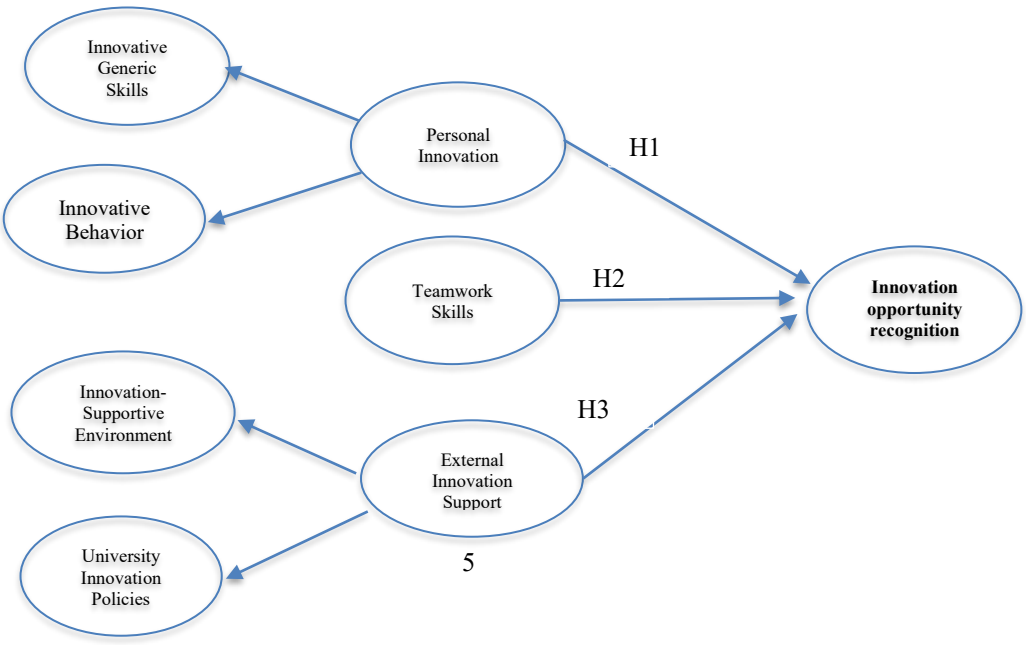


Figure 1: The conceptual model

(Source: The study's authors)

3. METHODOLOGY

Research design and measurement

This study utilizes a quantitative research design aimed at exploring the factors that influence innovation opportunity recognition (IOR) among university students in Vietnam. To measure the relevant constructs, we adapted multi-item scales from previously validated studies, making slight adjustments to better fit the context of higher education in Vietnam. A five-point Likert scale was employed, ranging from 1 (strongly disagree) to 5 (strongly agree), to gauge the observed variables.

Based on the study's conceptualization, both PI and EIS were modeled as second-order reflective constructs. Specifically, PI was operationalized through two first-order dimensions (IGS and IB), while EIS was operationalized through ISE and UIP. Each first-order construct was measured using multiple observed indicators adopted from validated scales in prior research (Chell & Athayde, 2009; De Jong & Den Hartog, 2005; Guerrero & Urbano, 2012; Ritter & Mostert, 2017).

Sampling and data collection

The study focused on students from prominent universities in Vietnam that actively incorporate innovation and entrepreneurship into their curricula. We selected four universities: Hanoi University of Science and Technology, Vietnam National University, Thuy loi University, and Tay Nguyen University. A purposive sampling method was used, concentrating on students enrolled in programs that include exposure to innovation and entrepreneurship education. Data was gathered through a structured online survey conducted from June to August 2025. We received a total of 376 responses, of which 374 were validated after cleaning the data. This sample size meets the requirements for the current number of observed variables of the research model, which is 30 variables (Wang et al, 2012; Kline, 2010).

Data analysis

The data analysis was carried out using SPSS 24 and AMOS 22, following three primary steps: (1) conducting reliability analysis for the scales using Cronbach's Alpha; (2) executing confirmatory factor analysis (CFA) to validate measurement accuracy, composite reliability, discriminant validity and model fit; and (3) utilizing structural equation modeling to test hypotheses and evaluate path coefficients. We adhered to widely accepted criteria for assessing model fit, including CFI, TLI, NFI, and IFI (all >0.9), RMSEA (<0.08), and Chi-square/df (<5).

