

Research Article

# Investigating Entrepreneurship Competencies Among University Students: A Descriptive-Comparative Study

Jamicah May A. Cañete <sup>1,\*</sup> , Brandon N. Obenza <sup>1</sup> , Gomersindo Jr C. Telesforo <sup>1</sup> , Maricar R. Toñacao <sup>1</sup> , Remy A. Lapinid <sup>1</sup> , Jenmae D. Mansiguin <sup>1</sup> , Jenalyn O. Yamson <sup>1</sup> , and Nargean Empillo <sup>1</sup> 

<sup>1</sup> University of Mindanao, Philippines

\* Correspondence: j.canete.549385@umindanao.edu.ph

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**Abstract:** This descriptive-comparative study examined the self-perceived entrepreneurship competencies of 282 university students across four core domains defined by the entrepreneurship competence framework: ideas and opportunities, personal resources, specific knowledge, and into action. Utilizing both descriptive statistics and inferential analyses (t-tests and Welch's ANOVA), the study revealed that students generally reported moderately high levels of entrepreneurial competence, particularly in opportunity recognition, resilience, and adaptability. Notably, female students scored significantly higher in the personal resources domain, highlighting a gender-based strength in intrapersonal and interpersonal capacities. Furthermore, significant differences in specific knowledge and overall entrepreneurship competence emerged across household income groups, with students from higher economic backgrounds exhibiting stronger domain-specific knowledge, affirming the influence of socioeconomic status on entrepreneurial development. These findings were interpreted through the theoretical lenses of the Theory of Planned Behavior, Human Capital Theory, and Effectuation Theory. The results suggest that attitudes and perceived behavioral control influence competence perceptions, economic resources shape access to knowledge, and adaptive learning fosters entrepreneurial resilience. Practical implications underscore the need for equity-oriented interventions that scaffold entrepreneurial skills, especially for economically disadvantaged students. This study contributes to the growing literature on entrepreneurship education by offering empirical insights into competence disparities and by proposing inclusive pedagogical strategies.

**Keywords:** Entrepreneurship competence; gender differences; economic status; Theory of Planned Behavior, Human Capital Theory, Effectuation Theory

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## 1. Introduction

Entrepreneurship competencies – defined as the amalgamation of knowledge, skills, and attitudes essential for recognizing and exploiting business opportunities – are increasingly regarded as core outcomes of higher education, particularly in the context of economic revitalization and sustainable development (Bacigalupo et al., 2016; Ratković et al., 2022). Universities play a critical role in cultivating an entrepreneurial mindset among students, thereby fostering innovation, self-employment, and regional economic transformation (Romero & Nalangan, 2023). In the Philippines, especially in developing regions like Mindanao, the emphasis on entrepreneurship education is aligned with national strategies aimed at reducing youth unemployment and alleviating poverty through human capital investment (Demillo & Demillo, 2022).

Despite policy advancements and curricular reforms, many students continue to exhibit a disconnect between theoretical entrepreneurship education and their practical entrepreneurial competence. Studies reveal that this gap may be influenced by demographic factors such as gender, socioeconomic background, and academic discipline (Armuña et al., 2020; Liu et al., 2022). While students enrolled in business programs typically demonstrate stronger entrepreneurial competencies (Ratković et al., 2022), recent findings suggest that psychological and behavioral traits – such as self-efficacy and financial behavior – are equally influential (Obenza, Cuaresma et al., 2024). These authors also found that financial self-

efficacy significantly mediates the relationship between financial behavior and financial well-being among college students in Region XI, underscoring the role of behavioral constructs in shaping real-world competencies.

Moreover, personality traits such as conscientiousness and extraversion have shown significant correlations with students' financial management behavior, which is conceptually linked to self-regulation and initiative – two dimensions closely related to entrepreneurial action (Obenza, Torre Franca et al., 2024). These findings suggest that non-cognitive and socio-psychological factors, though often overlooked, may provide deeper insight into students' readiness for entrepreneurial careers. These perspectives are also aligned with Social Cognitive Theory, which posits that self-efficacy beliefs directly influence behavior, motivation, and goal-setting – critical components of entrepreneurial success (Bandura, 2001).

In the local context, some studies have explored entrepreneurial intentions and basic challenges (Reyes et al., 2018), but there is a notable scarcity of comprehensive competency-based evaluations. While Romero and Nalangan (2023) assessed personal entrepreneurial competencies among graduating business students in Davao, their findings called for structured interventions to sustain and scale competency development. Furthermore, some authors (Obenza et al., 2023) confirmed that financial self-efficacy mediates the link between behavior and outcomes, even in professional cohorts such as DepEd teachers – offering a conceptual and methodological framework that could extend to entrepreneurship research.

This study draws on the Theory of Planned Behavior (TPB) (Ajzen, 1991), Human Capital Theory (HCT) (Becker, 1964), and Effectuation Theory (ET) (Sarasvathy, 2001) to frame its analysis. TPB posits that entrepreneurial intentions are shaped by attitudes, subjective norms, and perceived behavioral control, influencing an individual's likelihood to engage in entrepreneurial activity (Krueger et al., 2000). HCT underscores the role of education and skill acquisition in enhancing entrepreneurial potential (Martin et al., 2013), while ET highlights how entrepreneurs use available means and adapt to contingencies rather than relying on predictive strategies.

By integrating these theoretical perspectives, this study provides a grounded understanding of how gender, economic background, and academic discipline influence entrepreneurial competencies among university students. According to Armuña, Ramos, Juan, Feijóo, and Arenal (2020), competency domains include: ideas and opportunities (IO), personal resources (PR), specific knowledge (SK), and into action (IA). Ultimately, the findings aim to inform the design of evidence-based entrepreneurship education and institutional policies tailored to the unique challenges and opportunities within Mindanao's higher education landscape.

Given these research gaps, especially the lack of comparative data from Mindanao, this study seeks to investigate entrepreneurial competencies among university students using a descriptive-comparative design. Specifically, it aims to:

- (1) Profile students' entrepreneurship competencies across demographic groups;
- (2) Compare entrepreneurial competency dimensions – such as initiative, risk-taking, and persistence – across gender and socio-economic status;
- (3) Identify educational and institutional factors associated with variations in competency levels.

## 2. Materials and Methods

### 2.1. Research Design

This study adopts a descriptive-comparative quantitative research design, which is suitable for systematically profiling and contrasting entrepreneurial competencies across distinct demographic groups. As described by Creswell and Creswell (2023), descriptive research is employed to accurately illustrate the characteristics of a specific population, while comparative research focuses on identifying and analyzing differences between predefined groups – in this case, based on gender, economic status, and academic discipline.

