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Tracing Employment and Operationalization of Graduate Outcomes Among College Graduates of Online Learning Programs

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Abstract

Tracing the employment and operationalization of graduate outcomes provides critical insights into how online and remote learning modalities influence the development, acquisition, and mastery of technical knowledge, competencies, and skills among college graduates who completed their programs through online and remote learning modalities due to the COVID-19 pandemic. By employing a descriptive research design, the study systematically examined patterns, trends, and captured information regarding how these college graduates apply their learning in professional contexts. Findings unveil a significant proportion of graduates who secured employment within one month of graduation. While 56% were unemployed due to recent resignations, geographic barriers, limited job opportunities, and a preference for remote work. Among employed graduates, 53% held positions aligned with their degree programs and 63% occupied regular or permanent roles. Hence, Partial Least Squares–Structural Equation Modeling analysis suggests technical, interpersonal, and problem-solving skills can be significant predictors of graduate employability. Moreover, institutional core values were found to have a direct effect on employability, underscoring the importance of values-based education in fostering career success. Through this study, higher education institutions, policymakers, and curriculum designers are provided evidence-based recommendations for enhancing program design, integrating institutional values, and aligning education with workforce demands.

Introduction

The aftermath of the COVID-19 pandemic has raised urgent concerns about whether learners who completed their schooling through online and other remote learning modalities have adequately developed the technical knowledge, competencies, and skills necessary to advance in their personal, academic, and professional journeys. Dela Cruz et al. (2025) mentioned on how closure and subsequent reopening of schools resulted in unequal learning losses that further widen the existing educational disparities and other related issues, especially for those countries and nations that were not able to cope with the economic disruption brought by the recent pandemic. These issues were compounded by poor internet connectivity, limited access to digital tools and other resources, fewer opportunities for hands-on learning, reduced interaction with teachers and peers, and the like (Alter, 2020). Initially, it is foreseen to significantly hinder the development and acquisition of essential and technical competencies and skills among learners in different stages of schooling, highlighting a critical gap in preparedness that may affect their learning progression, future employability, and overall career readiness. (Wang & Wang, 2024; Hu et al., 2022; Zhang et al., 2024; Xia et al., 2022; Belayneh, 2023; Gamage et al., 2023). Gradually, evidence has emerged underscoring the inadequate acquisition of knowledge, competencies, and skills among learners. This emphasizes the need for a closer examination of the effectiveness of online and remote learning modalities in fostering holistic learner development (Chaturvedi et al., 2021; Casey, 2024; Lu, 2023; Azmi et al., 2022). For instance, Brennan et al. (2023) mentioned how college students expressed their thoughts and feelings toward uncertainty related to job opportunities and unemployment once they completed their course programs. This suggests uncertainty regarding the readiness of these students to enter the workforce. To address this issue, Whetstone and Rice (2023) proposed the implementation of a career adaptability intervention program for college students who are experiencing such struggles. However, this does not seem to be the case for the Philippines. Local and International Large-Scale Assessments (ILSAs) consistently indicate that the quality of education provided has been adversely affected, a situation that has been linked to the prolonged disruption of learning during the recent pandemic (Jakubowski et al., 2025; Atienza, 2021; Magadia, 2025). This implies that Filipino learners continue to face challenges in acquiring essential and technical knowledge, competencies, and skills necessary for academic success and future employability. Anchoring to the Human Capital Theory (Becker, 1964), Employability Theory (Harvey, 2001; Yorke, 2006), and Transformative Learning Theory (Mezirow, 1991), this study examines the employability and operationalization of graduate outcomes by college graduates from a Philippine private Higher Education Institution (HEI) that started and completed their respective course programs entirely through online modality. Through this study, critical insights and evidence can be provided for curriculum recalibration, guiding policymakers and educational leaders in refining learning standards, instructional strategies, and assessment frameworks to more effectively address learning gaps and adapt to evolving instructional modalities.