4. RESULTS

Information about the analyzed sample

Table 1. The structure of the analyzed sample (n = 374)

Variable	Categories	Number of respondents	Percentage (%)
Gender	Male	191	51.1
	Female	183	48.9
Year of study	First-year student	91	24,3
	Second-year student	67	17,9
	Third-year student	178	47,6
	Fourth-year student	33	8,8
	Fifth-year student	5	1,3
University	HUST	174	46,5
	ULIS	56	15,0

	TLU	95	25,4
	TNU	49	13,1
Field of study	Technology	113	30,2
	Economics	217	58,0
	Languages and Social Sciences	44	11,8

(Source: The study's authors)

The table 1, shows an almost equal gender distribution with males comprising of 51.1% and females 48.9%. With respect to year of study, respondents were mainly composed of third-year students (47.6%), first-year students were the second largest group from which responses were recorded (24.3%) and followed up by second year at 17.9%. It is just 8.8% for seniors and 1.3% for fifth-year students. This means the sample is made up of students in early and middle years of undergraduate study.

In terms of institutional affiliations, Hanoi University of Science and Technology (HUST) is the largest provider with 46.5%), followed by Thuy Loi University (25.4%). From ULIS, 15.0% and from Tay Nguyen University (TNU), 13.1% were smaller groups in this study sample.

In terms of fields of study, the largest proportion are in Economics (58.0%), while many in Technology (30.2%). 11.8% are of Languages and Social Sciences. This spread is especially focused on the areas of innovation and entrepreneurship.

Purposive sampling was successful of many disciplines, institutions and student backgrounds. This heterogeneous population is important in understanding the determinants influencing innovation opportunity recognition among university students in Vietnam.

Scale reliability analysis

Table 2. Scale reliability test and rejected observed variables

Scale	Number of observed variables	Observed variable are excluded	Cronbach's Alpha coefficient	Conclusion
TWS	6	None	0.933	Good quality
IGS	5	None	0.914	Good quality
IB	7	None	0.946	Good quality
OR	4	None	0.919	Good quality
ISE	4	None	0.943	Good quality
UIP	4	None	0.954	Good quality

(Source: The study's authors)

The results shown in Table 2 indicated that variables all satisfied the conditions in the reliability analysis of the scale through an alpha coefficient > 0.6 and a variable-total correlation > 0.3 (Nunnally and Burnstein, 1994).

Confirmatory factor analysis

The confirmatory factor analysis (CFA) was conducted using AMOS 22 with a sample size of 374. The model demonstrated an adequate fit to the data, as indicated by key fit indices: $\chi^2/df = 3.224$ (< 5), CFI = 0.928, TLI = 0.921, NFI = 0.899, IFI = 0.928, and RMSEA = 0.077 (< 0.08). These values fall within the acceptable thresholds suggested by Byrne (2001), Hair et al. (2019), and Kline (2016), confirming a satisfactory model fit.

All standardized factor loadings exceeded 0.7 and were statistically significant at $p < 0.001$, indicating strong convergent validity. Table 3 shows that the reliability and validity of the constructs were assessed through Composite Reliability (CR) and Average Variance Extracted (AVE). Results showed that CR values ranged from 0.933 to 0.967, exceeding the

minimum acceptable level of 0.70 (Hair et al., 2019), and AVE values ranged from 0.69 to 0.79, surpassing the 0.50 threshold (Fornell & Larcker, 1981). Discriminant validity was confirmed as the square root of each construct's AVE was greater than its inter-construct correlations.

Table 3. Composite Reliability (CR) and Average Variance Extracted (AVE)

Construct	CR	AVE	√AVE
Personal Innovation (PI)	0.964	0.692	0.832
External Innovation Support (EIS)	0.967	0.785	0.886
Teamwork Skill (TWS)	0.933	0.700	0.837
Innovation opportunity recognition (IOR)	0.951	0.741	0.861

(Source: The study's authors)

These findings collectively demonstrate that the measurement model achieved internal consistency, convergent validity, and discriminant validity, providing a robust foundation for subsequent SEM analysis.