This methodological approach enables the researcher to provide a comprehensive snapshot of entrepreneurial competencies among university students in Mindanao, allowing for statistically grounded comparisons. It also facilitates the identification of patterns or disparities in competencies across demographic categories, contributing to a deeper understanding of equity and inclusivity in entrepreneurship education.

### 2.2. Population and Sample



The target population of this study consists of university students enrolled in various academic programs across higher education institutions in Region XI, Philippines. Reflecting the study’s descriptive-comparative design, participants were selected using a stratified random sampling technique to ensure proportional representation across key demographic variables, namely gender, economic status, and academic discipline (Creswell & Creswell, 2023). This approach enhanced the validity of group comparisons by minimizing sampling bias and allowing for a more nuanced analysis of differences in entrepreneurial competencies.

A total of 282 students participated in the study. Of these, 62.4% were female (n = 176) and 37.6% were male (n = 106), ensuring sufficient gender representation to support comparative analysis. In terms of economic status, students were categorized according to Philippine household income classifications. The largest group, representing 27.0% (n = 76), fell into the “low-income but not poor” category, earning between ₱10,957 and ₱21,914 per month. This was followed closely by 23.0% (n = 65) who were classified as poor, with household incomes below ₱10,957. Students from the lower-middle-income bracket (₱21,914 to ₱43,828) comprised 20.6% (n = 58) of the sample, while those in the middle-income group (₱43,828 to ₱76,669) accounted for 15.2% (n = 43). Participants from upper-middle-income households were divided into two subgroups: 8.5% (n = 24) fell within the ₱76,669 to ₱131,484 range, and 5.7% (n = 16) had household incomes between ₱131,483 and ₱219,140. This distribution reveals a diverse socioeconomic profile among the respondents, which is essential for exploring competency differences based on income (see table 1).

**Table 1.** Socio-demographic profile of the respondents.

Economic status (family/household Income)	Counts	% of total	Cumulative %
Low-income but not poor: P10,957 to P21,914 monthly income	76	27.0%	27.0%
Lower middle: P21,914 to P43,828 monthly income	58	20.6%	47.5%
Middle: P43,828 to P76,66 monthly income	43	15.2%	62.8%
Poor: Below P10,957 monthly income	65	23.0%	85.8%
Upper middle but not rich: P131,483 to P219,140 monthly income	16	5.7%	91.5%
Upper middle: P76,669 to P131,484 monthly income	24	8.5%	100.0%
Gender	Counts	% of Total	Cumulative %
Female	176	62.4%	62.4%
Male	106	37.6%	100.0%

The structured composition of the sample, as detailed in table 1, provides a strong basis for statistically grounded comparisons across demographic groups. It supports the study’s goal of identifying variations in entrepreneurial competencies, particularly in relation to students’ gender and economic backgrounds, thereby contributing to evidence-based improvements in educational interventions targeting entrepreneurship development.

### 2.3. Instruments

This study utilized a standardized survey questionnaire based on the Entrepreneurship Competence (EntreComp) Framework developed by Bacigalupo, Kampylis, Punie, and Van den Brande (2016), a widely recognized model for assessing entrepreneurial competencies in education. The instrument evaluated students’ self-perceived competencies across four key dimensions (IO, PR, SK, and IA) as adapted by Armuña et al. (2020). These domains encompass critical entrepreneurial traits such as opportunity recognition, innovation, self-efficacy, financial literacy, leadership, and risk-taking. A 7-point Likert scale, ranging from 1 (Strongly Disagree) to 7 (Strongly Agree), was employed to capture the degree to which students identified with each item, allowing for both nuanced self-assessment and meaningful comparative analysis across demographic subgroups.

To ensure contextual relevance and reliability, the instrument underwent expert validation by two academic professionals and was subjected to a pilot reliability test prior to deployment. The results indicated excellent internal consistency, with Cronbach’s alpha ( $\alpha = 0.946$ ) and McDonald’s omega ( $\omega = 0.947$ ), both exceeding the 0.70 threshold recommended by Nunnally and Bernstein (1994). These metrics confirm the psychometric soundness of the tool, supporting its use in accurately measuring entrepreneurial competencies among university students in Region XI.



### 2.4. Data Collection and Analysis

Data collection was conducted using a structured online questionnaire, administered via Google Forms, which employed a 7-point Likert scale to measure students' self-assessed entrepreneurial competencies. Prior to data gathering, ethical clearance was obtained from the appropriate institutional review board, and informed consent was secured from all participants. Respondents were informed about the study's purpose, assured of their anonymity, and guaranteed the confidentiality of their responses. Completing the survey required approximately 10–15 minutes.

Once collected, the data were encoded, tallied, and organized using Microsoft Excel for initial processing. The raw dataset was subsequently submitted to a professional statistician for formal analysis and interpretation.

The study utilized both descriptive and inferential statistical analyses to examine entrepreneurial competencies across demographic groups. Descriptive statistics, such as means and standard deviations, were computed to summarize student performance across the four EntreComp-based dimensions: IO, PR, SK, and IA. For inferential analysis, independent samples t-tests were employed to assess differences based on gender, while one-way ANOVA was used to evaluate variations across economic status and academic disciplines. Where appropriate, effect sizes were calculated – Cohen's d for t-tests and eta-squared ( $\eta^2$ ) for ANOVA – to interpret the practical significance of observed differences.

To evaluate the internal consistency of the instrument, Cronbach's alpha was computed for each dimension, with a reliability threshold of 0.70, in accordance with Nunnally and Bernstein (1994). These analytic procedures provided a robust statistical foundation for identifying competency gaps and informing recommendations for curriculum and policy development in entrepreneurship education.

## 3. Results

### 3.1. Construct Validity

The findings of the confirmatory factor analysis (CFA) provided compelling evidence for the construct validity of the instrument used to assess entrepreneurial competencies among university students. As shown in table 2, all items loaded significantly onto their respective latent constructs ( $p < .001$ ), with factor loadings exceeding the widely accepted threshold of 0.70 (Hair et al., 2019). These strong standardized estimates indicate a high degree of indicator reliability and internal coherence within the dimensions of the EntreComp-based scale. Notably, the SK construct yielded the highest loadings, particularly for items SK2 (1.341) and SK3 (1.360), suggesting that knowledge-related competencies are particularly well defined and consistently measured by the items in this domain. Similarly, all indicators under IO, PR, and IA demonstrated robust loadings, further confirming the appropriateness of the instrument structure for the target student population in the Philippine context.