Literature Review

Post-Pandemic Shifts in Philippine Education

The Philippine education system is currently undergoing significant shifts toward blended and hybrid learning modalities to sustain and enhance the quality of education across all levels. This approach is seen as a strategy to improve educational quality, foster more effective learner–teacher interactions, and address persistent learning gaps (Pentang et al., 2025; Estrellado, 2022). Notably, blended

and hybrid modalities are being employed as flexible solutions that allow education to continue when face-to-face instruction is disrupted by potential threats such as extreme weather events, heat-related disruptions, and other emergencies. However, this raises concerns regarding how effectively students are able to develop and master the essential competencies and skills necessary to advance academically, socially, and practically (Chaturvedi et al., 2021; Jimenez, 2022; Lu, 2023; Casey, 2024). The results of national, regional, and international assessments provide an overview of the quality of learners and graduates being produced by Philippine educational institutions. Many of these learners experienced prolonged school closures and were exposed to varying learning modalities, factors that may have significantly influenced their academic performance and overall competency development (Atienza, 2021; Magadia, 2025; Dela Cruz et al., 2025). Some suggests that limited access to digital tools and resources, fewer opportunities for hands-on learning, reduced interactions with teachers and peers, and the like are contributing factors on how student performs in these large-scale assessments (Wang & Wang, 2024; Hu et al., 2022; Zhang et al., 2024; Belayneh, 2023; Gamage et al., 2023). Nonetheless, this provides ongoing and deep challenges and issues in the Philippine educational system (Jakubowski et al., 2025). Thus, this presents a predicament in which college graduates may face challenges in demonstrating the competencies expected by employers, licensure bodies, graduate programs, and other professional stakeholders. Moreover, one of the key indicators of the quality of educational services provided by a HEI in the Philippines is the employability of its graduates.

Post-Pandemic Shifts in Workplace

The COVID-19 pandemic reshaped the workplace dynamics in different industries. Notable changes include the emergence of diverse work arrangements, evolving job roles and functions, and shifting skill demands driven by digitalization and remote work practices (Harter & Wigert, 2025). Consequently, the job market has become more competitive, dynamic, and skills-driven, placing greater emphasis on graduates' adaptability, digital competence, and readiness to meet rapidly evolving workplace demands. Brown (2025) described graduates from traditional college programs often struggle to keep pace with the demands of the evolving global workplace. This gap is partly attributed to the emergence of new job roles and functions, as well as the growing need for competencies and skills that were previously unforeseen. In particular, the increasing integration of AI, automation, and other emerging technologies has introduced notable changes in the labor market. Jobs that require advanced digital literacy, data analysis, problem-solving, and adaptive thinking are now in high demand, while routine or manual tasks are increasingly being automated. Additionally, Wang and Wang (2024) mentioned on how college graduates encounter challenges such as recruitment difficulties, heightened competition for employment, and increased psychological stress due to these evolving expectations. Consequently, employability and successful job placement have become more complex and demanding than in previous years (Malousis et al., 2023). It is worth noting that one emerging trend is the increasing frequency of job transitions among the new generation of workers, often driven by factors such as career advancement, competitive compensation, cultural alignment, and personal growth (Bordey, 2024).

These global trends are mirrored in the Philippine labor market (Bustos, 2024). There are shifts that resulted in evolving job roles, increased labor market uncertainty, and reduced long-term employment stability, which have directly affected Filipino college graduates entering the workforce. The labor market has become more flexible, with a rise in fixed-term, casual, and freelance roles. Mapa (2025) added demographic changes, economic fluctuations, and geographic labor boundaries to further contribute to the dynamic shifts in the workplace and employment. Prior to this, HEIs are already aware of perennial challenges for a new college graduate to secure employment right after graduation (Cuadra et al., 2019). Initial initiatives focused on aligning curricula with labor market demands, enhancing career guidance and internship programs, strengthening academe-industry collaboration, and expanding financial aid. These efforts are aimed to improve employment outcomes and developing a skilled workforce aligned with national and global development goals. This is reflected in the 2023–2028 Philippine Development Plan (National Economic and Development Authority [NEDA], 2023) as well as to recent CHED Memorandum Orders (CMOs) to address the challenges encountered by newly college graduates. However, this underscores the need for HEIs to move beyond content-driven curricula toward competency-based, technology-enabled, and industry-responsive learning models. Hence, there is a need to conduct timely graduate tracer studies among college graduates to gain critical insights into their employability and how they operationalize their acquired competencies, knowledge, and skills in real-world professional contexts.

Gauging Graduate Outcomes and Employability Indicators

In the Philippines, graduate outcomes are articulated in various CMOs to ensure program quality and alignment with national and international standards. These CMOs provide guidelines and directives on how HEIs deliver their courses and structure their programs. In this study, particular attention was given to the operationalization of graduate outcomes as outlined in relevant CMOs, including

CMO No. 46, Series of 2012; CMO No. 17, Series of 2017; and CMO No. 25, Series of 2015, among others. These CMOs pertain to programs in computing, business, and the arts. The operationalization of graduate outcomes refers to the ways in which the competencies, skills, and values prescribed by these CMOs are manifested and applied by college graduates in professional settings, encompassing both technical proficiency and the practical demonstration of ethical, social, and cognitive skills in the workplace. One of the primary ways to assess graduate outcomes and employability is through graduate tracer studies.