Result on SEM application and hypothesis testing

The results shown in Figure 2 show that the overall fit of the model is acceptable: $\chi^2/df = 3.224$ (< 5.0), CFI = 0.928, TLI = 0.921, NFI = 0.899, IFI = 0.928, and RMSEA = 0.077 (< 0.08), all of which are within the recommended threshold values proposed by Hair et al. (2019), and Bentler and Bonett (1980). The GFI (0.805) and AGFI (0.772) are slightly lower than the conventional threshold of 0.90 but are considered acceptable due to the complexity of the model and the relatively large number of estimated parameters (Bollen, 1989). Together, these indices provide strong evidence of adequate and parsimonious model fit.

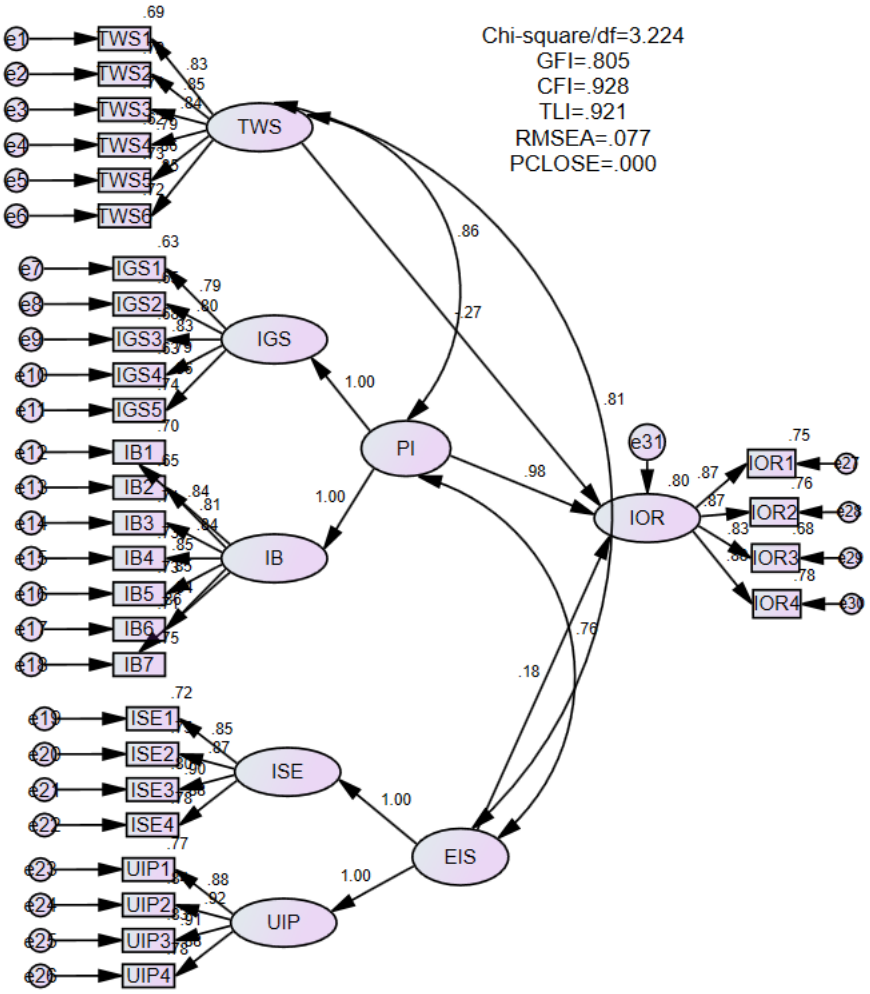
Meanwhile, the standardized path coefficients further confirmed the hypothesized relationships between the constructs. Personal Innovation (PI) had the strongest positive impact on Innovation Opportunity Perception (IOR) ($\beta = 0.977$, $p < 0.001$), followed by External Innovation Support (EIS) ($\beta = 0.184$, $p = 0.001$), while Teamwork Skills (TWS) showed a negative but statistically significant relationship with IOR ($\beta = -0.271$, $p < 0.001$) (Table 4). These findings suggest that both individual-level and external-level innovation capabilities contribute significantly to entrepreneurial opportunity perception, while over-reliance on team processes may reduce individual creativity and opportunity sensitivity.