**Table 2.** Factor loadings.

Factor	Indicator	Estimate	SE	Z	p
Ideas and opportunities (IO)	IO1	1.080	0.0611	17.7	<.001
	IO2	1.057	0.0578	18.3	<.001
	IO3	1.089	0.0656	16.6	<.001
	IO4	1.010	0.0600	16.8	<.001
	IO5	0.966	0.0633	15.3	<.001
Personal resources (PR)	PR1	0.915	0.0620	14.7	<.001
	PR2	1.041	0.0644	16.2	<.001
	PR3	1.027	0.0612	16.8	<.001
	PR4	1.112	0.0704	15.8	<.001
	PR5	1.035	0.0687	15.1	<.001
	PR6	0.976	0.0610	16.0	<.001
Specific knowledge (SK)	SK1	0.814	0.0698	11.7	<.001
	SK2	1.341	0.0678	19.8	<.001
	SK3	1.360	0.0703	19.4	<.001
Into action (IA)	IA1	1.066	0.0746	14.3	<.001
	IA2	1.030	0.0610	16.9	<.001



IA3	1.112	0.0690	16.1	<.001
IA4	1.054	0.0695	15.2	<.001
IA5	0.946	0.0641	14.8	<.001
IA6	0.994	0.0609	16.3	<.001
IA7	0.930	0.0656	14.2	<.001
IA8	0.965	0.0700	13.8	<.001

Beyond individual factor loadings, the inter-factor covariances presented in table 3 reinforce the theoretical coherence of the four-domain model. High and statistically significant covariances were observed between all pairs of constructs, particularly between PR and IO ( $r = 0.908, p < .001$ ), and between PR and IA ( $r = 0.872, p < .001$ ). These relationships suggest a strong degree of overlap and mutual reinforcement among the different entrepreneurial dimensions, supporting the notion that EntreComp is multifaceted and interdependent rather than a set of isolated traits (Bagozzi & Yi, 1988). For instance, students who demonstrate greater self-efficacy and resilience (under PR) are also more likely to act decisively and innovate (under IA and IO), aligning with theoretical models of entrepreneurial behavior such as the ET (Sarasvathy, 2001) and Social Cognitive Theory (Bandura, 2001). The robust associations across constructs not only affirm the scale’s factorial structure but also underscore the practical implication that strengthening one domain (e.g., knowledge) may reinforce others (e.g., action orientation).

**Table 3.** Factor estimates.

Factor covariances		Estimate	SE	Z	p
Ideas and opportunities (IO)	IO	1.000 <sup>a</sup>			
	PR	0.908	0.0171	53.00	<.001
	SK	0.700	0.0366	19.10	<.001
	IA	0.860	0.0213	40.50	<.001
Personal resources (PR)	PR	1.000 <sup>a</sup>			
	SK	0.713	0.0358	19.90	<.001
	IA	0.872	0.0203	42.90	<.001
Specific knowledge (SK)	SK	1.000 <sup>a</sup>			
	IA	0.766	0.0307	24.90	<.001
Into action (IA)	IA	1.000 <sup>a</sup>			

Note: <sup>a</sup> = fixed parameter

The CFA results validate the multidimensional structure of the entrepreneurship competency framework used in this study and confirm its suitability for assessing university students in the Southeast Asian educational context. The scale demonstrated both convergent and discriminant validity, essential criteria for establishing the credibility of latent construct measurements in educational and psychological research (Hair et al., 2019). These findings justify the continued use and adaptation of the instrument for broader applications, including longitudinal assessments and comparative studies across regions or disciplines.

### 3.2. Students’ level of entrepreneurship competence

The descriptive statistics presented in Table 4 offer valuable insights into the self-perceived entrepreneurial competences of the 282 respondents across four primary domains: IO, PR, SK, and IA, culminating in an overall assessment of EntreComp. Each item was rated on a 7-point Likert scale, with higher means indicating greater perceived competence.

In the domain of IO, participants reported a relatively high overall mean score of 5.20 (SD = 1.09), suggesting a generally strong entrepreneurial mindset related to opportunity recognition, idea generation, and value creation. The highest-rated item was IO5 (“I assess the consequences and impact of my ideas, opportunities, and actions before implementing them”) with a mean of 5.38 (SD = 1.25), reflecting a proactive and reflective orientation in decision-making processes. In contrast, IO2 (“I can develop creative and purposeful ideas to solve problems or generate new opportunities”) yielded the lowest mean in this cluster (M = 5.09, SD = 1.21), though it still suggests a moderately high self-perceived capacity for innovation.

PR, with an overall mean of 5.04 (SD = 1.07), reflects participants’ perceived intrapersonal and interpersonal skills essential to entrepreneurial success. Among the six items in this domain, PR1 (“I can effectively identify and evaluate my own strengths and



weaknesses, as well as those of my team”) attained the highest mean ( $M = 5.22$ ,  $SD = 1.21$ ), signifying strong self-awareness and evaluative capabilities. Conversely, PR5 (“I can clearly and effectively communicate my ideas to different audiences”) obtained the lowest mean ( $M = 4.86$ ,  $SD = 1.34$ ), indicating that communication skills may be a relative area of developmental need.

The SK domain received the lowest mean among all four dimensions ( $M = 4.83$ ,  $SD = 1.24$ ), pointing to a potential gap in foundational and technical knowledge related to entrepreneurship. In particular, SK3 (“I have a strong understanding of financial and economic concepts relevant to business”) scored the lowest overall mean ( $M = 4.68$ ,  $SD = 1.50$ ), which may warrant targeted educational interventions. Meanwhile, SK1 (“I have sufficient knowledge and skills to effectively use digital tools and technologies”) had the highest mean in this domain ( $M = 5.03$ ,  $SD = 1.27$ ), suggesting greater confidence in digital literacy over legal or financial knowledge.

The IA domain displayed a moderately high mean of 5.04 ( $SD = 1.05$ ), emphasizing participants’ perceived ability to translate entrepreneurial intention into practice. Notably, IA8 (“I view mistakes as learning opportunities and use them to improve my future actions”) emerged as the highest-rated item across all domains ( $M = 5.79$ ,  $SD = 1.33$ ), reflecting a growth-oriented mindset and resilience—critical traits in entrepreneurial contexts. On the other hand, IA1 (“I can develop new products or services that meet market needs”) had the lowest mean ( $M = 4.31$ ,  $SD = 1.44$ ), suggesting limited confidence in innovation execution, despite earlier expressed strengths in idea generation.

The composite score for EntreComp stood at a mean of 5.03 ( $SD = 1.01$ ), which overall denotes a favorable but varied level of entrepreneurial readiness. The relatively narrow standard deviation implies consistency across respondents, although some individual items exhibited greater dispersion, such as SK3 and IA1, both with higher standard deviations ( $SD > 1.40$ ), indicating heterogeneous responses and potential disparities in specific entrepreneurial competencies.