Graduate tracer studies are considered one of the key approaches for soliciting critical information and insights into the employability and graduate outcomes of college graduates from HEI. Such studies enable an educational institution to systematically examine graduates' employability profiles, the competencies and skills they have acquired, and the challenges they encounter in professional settings (Andaya et al., 2024; Tutor et al., 2019). To date, several tracer studies have been conducted in the Philippines and internationally, providing insights into employment trends, job alignment with academic programs, and skill utilization. For instance, Deblois (2021), Andaya et al. (2024), Fernando and Cagatao (2023), and Basabe et al. (2023) reported high employability rates among computing graduates, with most securing employment within six months to a year after graduation. These roles often align with graduates' areas of specialization, including software development, network administration, and systems engineering. Employers identified technical proficiency, adaptability, and problem-solving as the most in-demand competencies in this field. On the other hand, Lopena and Madrigal (2023) and Briones et al. (2021) observed that business college graduates are typically employed in middle- to senior-management positions. To enhance employability, these studies recommend integrating experiential learning opportunities and global business perspectives into curricula to better meet current market demands. Meanwhile, Palay and Garcia (2021) and Basir et al. (2022) found diverse employment outcomes among graduates of art-related programs. While many multimedia arts graduates find work in related industries, a significant number also pursue freelance, entrepreneurial, or interdisciplinary careers. However, these studies were conducted in the pre-pandemic period and may not fully reflect the employability outcomes, competencies, and challenges faced by graduates in the post-pandemic context, where online and hybrid learning modalities disrupted schooling, and evolving workplace demands may have reshaped the profile of graduate skills and readiness. Moreover, none of these studies examined how college graduates are able to operationalize their respective institution's core values in the workplace.

Statement of the Problem

This study examines the employability and operationalization of graduate outcomes among college graduates from a Philippine private HEI who completed their programs entirely through online modality. Specifically, this study sought to:

This study examines the employability and operationalization of graduate outcomes among college graduates from a Philippine private HEI who completed their programs entirely through online modality. Specifically, this study sought to:

1. What is the demographic profile of the graduates, in terms of:

1.1. sex;

1.2. civil status; and

1.3. current residency?

2. What is the nature of employment status, engagement, and job placement of the graduates?

3. What are the employability characteristics of the employed graduates, in terms of:

3.1. length of obtaining a first job;

3.2. frequent changes of job;

3.3. average monthly income; and

3.4. work location?

4. To what extent do the graduate outcomes and internalization of institutional core values influence the employability of college graduates who completed their programs through online learning modality?

Methods

Employing a descriptive research design to examine the employability and operationalization of graduate outcomes among college graduates from a Philippine private HEI who completed their programs entirely through online modality. Purposive, stratified, power-series, and quota sampling techniques were utilized to identify the respondents. Purposively, the respondents are college graduates who began their academic programs in 2020 and completed them in 2023 through pure online learning modality. Furthermore, the respondents were categorized based on their course programs into computing-related, business-related, and art-related. Graduates from computing-related programs included those who completed the Bachelor of Science (BS) in Computer Science with specializations in Software Engineering, Cloud Computing, and Data Science, the BS in Information Technology with a specialization in Web Development, and the BS in Entertainment and Media Computing with a specialization in Game Development. Business-related programs comprised the BS in Business Administration major in Marketing Management, the Bachelor of Arts (BA) in Psychology, and the BS in Real Estate Management. Meanwhile, art-related programs included the BA in Multimedia Arts and Design, the BS in Animation, the BA in Fashion Design and Technology, and the AB Film and Visual Effects. It is important to note that not all academic programs offered by the institution were included, as some newer programs had not yet produced graduates at the time of data collection. Schomburg (2014) mentioned that a response rate between 30% and 60% was considered acceptable for a graduate tracer study. Table 1 provides the distribution of respondents with an overall response rate of 86%. This not only met the suggested response rate for a tracer study but also meets the minimum sample for performing Partial Least Squares-Structural Equation Model (PLS-SEM) by Kock (2021).