Table 4. Hypothetical results

Hypothesis	Path			Estimate	S.E.	C.R.	P	Result
H1	IOR	<---	PI	.926	.074	12.597	***	Accept
H2	IOR	<---	TWS	-.260	.075	-3.482	***	Accept
H3	IOR	<---	EIS	.174	.053	3.279	.001	Accept

(Source: Analysis results's authors)

The squared multiple correlation coefficient (R^2) of IOR is 0.803, indicating that approximately 80.3% of the variance in innovation opportunity perception is explained by PI, EIS, and TWS. This high explanatory power highlights the robustness of the proposed model and its theoretical foundation in the Resource-Based View and Cognitive Entrepreneurship Theory. Overall, the SEM results demonstrate good reliability, validity, and predictive power, supporting the hypothesized relationships across the entire model.



(Source: Analysis results's authors)

Figure 2: Results of structural equation modeling

5. DISCUSSIONS AND IMPLICATIONS

Discussion

The The structural model provides clear evidence that PI played a significant mediating role on the relationship between students' IOR and each variable. Near unity path coefficient (β = 0,926) clearly disclose that innovative risk taking students imaginative, exploring ideas and persistency in efforts are much better equipped to scan for entrepreneurial opportunities. With this high correlation it is assumed that the process of recognising opportunities depends more in humans' individual abilities than it does on their environment. This is why, on an educational level, it's important to cultivate personal innovation skills – such as creative problem-solving, resilience in an uncertain environment and entrepreneurial thinking – with hands-on instruction, case studies and by integrating prototyping and experimentations into the evaluation frameworks.

In contrast, EIS has a statistically significant impact on but is weak compared with IS education (β = 0.174). This indicates that formalizing systems, government supports and institutional endorsement can help transitional students to identify opportunities, yet this fosterive mechanism should be seen as a support but not a force. In practice, environmental support should be considered as an instrument that contributes to strengthen students' personal resources rather than a panacea.

One interesting aspect that arises from this study, though somewhat unexpected is the fact that Teamwork skills (TWS) had a significant negative effect on students' capacity to identity opportunity for innovation similarly Innovation

Opportunities Recognize (IOR). Even though scholars widely accepted that team working encourage creativity, and knowledge sharing (West, 2002; Chen et al, 2024), but in the case of Vietnam their findings show that those having stronger teamwork skills are less likely to recognize an entrepreneurial opportunity ($\beta = –0.260$). This implies that group dynamics, if not carefully orchestrated, can suppress creativity rather than foster it.

At a theoretical level, these findings echo classic complaints regarding group decision making. Nemeth et al. (1989) theorized that groupthink may stifle innovative thinking through the force of conformity, and thus reduce creativity. This finding is consistent with studies in organizations, where a homogenous team can deter originality by emphasizing consensus. In many Asian contexts where consensus and deference to authority are often prized, intragroup interactions might compound homophily and contours of norms that inhibit the challenging of majority opinions. This cultural element may also explain why collaboration gets in the way of opportunity identification for Vietnamese students.

However, this is in stark contrast to the evidence from research undertaken within Western higher education where teamwork has been found to strengthen entrepreneurial skills and alertness by synthesizing multiple perspectives and engaging in collaborative brainstorming (Baron, 2006). This reveals that teamwork isn't inherently good for spotting opportunities, though; its effectiveness depends on how team dynamics are put in place. In order to get the best possible team dynamics, instructors/institutions should stop aiming for consensus. Rather, they should use techniques that encourage people to come up with ideas on their own before discussing them in a group, instigate rotation of leaders and foster healthy disputes between co-workers. These teaching approaches can help to transform team work as something that restricts into a powerful mechanism for improving identification of entrepreneurial opportunities.