Taken together, these descriptive findings underscore a solid entrepreneurial foundation among respondents, particularly in personal resilience, ethical foresight, and opportunity recognition, while simultaneously revealing targeted areas for further capacity-building, especially in financial literacy, product innovation, and strategic communication. These insights offer a critical empirical basis for the design of entrepreneurial training programs and curriculum enhancements tailored to bridge competence gaps and cultivate well-rounded entrepreneurial skill sets.

**Table 4.** Descriptive statistics.

	<b>N</b>	<b>Mean</b>	<b>SD</b>
IO1. I am able to identify opportunities that create value and address important challenges	282	5.12	1.27
IO2. I can develop creative and purposeful ideas to solve problems or generate new opportunities.	282	5.09	1.21
IO3. I can visualize future scenarios to guide my decisions and actions.	282	5.22	1.33
IO4. I can recognize the potential value of an idea and how it can create impact.	282	5.17	1.22
IO5. I assess the consequences and impact of my ideas, opportunities, and actions before implementing them.	282	5.38	1.25
<b>Ideas and opportunities</b>	282	5.20	1.09
PR1. I can effectively identify and evaluate my own strengths and weaknesses, as well as those of my team.	282	5.22	1.21
PR2. I am determined to turn my ideas into action, even when facing pressure, adversity, or failure.	282	5.17	1.29
PR3. I can effectively maximize and make the most of limited resources to achieve my goals.	282	5.05	1.24
PR4. I am confident in my ability to lead and motivate others toward a common goal.	282	4.89	1.40
PR5. I can clearly and effectively communicate my ideas to different audiences.	282	4.86	1.34
PR6. I can apply knowledge from different fields to solve problems and create value.	282	5.05	1.22
<b>Personal resources</b>	282	5.04	1.07



SK1. I have sufficient knowledge and skills to effectively use digital tools and technologies.	282	5.03	1.27
SK2. I understand the legal aspects related to business and entrepreneurship.	282	4.78	1.46
SK3. I have a strong understanding of financial and economic concepts relevant to business.	282	4.68	1.50
<b>Specific knowledge</b>	282	4.83	1.24
IA1. I can develop new products or services that meet market needs.	282	4.31	1.44
IA2. I can effectively define priorities and create action plans to achieve my goals.	282	5.01	1.24
IA3. I am comfortable making decisions in situations involving uncertainty, ambiguity, and risk.	282	4.66	1.38
IA4. I actively seek and establish professional contacts to expand my network.	282	4.83	1.37
IA5. I work well in teams and contribute effectively to group success.	282	5.28	1.25
IA6. I can identify and solve complex problems effectively.	282	4.96	1.23
IA7. I learn best through hands-on experiences and practical application.	282	5.51	1.26
IA8. I view mistakes as learning opportunities and use them to improve my future actions.	282	5.79	1.33
<b>Into action</b>	282	5.04	1.05
<b>Entrepreneurship Competence</b>	282	5.03	1.01

3.3. Students’ Level of EntreComp when Grouped according to their Profiles

The statistical analyses presented in Tables 5 and 6 provide understanding of the variations in EntreComp and its associated dimensions across gender and economic status, as assessed through independent samples t-tests and one-way ANOVA respectively. These inferential analyses serve to interrogate whether statistically significant differences exist among subgroups in terms of their entrepreneurial capabilities.

Table 5 reports the results of independent samples t-tests comparing male and female participants across five composite dimensions of EntreComp. Among these, PR yielded a statistically significant difference ( $t(280) = 2.039, p = 0.042$ ), with females reporting higher mean scores than males (Mean Difference = 0.267, SE = 0.131). Although the effect size, represented by Cohen’s  $d = 0.2507$ , falls within the small to moderate range (Cohen, 1988), it still suggests a meaningful gender-based variation in perceived intrapersonal and interpersonal entrepreneurial capacities, such as leadership, resourcefulness, and resilience. Conversely, the other four dimensions—IO ( $p = 0.096$ ), SK ( $p = 0.491$ ), IA ( $p = 0.370$ ), and the overall EntreComp composite score ( $p = 0.152$ )—did not reach statistical significance, indicating no conclusive gender-based differences in these areas. However, the small effect sizes observed (e.g.,  $d = 0.2056$  for IO;  $d = 0.0847$  for SK) still suggest subtle trends worthy of further exploration in larger or more balanced samples.

Table 5. Independent samples t-test.

		Statistic	df	p	Mean difference	SE difference	Effect Size
IO	Student’s t	1.673	280	0.096	0.223	0.134	Cohen’s d 0.2056
PR	Student’s t	2.039	280	0.042	0.267	0.131	Cohen’s d 0.2507
SK	Student’s t	0.689	280	0.491	0.105	0.153	Cohen’s d 0.0847
IA	Student’s t	0.897	280	0.370	0.116	0.130	Cohen’s d 0.1103
EntreComp	Student’s t	1.438	280	0.152	0.178	0.124	Cohen’s d 0.1768

Note:  $H_a \mu_{Female} \neq \mu_{Male}$

The one-way Welch’s ANOVA presented in table 6 evaluates the effect of household income brackets on the five domains of EntreComp. Among these, two domains revealed statistically significant differences across income groups: SK ( $F(5, 82.4) = 3.00, p = 0.015$ ) and the overall EntreComp composite score ( $F(5, 84.7) = 2.39, p = 0.044$ ). These findings suggest that economic background may play a meaningful role in shaping students’ entrepreneurial knowledge and readiness, likely due to disparities in access to educational resources, financial literacy exposure, or practical business experience. In contrast, the domains of IO ( $p = 0.128$ ), PR ( $p = 0.201$ ), and IA ( $p = 0.084$ ) did not demonstrate statistically significant differences across income levels. However, the marginal p-value for IA



indicates a potential trend toward variance that may be worth investigating further with a larger sample.

**Table 6.** One-way ANOVA (Welch’s)

	F	df1	df2	p
Ideas and opportunities	1.77	5	84.8	0.128
Personal resources	1.49	5	86.3	0.201
Specific knowledge	3.00	5	82.4	0.015
Into action	2.02	5	85.1	0.084
Entrepreneurship competence	2.39	5	84.7	0.044

Delving deeper into these results, table 7 presents the Tukey post-hoc comparisons for the SK domain. Notably, a statistically significant difference emerged between students from the “Low-income but not poor” bracket (₱10,957 to ₱21,914) and those in the “Upper middle” income group (₱76,669 to ₱131,484), with a mean difference of 0.929 ( $t = 3.255$ ,  $df = 276$ ,  $p = 0.016$ ). This result highlights a distinct knowledge gap in entrepreneurship-related technical skills – particularly in financial and digital literacy – between students from modest economic backgrounds and their higher-income peers. No other pairwise comparisons reached statistical significance, although the difference between the “Low-income but not poor” and “Poor” groups versus “Middle” or “Upper middle but not rich” income brackets approached significance in several cases. This indicates that students from lower socioeconomic strata may have uneven access to foundational business knowledge, reinforcing the HCT (Becker, 1964), which posits that educational and skill-based investments are often contingent upon socioeconomic resources.