Table 1
Distribution of Respondents by Course Program

Categories	Number of Responses	Number of Graduates	Response Rate
Computing-related programs	116	116	100%
Business-related programs	37	84	44%
Art-related programs	194	203	96%
Statistic	347	403	86%

Meanwhile, the graduate tracer study questionnaire was developed and validated based on related CMOs, institutional core values, and the work of Andaya et al. (2024) and Pentang et al. (2024). The initial draft of the questionnaire was reviewed by experts in the field of education, research, computing, business, arts, and language to observe face validation of the questionnaire. Consequently, a pilot test was administered. This was used to establish the reliability of the questionnaire. Hence, it yields to a reliability coefficient of 0.92 which indicates a high level of internal consistency. Collectively, the questionnaire was refined, digitized, and organized into four (4) sections, specifically informed consent form, demographic profile, employability profile, and operationalization of graduate outcomes and institutional core values.

Afterwards, the digitized questionnaire was disseminated through appropriate communication channels one (1) year after the students had graduated from the institution. This took place between August 2024 and March 2025. Upon completion of the data gathering process, the responses were appropriately cleansed, aggregated, and analyzed using appropriate statistical techniques and tools through a licensed IBM Statistical Package for Social Sciences (SPSS) version 28, WarpPLS version 8, and NVivo version 12.

Results

Demographic Profile of the College Graduates

Table 2 shows the demographics of the respondents. In terms of sex, about 55% of the respondents were male, while 46% were female. This distribution also reflects observable trends across disciplines: computing-related programs had a noticeably higher proportion of male graduates, whereas business and art-related programs showed a greater representation of female graduates. The civil status of respondents further indicates that the vast majority (98%) were single at the time of the survey, with only 2% married after graduation. This trend may reflect the relatively young age profile of the respondents, given that the data were gathered within a year of graduation. In terms of geographic location, most graduates (70%) reported residing in the National Capital Region (NCR), while 28% were living outside NCR but within the Philippines. A small proportion (2%) had migrated abroad, suggesting a minor level of international mobility among the graduate cohort.

Table 2
Demographic Profile (n = 347)

Variables	Computing-related programs	Business-related programs	Art-related programs	Total	%
Sex					
Female	18	21	119	158	46%
Male	98	16	75	189	55%
Civil Status					
Single	116	32	193	341	98%
Married	0	5	1	6	2%
Separated/Divorced	0	0	0	0	0%
Widow/er	0	0	0	0	0%
Current Residency					
Within the NCR, Philippines	86	30	127	243	70%
Outside of the NCR but within the Philippines	29	7	60	96	28%
Outside of the Philippines	1	0	7	8	2%

Employability Profile of the College Graduates

Table 3 presents the current employment status of the surveyed graduates, showing that 33% are employed, 11% are self-employed, and 56% remain unemployed. Tables 4 and 5 provide further insights into the characteristics of those employed during the conduct of the study.

Table 4 highlights the type of employment and alignment of job roles with academic preparation. About 63% of employed graduates hold regular or permanent positions, 14% are on probation, and a smaller proportion are in seasonal roles, indicating promising job stability within a year of graduation. In terms of alignment with program outcomes, 53% are in positions directly related to their academic preparation, 34% occupy roles not fully aligned, and 13% hold leadership-oriented positions, reflecting opportunities for career advancement or managerial and entrepreneurial pathways.

Table 5 examines additional employability characteristics. Approximately 53% of employed graduates secured their first job within one month of graduation, while 79% remain in their initial positions, suggesting job stability, satisfaction, or limited mobility. Regarding compensation, 43% earn a monthly salary between PhP 30,001 and PhP 50,000, indicating moderate early-career earnings in the Philippine context. Geographically, 78% work within the NCR, and 8% are employed abroad. This demonstrates some levels of international employability and access to global labor markets.

Table 3
Employment status (n = 347)

Categories	Computing-related programs		Business-related programs		Art-related programs		Total	%
	f	%	f	%	f	%		
Employed	63	54%	17	15%	36	31%	116	33%
Self-employed	18	49%	13	35%	6	16%	37	11%
Unemployed	99	51%	37	19%	58	30%	194	56%

Table 4
Employment nature of employed graduates (n = 116)

Categories	Computing-related programs		Business-related programs		Art-related programs		Total	%
	f	%	f	%	f	%		
Employment Type								
Regular/Permanent	44	70%	13	76%	16	44%	73	63%
Casual	1	2%	3	18%	3	8%	7	6%
Project-based	6	10%	0	0%	5	14%	11	9%
Seasonal	3	5%	0	0%	0	0%	3	3%
Fixed-Term	2	3%	0	0%	4	11%	6	5%
Probationary	7	11%	1	6%	8	22%	16	14%
Employment alignment								
CMO-aligned	29	46%	7	41%	25	69%	61	53%
Non-CMO-aligned	31	49%	4	24%	5	14%	40	34%
Leadership-oriented	3	5%	6	35%	6	17%	15	13%