Implications

On the whole, these findings are relevant not only to universities, but also to policy-makers. Between these levels, there should also be an emphasis in higher education on the development of students' own innovation capabilities through a curriculum that supports thinking like entrepreneurs and learning about opportunities. At the same time, co-teaching approaches require reformulation to navigate between working as a team and exercising individual creativity without falling into the trap of consensus fetishism. Institutions need to "engineer" an environment of support — incubation, seed funding, mentorship and trial and error lab space — not as replacements for personal initiative but as tools to remove the barrier between individual creativity and opportunity recognition. Also, universities should establish explicit innovation target for student-led projects and prototypes as well as with external partners to ensure innovation is fully integrated within its accountability measures. For Government and regulators, the results reveal the importance of more than generic support could provide. Rather, the emphasis should be on creating an integrated innovation system. Public funding campaigns need to channel money and resources directly into students' hands with less bureaucracy than we see on student projects posted at universities. The national systems should not only facilitate collaboration across disciplines like technology, design and economy but also be able to capture the physical conditions in which entrepreneurial opportunities emerge. There is also a need to subsidize faculty's professional development that allows for the creation of new institutions and an elevated level of expertise moving beyond mechanics of hands-on learning, but through coaching in innovation and opportunity recognition.

6. CONCLUSION

An analysis in the context of Vietnam on what influences undergraduates' opportunity recognition is presented through structural equation model. The findings show that self-initiated innovation that consists of creativity, proactivity and persistence is the strongest predictor of opportunity identification. This highlights the absolute importance of personnel. Both the educational environment and policy support are positively associated with it, but their effects are not very strong. In contrast weakly formed team-work abilities could suppress the process of opportunity identification for entertaining conformity than innovation. The discoveries add to the longitudinal literature by showing how micro-, meso- and exo-level factors interplay in fostering entrepreneurial potential. On a practical level, these three components would include: the development of individual innovation skills (i.e. parallel to personal learning objectives); re-designing teamwork (e.g. balancing team output with individual contributions for creative thinking); and developing ecosystem and support infrastructure including mentoring, incubation services, initial seed funding for student projects. For policy makers, the research suggests that there is a pressing demand for adopting holistic systems of education which support multidisciplinary networking and pathways, capacity-building and investment in qualified staff. Both efforts combined can help to create a flourishing insurance entrepreneur environment.

7. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

There are some limitations of this study, although it provides a rich set of insights. First, the data were collected from only four universities in Vietnam; therefore these findings may not be representative of higher education in this country. It would be better if future studies include different universities in any countries, including heterogeneous fields categories for more generalizable findings. The second limitation is that this study designs as a cross-sectional research can only provide an alimited observation of the dynamics between innovation opportunity recognition over time. The effects of cause and ideas development would be better understood with a longitudinal research design. Furthermore, the study focused on individual innovation, team cooperation and external assistance while ignoring others which might also be crucial. By combining these components, researchers would gain a better understanding about why opportunity is recognized. Such issues need to be addressed in order to pave the way for future studies that provide a more comprehensive understanding about how individual, social and institutional factors interact with one another and shape innovation-driven entrepreneurship in emerging economies.

8. ACKNOWLEDGMENTS

This research is funded by the Hanoi University of Science and Technology (HUST) under project number T2024-PC-091

9. REFERENCES

Anderson, J. C., & Gerbing, D. W. (1988). Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Journal of Psychological Bulletin, 103*(3), 411–423.

Alvarez, S. A., & Barney, J. B. (2007). Discovery and creation: Alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal, 1*(1–2), 11–26.

Ardichvili, A., Cardozo, R., & Ray, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing, 18*(1), 105–123.

Baron, R. A. (2006). Opportunity recognition as pattern recognition: How entrepreneurs "connect the dots" to identify new business opportunities. *Academy of Management Perspectives, 20*(1), 104–119.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, *17*(1), 99-120.

Becker, G. (1993). *Human Capital*. University of Chicago Press.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*(3), 588.

Bollen, K. A. (1989). *Structural equations with latent variables.* Wiley.

Browne, M. W. (1993). Alternative ways of assessing model fit. *Testing Structural Equation Models*. Sage.

Chell, E., & Athayde, R. (2009). The identification and measurement of innovative characteristics of young people. London: Nesta, 17.