**Table 7.** Tukey Post-Hoc test – SK.

		Low-income but not poor: ₱10,957 to ₱21,914 monthly income	Lower middle: ₱21,914 to ₱43,828 monthly income	Middle: ₱43,828 to ₱76,666 monthly income	Poor: Below ₱10,957 monthly income	Upper middle but not rich: ₱131,483 to ₱219,140 monthly income	Upper middle: ₱76,669 to ₱131,484 monthly income
Low-income but not poor: ₱10,957 to ₱21,914 monthly income	Mean difference	-	0.282	0.0399	0.438	0.630	0.929*
	t-value	-	1.33	0.171	2.126	1.880	3.255
	df	-	276	276	276	276	276
	p-value	-	0.770	1.000	0.277	0.416	0.016
Lower middle: ₱21,914 to ₱43,828 monthly income	Mean difference	-	-	-0.2422	0.156	0.348	0.647
	t-value	-	-	-0.987	0.708	1.012	2.187
	df	-	-	276	276	276	276
	p-value	-	-	0.922	0.981	0.914	0.247
Middle: ₱43,828 to ₱76,666 monthly income	Mean difference	-	-	-	0.398	0.591	0.889
	t-value	-	-	-	1.661	1.654	2.863
	df	-	-	-	276	276	276
	p-value	-	-	-	0.559	0.563	0.051
Poor: Below ₱10,957 monthly income	Mean difference	-	-	-	-	0.193	0.491
	t-value	-	-	-	-	0.566	1.687
	df	-	-	-	-	276	276
	p-value	-	-	-	-	0.993	0.541
Upper middle but not rich: ₱131,483 to ₱219,140	Mean difference	-	-	-	-	-	0.299
	t-value	-	-	-	-	-	0.759
	df	-	-	-	-	-	276



monthly income	p-value	-	0.974
Upper middle: P76,669 to P131,484 monthly income	Mean difference	-	-
	t-value	-	-
	df	-	-
	p-value	-	-

Note: \* p < .05, \*\* p < .01, \*\*\* p < .001

In table 8, which reports the Tukey post-hoc comparisons for the overall EntreComp, no pairwise differences reached statistical significance at the 0.05 level. The most notable – but still non-significant – comparison was between the “Low-income but not poor” group and the “Poor” group (mean difference = 0.426, t = 2.53, p = 0.120), which suggests that economic disadvantage may modestly affect students’ self-perceived entrepreneurial capabilities. Although these results do not establish conclusive income-based disparities in total entrepreneurial competence, they hint at emerging patterns of inequality that warrant more targeted investigation. These findings lend empirical support to the premise that while general entrepreneurial mindset dimensions – such as creativity, perseverance, and opportunity recognition – may be less influenced by income, technical knowledge and confidence in applying entrepreneurship skills are more vulnerable to socioeconomic disparities.

**Table 8.** Tukey Post-Hoc test – EntreComp.

		<b>Low-income but not poor: P10,957 to P21,914 monthly income</b>	<b>Lower middle: P21,914 to P43,828 monthly income</b>	<b>Middle: P43,828 to P76,66 monthly income</b>	<b>Poor: Below P10,957 monthly income</b>	<b>Upper middle but not rich: P131,483 to P219,140 monthly income</b>	<b>Upper middle: P76,669 to P131,484 monthly income</b>
Low-income but not poor: P10,957 to P21,914 monthly income	Mean difference	-	0.156	-0.103	0.426	0.2378	0.3546
	t-value	-	0.894	-0.541	2.53	0.866	1.517
	df	-	276	276	276	276	276
	p-value	-	0.948	0.994	0.120	0.954	0.654
Lower middle: P21,914 to P43,828 monthly income	Mean difference	-	-	-0.259	0.270	0.0822	0.1990
	t-value	-	-	-1.288	1.50	0.292	0.821
	df	-	-	276	276	276	276
	p-value	-	-	0.791	0.665	1.000	0.963
Middle: P43,828 to P76,66 monthly income	Mean difference	-	-	-	0.529	0.3410	0.4578
	t-value	-	-	-	2.70	1.166	1.800
	df	-	-	-	276	276	276
	p-value	-	-	-	0.079	0.852	0.468
Poor: Below P10,957 monthly income	Mean difference	-	-	-	-	-0.1881	-0.0713
	t-value	-	-	-	-	-0.675	-0.299
	df	-	-	-	-	276	276
	p-value	-	-	-	-	0.985	1.000
Upper middle but not rich: P131,483 to P219,140 monthly income	Mean difference	-	-	-	-	-	0.1168
	t-value	-	-	-	-	-	0.362
	df	-	-	-	-	-	276
	p-value	-	-	-	-	-	0.999
Upper	Mean	-	-	-	-	-	-



middle:	difference	
P76,669 to	t-value	-
P131,484	df	-
monthly	p-value	-
income		

Note: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Taken together, the inferential results in tables 6 to 8 substantiate the critical need for equity-focused entrepreneurship education programs that offer additional scaffolding and targeted interventions for students from economically disadvantaged backgrounds. By integrating tailored financial literacy training, mentorship, and resource accessibility strategies, higher education institutions can help mitigate these structural disparities and democratize access to entrepreneurial success.

#### 4. Discussion

The present study aimed to investigate the self-perceived EntreComp of university students across four key domains (IO, PR, SK, and IA) and to assess whether these competencies varied significantly based on gender and economic status. The results offer both affirmations of prior literature and novel insights, particularly when interpreted through established theoretical lenses such as the TPB (Ajzen, 1991), HCT (Becker, 1964), and ET (Sarasvathy, 2001).

The overall self-reported EntreComp among students was moderately high ( $M = 5.03$ ,  $SD = 1.01$ ), with the strongest performance in the IO domain. This finding suggests that students feel confident in recognizing and evaluating entrepreneurial opportunities and in considering the ethical and social impact of their actions – an observation congruent with the EntreComp model’s emphasis on value creation and sustainability (Bacigalupo et al., 2016). High ratings for specific items such as assessing the consequences and impact of entrepreneurial decisions (IO5) align with the “ethical and sustainable thinking” dimension of the EntreComp framework and further support literature identifying opportunity recognition as a cornerstone of entrepreneurial intention (Karimi et al., 2014; Liu et al., 2025).