Table 5
Employability characteristics of employed graduates (n = 116)

Indicators	Computing-related programs		Business-related programs		Art-related programs		Total	%
	f	%	f	%	f	%		
Length of time to obtain a first job								
less than a month	27	43%	13	76%	22	61%	62	53%
1 to 3 months	10	16%	2	12%	7	19%	19	16%
4 to 6 months	15	24%	1	6%	6	17%	22	19%
7 to 11 months	8	13%	0	0%	0	0%	8	7%
More than 12 months	3	5%	1	6%	1	3%	5	4%
Frequent changes of job								
no change	50	79%	14	82%	28	78%	92	79%
1–3	12	19%	3	18%	7	19%	22	19%
4–6	1	2%	0	0%	0	0%	1	1%
more than 7	0	0%	0	0%	1	3%	1	1%
Current monthly income								
below PHP 10,000.00	2	3%	0	0%	5	14%	7	6%
PHP 10,001.00 to PHP 30,000.00	21	33%	6	35%	9	25%	36	31%
PHP 30,001.00 to PHP 50,000.00	27	43%	4	24%	15	42%	46	40%
PHP 50,001.00 to PHP 70,000.00	13	21%	1	6%	4	11%	18	16%
above PhP 70, 000.00	0	0%	6	35%	3	8%	9	8%
Current work location								
Within the NCR, Philippines	56	89%	14	82%	21	58%	91	78%
Outside of the NCR but within the Philippines	6	10%	3	18%	7	19%	16	14%
Outside of the Philippines	1	2%	0	0%	8	22%	9	8%

Operationalization of Graduate Outcomes

Table 6 shows a summary of how the college graduates believe that they are able to apply the graduate outcomes in a professional setting. Graduates from business-related programs have the highest overall mean ratings, particularly excelling in entrepreneurial and leadership skills. Computing graduates demonstrate consistently high ratings across all skill indicators, ranging from 3.65 to 3.69, with especially strong performance in entrepreneurial and communication skills, highlighting the growing importance of soft skills even in technical fields. The overall mean for this group was 3.67 with a standard deviation of 0.59, reflecting strong perceived applicability of competencies in professional environments. Arts-related graduates reported the lowest overall mean of 3.65, with entrepreneurial and communication skills emerging as relative strengths, likely due to the expressive and project-based nature of arts education that fosters these competencies.

Meanwhile, Table 7 shows that the operationalization of institutional core values among graduates across disciplines reveals overall strong agreement in embodying the values promoted by the institution. Graduates from business-related programs reported the highest overall mean, indicating the strongest alignment with institutional values, followed by computing-related graduates and arts-related graduates.

Table 6
Operationalization of graduate outcomes (n = 347)

Skills	Computing-related courses			Business-related courses			Art-related courses			Overall Statistic		
	Mean	SD	VI	Mean	SD	VI	Mean	SD	VI	Mean	SD	VI
Technical Skills	3.65	0.60	Strongly Agree	3.78	0.52	Strongly Agree	3.64	0.62	Strongly Agree	3.69	0.58	Strongly Agree
Communication Skills	3.68	0.55	Strongly Agree	3.72	0.52	Strongly Agree	3.67	0.56	Strongly Agree	3.69	0.54	Strongly Agree
Interpersonal Skills	3.66	0.63	Strongly Agree	3.63	0.69	Strongly Agree	3.65	0.64	Strongly Agree	3.65	0.65	Strongly Agree
Leadership Skills	3.67	0.55	Strongly Agree	3.77	0.44	Strongly Agree	3.67	0.55	Strongly Agree	3.70	0.52	Strongly Agree
Problem-Solving Skills	3.66	0.63	Strongly Agree	3.80	0.47	Strongly Agree	3.63	0.64	Strongly Agree	3.70	0.58	Strongly Agree
Entrepreneurial Skills	3.69	0.57	Strongly Agree	3.86	0.37	Strongly Agree	3.67	0.58	Strongly Agree	3.74	0.51	Strongly Agree
Overall Statistic	3.67	0.59	Strongly Agree	3.76	0.50	Strongly Agree	3.65	0.60	Strongly Agree	3.69	0.56	Strongly Agree

Remarks: SD = standard deviation; VI = Verbal Interpretation

Table 7
Operationalization of the institutional core values (n = 347)