Chen, S., Ma, L., & Ma, Y. (2024). Chinese Doctoral Students Involved in Interdisciplinary Learning Score Higher on Scientific Creativity: The Roles of Teamwork Skills and Collaborative Behaviors. *Behavioral Sciences, 14*(11), 1046.

Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of business venturing*, *18*(3), 301-331.

De Jong, J. P. J., & Den Hartog, D. (2010). Measuring innovative work behaviour. *Creativity and Innovation Management, 19*(1), 23–36.

Dyer, J. H., Gregersen, H. B., & Christensen, C. (2008). Entrepreneur Behaviors, Opportunity Recognition, and the Origins of Innovative Ventures. *Journal of Strategic Entrepreneurship, 2*, 317–338. https://doi.org/10.1002/sej.59

Etzkowitz, H. (2013). *The triple helix: University–industry–government innovation in action.* Routledge.

Guerrero, M., & Urbano, D. (2012). The development of an entrepreneurial university. *Journal of Technology Transfer, 37*(1), 43–74.

Hair, J., Aderson, R., Tatham, P., & Black, W. (2006). Multivariate Data Analysis (6th ed.). Upper Saddle River, NJ: Prentice Hall.

Jamali, D., Sidani, Y., & Zouein, C. (2009). *The learning organization: Tracking its progress in the Lebanese context. The Learning Organization, 16(4), 337–362.* https://doi.org/10.1108/09696470910960496

Kim, J. Y., Choi, D. S., Sung, C. S., & Park, J. Y. (2018). The role of problem solving ability on innovative behavior and opportunity recognition in university students. *Journal of Open Innovation: Technology, Market, and Complexity, 4*(1), 1–13.

Kline, R. B. (2011). Principles and Practices of Structural Equation Modeling. New York: Guilford Press.

Kozlowski, S. W. J., & Ilgen, D. R. (2006). Enhancing the effectiveness of work groups and teams. *Psychological Science in the Public Interest, 7*(3), 77–124.

Manev, I. M., Gyoshev, B. S., & Manolova, T. S. (2005). The role of human and social capital and entrepreneurial orientation for small business performance in a transitional economy. *International Journal of Entrepreneurship and Innovation Management, 5*(3–4), 298–318.

Neck, C. P., & Manz, C. C. (1994). From groupthink to teamthink: Toward the creation of constructive thought patterns in self-managing work teams. *Human relations*, *47*(8), 929-952.

Ngah, R., Sarmidy, R., & Abd Halil, N. H. (2020). Implications of generic skills on innovative behavior towards opportunity recognition in youth. *Research in World Economy, 11*(1), 123–129.

OECD (2018). Fostering Student Agency through Education Policy. *https://www.oecd.org/education/ceri/fostering-student-agency.pdf.*

O'Neil, H. F., Allred, K., & Baker, E. L. (1997). Review of workforce readiness theoretical frameworks. In H. F. O'Neil (Ed.), *Workforce Readiness: Competencies and Assessment* (pp. 3–5). Lawrence Erlbaum Associates.

Portela-Pino, I., Sal-de-Rellán, A., et al. (2024). *Teamwork competencies and their influence on health literacy and other health variables. Health Education & Behavior*.

Rasmussen, E., & Wright, M. (2015). How can universities facilitate academic spin-offs? An entrepreneurial competency perspective. *Journal of Technology Transfer, 40*(5), 782–799.

Ritter, S. M., & Mostert, N. (2017). *Enhancement of creative thinking skills using a cognitive-based creativity training. Creativity Research Journal, 29(4), 296–304.* https://doi.org/10.1080/10400419.2017.1376160

Shane, S., & Venkataraman, S. (2000**).** The promise of entrepreneurship as a field of research. *Academy of Management Review, 25*(1), 217–226.

Wang, J., & Wang, X. (2019). *Structural equation modeling: Applications using Mplus*. John Wiley & Sons.

West, M. A. (2002). Sparkling fountains or stagnant ponds: An integrative model of creativity and innovation implementation in work groups. *Applied Psychology, 51*(3), 355–387.