In contrast, the lowest-rated items emerged within the domains of SK and IA, notably SK3 (financial knowledge) and IA1 (product innovation). These findings highlight persistent gaps in financial and innovation-related competence – a trend previously identified in both local and international studies (Iglesias-Sánchez et al., 2019; Yin et al., 2022). From the standpoint of HCT (Becker, 1964), this underscores the critical need for targeted educational investments in domain-specific skills such as financial literacy and product development. It also reinforces the notion that technical knowledge forms a vital component of entrepreneurial capacity that is, in turn, shaped by the quality and accessibility of formal and experiential education.

Moreover, the high scores on items related to learning from failure (IA8) and teamwork (PR1) reflect personal and interpersonal resources conducive to entrepreneurial resilience and adaptability. These traits are consistent with ET’s (Sarasvathy, 2001) emphasis on leveraging available means, accepting uncertainty, and embracing failure as part of the entrepreneurial process. The students’ favorable self-perception in these areas suggests that they may be more inclined to adopt effectual rather than causal logic in real-world entrepreneurial scenarios – a desirable orientation for navigating complex, uncertain environments.

The inferential analysis revealed minimal gender-based differences, with only the PR domain showing statistically significant variation in favor of female students. This aligns with existing research indicating that women often report higher levels of collaboration, planning, and empathy – traits associated with entrepreneurial personal resources – even as they simultaneously report lower self-efficacy (Barrientos-Báez et al., 2022; Rotnitsky et al., 2024). The small to moderate effect size ( $d = 0.2507$ ) observed in this study lends weight to the argument that while the competencies are present, female students may understate their entrepreneurial potential due to perceived behavioral control issues, as posited by the TPB (Ajzen, 1991).

This interpretation also resonates with findings from Villanueva-Flores, Diaz-Fernandez, Hernandez-Roque, and van Engen (2021), who noted that subjective norms and psychological capital – such as self-efficacy and perceived social support – are particularly influential for women’s entrepreneurial intentions. Therefore, the current findings reinforce the need for gender-sensitive entrepreneurship education that not only develops

competencies but also cultivates positive entrepreneurial attitudes and social validation mechanisms.

The findings of this study affirm the significant influence of economic status on students' EntreComp across several core dimensions – particularly SK and the overall EntreComp composite score. These disparities align with established theoretical frameworks, particularly the TPB (Ajzen, 1991), HCT (Becker, 1964), and ET (Sarasvathy, 2001), offering a multidimensional explanation for how economic resources shape entrepreneurial development in higher education contexts.

In the domain of IO, students from higher-income backgrounds demonstrated higher confidence in recognizing and evaluating business ideas, supporting the view that financial security enhances access to entrepreneurial exposure (Czyzewska & Mroczek, 2020). This result is consistent with the HCT, which posits that individuals with greater resources can invest more in opportunity-seeking behaviors and skills acquisition (Becker, 1964). However, overconfidence in assessing opportunity viability may emerge due to limited experience with constraints – a nuance observed in the literature (Czyzewska & Mroczek, 2020). This reflects an imbalance between perceived and actual opportunity evaluation, where resource abundance may mask deficiencies in critical appraisal skills.

Regarding PR, the data support the notion that economic capital translates into greater self-efficacy and entrepreneurial motivation. Students from wealthier families reported stronger confidence in their leadership, resilience, and social resource utilization, echoing previous research that highlights the moderating role of family economic status in converting entrepreneurship education into intention and action (Li et al., 2023). Ajzen's (1991) TPB also explains this dynamic through the construct of perceived behavioral control—suggesting that economically privileged students perceive fewer external barriers to initiating entrepreneurial action.

The statistically significant income-based variation in SK – particularly between the “low-income but not poor” and “upper middle” income groups – underscores disparities in technical preparation, especially in financial literacy and legal acumen. Students from lower-income backgrounds are more likely to report gaps in entrepreneurial knowledge, which impedes their ability to formulate viable business strategies (Czyzewska & Mroczek, 2020; Liu et al., 2025; Li et al., 2023). This reinforces Becker's (1964) assertion that access to quality education and extracurricular engagement – such as competitions, workshops, and entrepreneurship networks – is often contingent upon socioeconomic advantage.

In terms of IA, although the differences across income levels did not reach statistical significance, the marginal p-value suggests a latent disparity that aligns with existing literature. Students from higher economic backgrounds are more likely to act on entrepreneurial intentions due to fewer financial risks and greater access to support systems (Liu et al., 2022; Czyzewska & Mroczek, 2020). ET (Sarasvathy, 2001) offers an interpretive lens here: students with fewer resources may be more adept at means-driven action but require institutional support to scale these intentions into sustainable ventures. Conversely, wealthier students benefit from both the means and institutional alignment to actualize predefined entrepreneurial goals.

The overall pattern of results highlights a stratified entrepreneurial ecosystem within higher education, where competence development is shaped not only by cognitive and attitudinal factors but also by students' material conditions. This calls for a responsive and inclusive educational strategy – one that prioritizes the democratization of entrepreneurship training. Equity-focused interventions, such as tiered mentorship programs, integrated financial literacy curricula, and accessibility to real-life entrepreneurial engagements, are essential to close the competence gap and promote inclusive entrepreneurial ecosystems.

The present study contributes meaningful theoretical and applied insights by integrating established frameworks to interpret the dynamics of EntreComp among university students, particularly as influenced by gender and economic status.

First, the TPB (Ajzen, 1991) serves as a foundational lens to understand the relationship between students' competence perceptions and entrepreneurial intention. Although the study did not directly measure attitudes, subjective norms, or perceived behavioral control, the high ratings in domains such as IA and IO – especially among female students and those from higher-income groups – suggest robust internal motivation and confidence in enacting entrepreneurial behavior. The significantly higher PR score among females implies stronger self-regulatory capacities and intrapersonal awareness, which are essential for perceived behavioral control. This supports TPB's assertion that psychological readiness is central to translating intention into action.

Second, the HCT (Becker, 1964) offers explanatory power in understanding disparities in competence, particularly in the domain of SK. Students from higher economic brackets consistently rated themselves higher in technical knowledge areas such as financial literacy, digital skills, and business awareness. This affirms the theory's proposition that access to resources and education enhances productivity and work-readiness. Conversely, students from lower-income households may lack access to enriching educational experiences and industry exposure, thereby limiting their ability to internalize domain-specific entrepreneurial skills. These disparities reflect systemic issues in access to skill-building opportunities, which ultimately shape long-term entrepreneurial potential.