Indicators	Computing-related courses			Business-related courses			Art-related courses			Overall Statistic		
	Mean	SD	VI	Mean	SD	VI	Mean	SD	VI	Mean	SD	VI
I always go above and beyond what is being asked of me.	3.25	0.62	Strongly Agree	3.53	0.60	Strongly Agree	3.28	0.62	Strongly Agree	3.35	0.61	Strongly Agree
I am a hard-working and self-motivated person.	3.31	0.62	Strongly Agree	3.59	0.57	Strongly Agree	3.29	0.62	Strongly Agree	3.40	0.60	Strongly Agree
I always collaborate with others in achieving the set goals/objectives.	3.32	0.62	Strongly Agree	3.43	0.56	Strongly Agree	3.34	0.62	Strongly Agree	3.36	0.60	Strongly Agree
I always envision myself toward positive change and action.	3.36	0.61	Strongly Agree	3.42	0.53	Strongly Agree	3.31	0.67	Strongly Agree	3.37	0.60	Strongly Agree
I always offer help to others.	3.33	0.67	Strongly Agree	3.47	0.52	Strongly Agree	3.48	0.61	Strongly Agree	3.43	0.60	Strongly Agree
I always value joy and fulfillment.	3.50	0.60	Strongly Agree	3.56	0.55	Strongly Agree	3.45	0.65	Strongly Agree	3.51	0.60	Strongly Agree
I always cheer for others.	3.47	0.64	Strongly Agree	3.74	0.46	Strongly Agree	3.24	0.67	Agree	3.48	0.59	Strongly Agree
I always choose to see the good in every situation.	3.28	0.67	Strongly Agree	3.36	0.59	Strongly Agree	3.45	0.65	Strongly Agree	3.36	0.64	Strongly Agree
Overall Statistic	3.35	0.63	Strongly Agree	3.51	0.55	Strongly Agree	3.36	0.64	Strongly Agree	3.41	0.61	Strongly Agree

Remarks: SD = standard deviation; VI = Verbal Interpretation

Figure 1 shows the results of the PLS-SEM. This highlights the significance of both skill acquisition and values integration in shaping graduate employability. The model demonstrated satisfactory overall fit and quality, supporting the robustness of the results. The Average Path Coefficient (APC = 0.171, $p < 0.001$) indicated a substantial average effect size across the model's paths. The Average R-squared (ARS = 0.496, $p < 0.001$) and Average Adjusted R-squared (AARS = 0.487, $p < 0.001$) suggested that nearly half of the variance in the endogenous variables was explained by the model. With respect to multicollinearity, the Average Block VIF (AVIF = 3.831) and Average Full Collinearity VIF (AFVIF = 3.302) fell within the acceptable threshold (≤ 5), though marginally higher than the ideal benchmark of 3.30, indicating tolerable multicollinearity among predictors. All advanced quality indices for predictive and explanatory validity were also met. Specifically, the Tenenhaus Goodness-of-Fit (GoF = 0.659) exceeded the cutoff for a large model fit (> 0.36). The Simpson's Paradox Ratio (SPR = 0.846) satisfied the ideal threshold (≥ 0.70). The R-squared Contribution Ratio (RSCR = 0.961) confirmed a strong model contribution (≥ 0.90). The Statistical Suppression Ratio (SSR = 0.923) was acceptable (≥ 0.70), and the Nonlinear Bivariate Causality Direction Ratio (NLBCDR = 1.000) indicated an ideal causal directionality (≥ 0.70). Collectively, these indices confirmed that the model is both statistically robust and conceptually meaningful.

Regarding the structural paths, technical skills ($\beta = 0.46$, $p < 0.01$), interpersonal skills ($\beta = 0.26$, $p < 0.01$), and problem-solving skills ($\beta = 0.18$, $p < 0.01$) emerged as the strongest direct predictors of employability. These results underscore the importance of both cognitive and relational competencies in preparing graduates for workforce demands. Overall, the strength of these metrics enhances confidence in the validity of the theoretical relationships tested, particularly the dual role of skills and institutional core values in shaping employability.

Discussion

The demographic profile of college graduates from computing, business, and arts programs provides important context for understanding employability and the operationalization of graduate outcomes and institutional core values. Male graduates predominated in computing programs, corresponding with higher employment rates in the technology sector. While female graduates were more represented in business and arts programs, reflecting employment in service-oriented industries such as marketing, design, and education, consistent with previous studies (Andaya et al., 2024; Tutor et al., 2019). In terms of civil status, majority of the respondents were single and early in their careers. This suggests a workforce focused on skill development and career establishment, a phase conducive to applying core competencies such as critical thinking, technical skills, and lifelong learning as outlined in CMOs. A high proportion of graduates residing in the NCR indicates greater access to employment opportunities, professional networks, and industry hubs, whereas graduates outside NCR or abroad may face different labor market conditions and cultural challenges in operationalizing their academic learning.