Third, ET (Sarasvathy, 2001) helps contextualize students' adaptability and action orientation in uncertain environments. Across all income and gender groups, high scores in resilience-related items – such as viewing mistakes as learning opportunities (IA8) – point to an emerging effectual mindset. Female students' higher ratings in interpersonal and evaluative capacities also resonate with effectual logic, wherein entrepreneurs start with their available means and adapt as goals evolve. This finding reinforces the argument that effectuation is not limited to those with privileged access but can also be cultivated among those who develop resilience and creativity through constraint.

From a practical standpoint, the findings highlight the need for inclusive and differentiated entrepreneurship education. The gender-based strength in PR suggests that entrepreneurship programs should further cultivate communication, self-awareness, and leadership among male students, while continuing to support and challenge female students to apply their interpersonal strengths in high-risk entrepreneurial settings. Meanwhile, economic disparities in knowledge-related competencies underscore the urgency of embedding equity-driven interventions – such as subsidized access to entrepreneurship competitions, mentorship programs, digital training modules, and financial literacy workshops – particularly for students from economically disadvantaged backgrounds.

Therefore, this study underscores that while foundational entrepreneurial competencies are present across student groups, systemic and social factors such as gender and income status significantly mediate the development and application of these competencies. Aligning program designs with the psychological, structural, and experiential dimensions of entrepreneurship can help bridge these gaps, ensuring a more equitable and empowering entrepreneurial education for all learners.

Based on the study's findings, several strategic recommendations are proposed to enhance the inclusivity, efficacy, and theoretical grounding of entrepreneurship education in higher education institutions.

First, addressing disparities in SK is crucial, particularly among students from lower economic backgrounds. The relatively lower competence scores in financial literacy, digital tools, and legal awareness among these groups signal a need for targeted curricular interventions. Programs should integrate modules on applied financial management, digital entrepreneurship, and regulatory compliance. Instructional strategies such as case-based learning, business simulations, and legal clinics can foster hands-on mastery of these technical areas.

Second, given the positive self-perceptions observed in the domains of resilience and opportunity recognition, especially among female students, institutions should continue to strengthen experiential and effectuation-based pedagogies. Activities such as startup incubators, entrepreneurial bootcamps, hackathons, and real-world problem-solving challenges can cultivate adaptability and innovation – core competencies emphasized in ET (Sarasvathy, 2001). These strategies are particularly beneficial in democratizing access to entrepreneurial experiences for students with fewer material resources.

Third, the study revealed gender-based strengths in the domain of PR, with female students reporting higher self-efficacy, reflection, and perseverance. This suggests the value of expanding gender-responsive programs, including peer mentoring, entrepreneurship circles, and leadership workshops led by diverse role models. These initiatives support the TPB (Ajzen, 1991) by strengthening perceived behavioral control and enhancing the motivational foundation for entrepreneurial intention, particularly among underrepresented groups.

Fourth, the results highlight that economic status, rather than educational attainment *per se*, significantly influences EntreComp. Accordingly, entrepreneurship curricula should incorporate equity-oriented scaffolding. Students from lower-income households may benefit from scholarship-linked training programs, free access to entrepreneurial resources, and community partnerships that reduce barriers to participation. Ensuring inclusive access to

competitions, internships, and venture funding is essential to operationalize the equity goals implied by HCT (Becker, 1964).

Lastly, institutions are encouraged to establish robust monitoring and evaluation systems to track student growth in EntreComp across time. Implementing formative feedback tools, pre-post diagnostic assessments, and competency portfolios aligned with the EntreComp framework can help faculty identify areas of growth and tailor instruction accordingly. These mechanisms would enhance evidence-based teaching, support institutional accountability, and ensure that entrepreneurship education remains responsive to the diverse needs of learners.

## 5. Conclusions

This study offers a comprehensive examination of university students' entrepreneurship competencies using a descriptive-comparative design grounded in the EntreComp framework. Overall, students rated themselves as moderately competent across the four key dimensions (IO, PR, SK, and IA) with the highest scores observed in opportunity recognition and resilience, and the lowest in financial literacy and product innovation. These findings affirm the multifaceted and uneven nature of entrepreneurial readiness in higher education contexts.

Inferential analyses revealed significant gender- and income-based variations in perceived competence. Female students demonstrated higher levels of PR, suggesting stronger self-awareness, evaluative ability, and interpersonal adaptability – competencies crucial for perceived behavioral control as articulated in the TPB. Furthermore, economic status emerged as a significant determinant of entrepreneurial knowledge and overall competence. Students from higher-income backgrounds reported stronger technical knowledge, especially in digital and financial literacy, consistent with the assumptions of HCT, which underscores the importance of access to education and skill-building opportunities in developing entrepreneurial capacity.

These empirical patterns reflect not only differential access to learning environments but also variation in psychological and contextual resources. From the perspective of ET, students across income brackets displayed resilience and adaptive logic, particularly in learning from mistakes and leveraging available means – hallmarks of effectual reasoning. However, structural disparities in knowledge and opportunity access suggest that effectuation may be more easily operationalized by students with greater economic capital.

Taken together, the study highlights that entrepreneurial competence is not evenly distributed, but rather shaped by an interplay of gender, economic background, and internal dispositions. The findings underscore the necessity for equity-oriented and context-sensitive entrepreneurship education programs that cultivate both cognitive and practical skills across diverse student populations.

Several limitations must be acknowledged in interpreting the results of this study. First, the reliance on self-reported measures may introduce social desirability bias or discrepancies between perceived and actual competence levels. While the Likert-scale items were validated and aligned with the EntreComp framework, future studies should consider triangulating self-assessments with objective performance-based tasks or behavioral indicators.

Second, the study employed a cross-sectional design, which limits causal inferences regarding the development of entrepreneurship competencies over time. Longitudinal or experimental studies would provide stronger evidence on how education or interventions influence competence trajectories.

Third, the sample, while sufficient in size ( $N = 282$ ), may not be fully representative in terms of gender distribution and economic classification. The modest number of female participants and the overrepresentation of certain academic disciplines may limit the generalizability of gender-related findings.

Despite these limitations, the study offers meaningful contributions to the field of entrepreneurship education by highlighting competence profiles, identifying gaps, and proposing data-driven strategies grounded in theory and empirical evidence.