Employment outcomes revealed that 33% of graduates were employed, 11% self-employed, and 56% unemployed. Unemployment was largely attributed to personal or family obligations, limited field-specific job opportunities, geographic constraints, and preferences for remote work. Skill-job mismatches were also noted, particularly among computing graduates, reflecting the interdisciplinary nature of the tech industry. Notably, 11% of graduates pursued self-employment, engaging in entrepreneurial or freelance work aligned with their fields, such as digital marketing, graphic design, and e-commerce. Business graduates were more likely to occupy leadership roles, while arts graduates typically held positions closely aligned with their academic training, highlighting discipline-specific career trajectories and the importance of both domain-specific and transferable competencies (Bedoya-Guerrero et al., 2024). Early career indicators suggest that many graduates secured employment quickly, experienced job stability, and earned moderate incomes, though mobility and compensation were influenced by regional and industry factors (Krylova et al., 2021).

Assessment of graduate outcomes showed that online graduates generally achieved high levels of competency, particularly in leadership and entrepreneurship, reflecting alignment between curricula and competency-based approaches. Entrepreneurial skills were rated highest, followed by technical, communication, and problem-solving skills, while interpersonal skills were comparatively lower, indicating a need for strategies to enhance collaboration in online learning environments. Variations across disciplines point to opportunities for context-specific curriculum improvements. Furthermore, the institution embedded opportunities for developing affective and interpersonal competencies aligned with its core values.

Graduate outcomes were influenced not only by technical proficiencies but also by values formation, particularly through entrepreneurial ($\beta = 0.24$, $p < 0.01$), leadership ($\beta = 0.13$, $p < 0.01$), and problem-solving skills ($\beta = 0.19$, $p < 0.01$). Institutional core values also had a significant effect on employability ($\beta = 0.29$, $p < 0.01$), supporting the view that graduates who internalize values such as integrity, service, and excellence are better positioned for professional success. These findings suggest a dual pathway - skills and values - in preparing graduates for the workforce. Integrating value-based education alongside technical and transferable skill development through curricula, co-curricular activities, and service-learning initiatives can holistically enhance graduate preparedness and responsiveness to evolving professional environments (Hijastro, 2024).

Conclusion

As various learning institutions in the Philippines increasingly adopted remote learning modalities during the COVID-19 pandemic, concerns emerged regarding the effectiveness of these programs in producing work-ready graduates who embody the appropriate competencies, skills, and values. While employability is often assessed through job placement and employment status, less attention has been given to how graduates operationalize embedded learning outcomes within the evolving post-pandemic labor market. This study sought to address that gap by tracing both the employment outcomes and the extent to which graduate outcomes were operationalized by college graduates from a Philippine private HEI.

Employment outcomes revealed that unemployment was attributed to recent resignations, family obligations, limited job opportunities aligned with academic training, geographic barriers, and preferences for remote work. While the majority of the employed graduates have jobs aligned with CHED-mandated outcomes. Whereas leadership or supervisory roles were predominantly among business graduates, while computing graduates often worked in roles not directly aligned with their academic background, reflecting interdisciplinary demands in the technology sector. In terms of operationalizing the competencies, graduates reported strong application of technical, communication, interpersonal, leadership, problem-solving, and entrepreneurial skills. Business graduates

demonstrated particularly high proficiency in entrepreneurial and problem-solving skills, while arts and computing graduates excelled in technical and communication competencies. Moreover, graduates demonstrated high internalization of institutional core values, often reflected in team-based work, service-oriented roles, and leadership responsibilities. PLS-SEM analysis further confirmed that technical, interpersonal, and problem-solving skills, alongside institutional core values, significantly predicted employability, underscoring the dual role of skills and values in career success.

Based on these findings, several recommendations are proposed to strengthen graduate outcomes and employability. Curriculum design should embed authentic, industry-aligned learning experiences that explicitly integrate mandated competencies. While co-curricular and service-learning programs should cultivate collaboration, integrity, and motivation in real-world contexts. Institutions should enhance career development support for students and unemployed graduates through job readiness workshops, career coaching, and remote job-matching platforms. Lastly, regular graduate tracer studies incorporating employer feedback are essential to evaluate not only employment rates but also the meaningful application of both skills and values in professional contexts. Collectively, these strategies can holistically prepare graduates to respond effectively to evolving labor market demands while embodying institutional values.

Declarations

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Ethics Statement

The researchers secured ethical clearance from the institution's research ethics committee. Informed consent was obtained from all respondents involved in the study in observance of the country's data privacy act.

This study was conducted in accordance with recognized ethical standards. Informed consent was obtained from all participants, and data was collected and reported with respect for confidentiality and anonymity.

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AI Use Statement

In this work, the researchers utilized artificial intelligence (AI) tools and methodologies, specifically ChatGPT (GPT-5, OpenAI), for language refinement, formatting, and editorial assistance. After using this tool, the authors evaluated and revised the content as necessary, taking full responsibility for the published content.

Conflicts of Interest Statement

The researchers declare that they have no conflicts of interest in relation to this study.

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Figures

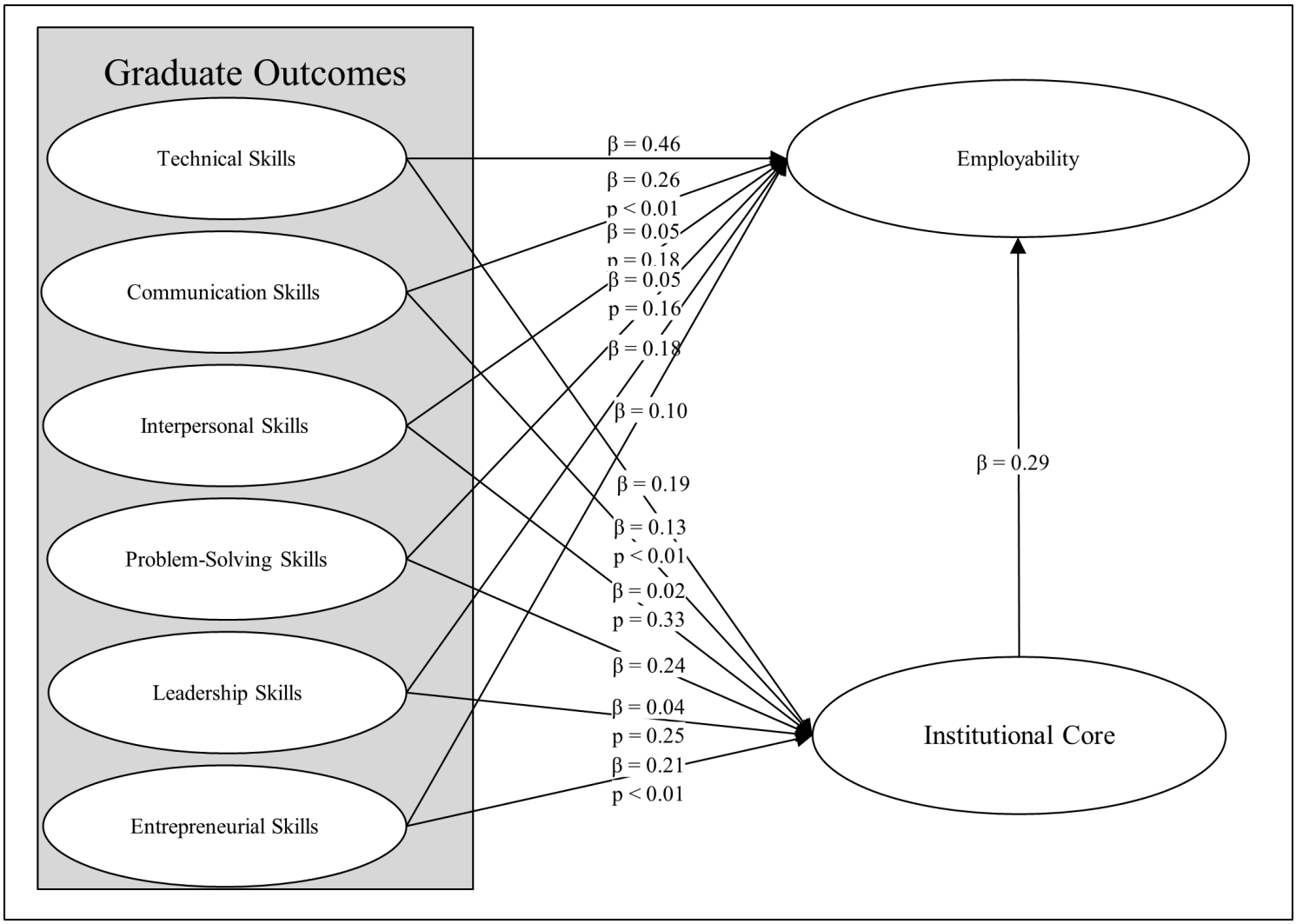


Figure 1

PLS-SEM of Graduate Outcomes, Institutional Core Values, and Employability