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## References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Armuña, C., Ramos, S., Juan, J., Feijóo, C., & Arenal, A. (2020). From stand-up to start-up: exploring entrepreneurship competences and STEM women's intention. *International Entrepreneurship and Management Journal*, 16(1), 69-92. <https://doi.org/10.1007/s11365-019-00627-z>
- Bacigalupo, M., Kampylis, P., Punie, Y., & Van den Brande, G. (2016). *EntreComp: The entrepreneurship competence framework*. Publication Office of the European Union. <https://doi.org/10.2791/593884>
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74-94. <https://doi.org/10.1177/009207038801600107>
- Bandura A. (2001). Social cognitive theory: an agentic perspective. *Annual review of psychology*, 52, 1-26. <https://doi.org/10.1146/annurev.psych.52.1.1>
- Barrientos-Báez, A., Martínez-González, J. A., García-Rodríguez, F. J., & GómezGalán, J. (2022). Entrepreneurial competence perceived by university students: Quantitative and descriptive analysis. *Journal of International Studies*, 15(2), 40-49. DOI: 10.14254/2071-8330.2022/15-2/3
- Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, Quantitative, and Mixed Methods Approaches* (6th ed.). SAGE Publications.
- Czyzewska, M., & Mroczek, T. (2020). Data Mining in Entrepreneurial Competencies Diagnosis. *Education Sciences*, 10(8), 196. <https://doi.org/10.3390/educsci10080196>
- Demillo, R. M., & Demillo, G. M. (2022). Entrepreneurial Intention of Business Students in Davao Del Sur State College. *Global Journal of Management and Business Research*, 22(7), 21-32. <https://journalofbusiness.org/index.php/GJMBR/article/view/102705>
- Hair, J. F., Babin, B. J., Anderson, R. E., & Black, W. C. (2019). *Multivariate Data Analysis* (8th ed.). Pearson Prentice.
- Iglesias-Sánchez, P. P., Jambrino-Maldonado, C., & de las Heras-Pedrosa, C. (2019). Training Entrepreneurial Competences with Open Innovation Paradigm in Higher Education. *Sustainability*, 11(17), 4689. <https://doi.org/10.3390/su11174689>
- Karimi, S., Biemans, H. J. A., Lans, T., Aazami, M., & Mulder, M. (2014). Fostering students' competence in identifying business opportunities in entrepreneurship education. *Innovations in Education and Teaching International*, 53(2), 215-229. <https://doi.org/10.1080/14703297.2014.993419>
- Krueger, N. F., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15(5-6), 411-432. [https://doi.org/10.1016/S0883-9026\(98\)00033-0](https://doi.org/10.1016/S0883-9026(98)00033-0)
- Li, G., Long, Z., Jiang, Y., Huang, Y., Wang, P., & Huang, Z. (2023). Entrepreneurship education, entrepreneurship policy and entrepreneurial competence: mediating effect of entrepreneurship competition in China. *Education + Training*, 65(4), 607-629. <https://doi.org/10.1108/ET-06-2021-0218>
- Liu, Y., Alias, B. S., & Hamid, A. H. A. (2025). Student Entrepreneurship Competence and Its Contribution to Sustainable Development: A Systematic Review in the Context of Chinese Higher Education. *Sustainability*, 17(7), 3148. <https://doi.org/10.3390/su17073148>
- Liu, Y., Li, M., Li, X., & Zeng, J. (2022). Entrepreneurship education on entrepreneurial intention: The moderating role of the personality and family economic status. *Frontiers in psychology*, 13, 978480. <https://doi.org/10.3389/fpsyg.2022.978480>
- Martin, B. C., McNally, J. J., & Kay, M. J. (2013). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing*, 28(2), 211-224. <https://doi.org/10.1016/j.jbusvent.2012.03.002>
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
- Obenza, B. N., Sandico, A. V. P., Solis, A. J. D., Jashley M. G., Majo, N. R. C., Serios, R. N., ... Obenza- Tanudtanud, D. M. N. (2023). Financial Management Behavior and Financial Well-Being of Deped Teachers as Mediated By Financial Self-Efficacy. *British International Journal of Applied Economics, Finance and Accounting*, 7(6), 17-35. <https://aspjournals.org/Journals/index.php/bijaefa/article/view/524>
- Obenza, B. N., Cuaresma, N. B. G., Carandang, Y. G. D., Dalugdug, L. J. S., Resus, K. S. M., Jumamoy, B. C. A., ... Chi, K. C. Y. (2024). The Mediating Effect of Financial Self-Efficacy on Financial Behavior and Financial Well-Being of College Students in Region XI. *American Journal of Economics and Business Innovation*, 3(1), 21-30. <https://doi.org/10.54536/ajebi.v3i1.2313>
- Obenza, B., TorreFranca, J. P., Amarilla, J. D., Pandamon, J., Encarnacion, S., Getalado, G., & Azis, A. H. (2024). Personality Traits and Financial Management Behavior of University Students. *International Journal of Business and Applied Economics*, 3(1), 1-20. <https://doi.org/10.55927/ijbae.v3i1.7309>
- Ratković, T., Šlogar, H., & Šokčević, S. (2022). Entrepreneurial competencies of university students. *Economics and Sociology*, 15(4), 129-145. doi:10.14254/2071-789X.2022/15-4/6
- Reyes, G. U., Mariano, R. A., Herrera, M. N. Q., Manipol, N. E. P., & Cabardo, J. J. S. (2018). Personal Entrepreneurial Competencies and Entrepreneurial Intention of Non-Business Students Enrolled in an Introductory Entrepreneurship Course. *Journal of Economics, Management and Agricultural Development*, 4(1), Article 1. <https://www.ukdr.uplb.edu.ph/jemad/vol4/iss1/1>
- Romero, R. S., & Nalangan, R. M. (2023). Assessment of Personal Entrepreneurial Competencies of University of Mindanao Graduating Business Students. *International Journal of Industrial Management*, 17(1), 50-59. <https://doi.org/10.15282/ijim.17.1.2023.9213>
- Rotnitsky, I., Ukrop, S., Yavich, R., & Davidovitch, N. (2024). Gender differences in entrepreneurship studies. *The European Educational Researcher*, 7(1), 31-52. <https://doi.org/10.31757/euer.712>
- Sarasvathy, S. D. (2001). Causation and Effectuation: Toward a Theoretical Shift from Economic Inevitability to Entrepreneurial Contingency. *The Academy of Management Review*, 26(2), 243-263. <https://doi.org/10.2307/259121>



- Villanueva-Flores, M., Diaz-Fernandez, M., Hernandez-Roque, D., & van Engen, M. (2021). Psychological capital and entrepreneurship: gender differences. *Gender in Management*, 36(3), 410-429. <https://doi.org/10.1108/GM-07-2020-0231>
- Yin, Z., Liu, Z. & Tong, P. (2022). Core Entrepreneurial Competences of Chinese College Students: Expert Conceptualisation Versus Real-Life Cases. *The Asia-Pacific Education Researcher*, 31, 781-801. <https://doi.org/10.1007/s40299-022-00656-3>