

Research Article

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Author for correspondence:

Sales G. Aribé Jr.

✉ sg.aribe@buksu.edu.ph

✉ Bukidnon State University, Philippines



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Tracing Pandemic-Era IT Graduates: Educational Outcomes and Employability in the Post-COVID Labor Market

Sales G. Aribé Jr. , John Lloyd Q. Rojo

Abstract

Background/purpose. The COVID-19 pandemic profoundly disrupted higher education systems, forcing a generation of students to complete their degrees under fully or partially remote learning conditions. This tracer study investigates the post-graduation pathways, employment outcomes, and job-program alignment of Bukidnon State University's BSIT graduates from Batches 2020–2022—specifically those shaped by the pandemic's shift to online education. As one of the few studies focusing on COVID-era IT graduates in the Philippine context, it provides valuable insights into how remote learning influenced employability, workplace readiness, and the application of skills in real-world settings.

Materials/methods. Data were gathered from 45 traced graduates using a modified CHED tracer survey and analyzed through descriptive statistics.

Results. Results show that 71.43% of respondents were employed, with 97.50% working locally, primarily in the ICT sector (62.59%), and earning modest salaries of \$ 175 – \$ 350 (60%). ICT skills (60.38%), along with communication, critical thinking, and problem-solving skills (each at 45.28%), were perceived as most useful at work, while entrepreneurial skills (16.98%) lagged behind. While 76.19% of 2022 graduates held jobs aligned with their degree, earlier cohorts reported full alignment.

Conclusion. The findings underscore both the adaptability of pandemic-trained graduates and the urgent need for curriculum recalibration to better support entrepreneurial, global, and future-ready competencies.

1. Introduction

The growing demand for Information Technology (IT) professionals in the Philippines continues to drive the expansion and integration of IT programs in higher education institutions (HEIs). As the global economy becomes increasingly digital, the IT industry remains a major force in fostering innovation, development, and transformation across sectors (Albina & Sumagaysay, 2020; Andaya et al., 2024). This evolving landscape requires graduates who are not only technically competent but also adaptable, entrepreneurial, and responsive to both local and global market needs.

To assess program relevance and graduate outcomes, many Philippine HEIs regularly conduct tracer studies among IT graduates. For instance, the University of Cebu reported that a majority of its 2016–2021 graduates secured permanent employment within a year of graduation, with their academic training remaining strongly relevant to their first job (Basabe et al., 2023a). Meanwhile, the Nueva Ecija University of Science and Technology, San Isidro Campus, conducted a tracer study for its 2016–2018 IT cohort, finding that 72% gained employment and 62% worked in positions with regular status (Mina et al., 2020). Bukidnon State University (BukSU) also maintains an institutional tracer survey to assess its alumni's employability and inform program improvement (Villanca et al., 2020).

However, the COVID-19 pandemic abruptly disrupted traditional educational systems and reshaped how students acquire knowledge and competencies. In response to health restrictions, HEIs shifted to remote learning, resulting in an entire generation of students completing their degrees fully online. This unprecedented shift brought new questions to the forefront of education and workforce development: *Can graduates who studied exclusively in virtual environments compete effectively in the labor market? How does their training align with industry expectations? And more importantly, what lessons can be drawn about the long-term employability of pandemic-era graduates?*

While tracer studies of IT graduates exist, there is limited evidence on the employment outcomes, job-program alignment, and competency applications of graduates who completed a significant portion of their studies during the COVID-19 pandemic. These concerns are further amplified when considering graduates whose academic experience was entirely mediated by technology, absent of in-person labs, internships, or face-to-face mentorship. Few studies specifically examine whether prolonged online learning and reduced hands-on training have influenced job fit, career pathways, or entrepreneurial readiness. Based on the identified gaps, this study seeks to answer the following research questions:

- What is the socio-demographic and academic profile of the BSIT graduates from batches 2020-2022?
- What is the employment status and job experience of these graduates?
- Which competencies do graduates identify as most useful in their current jobs? and
- To what extent is there alignment between the graduates' current employment and their academic training (job fit)?

This study is significant because it highlights a timely and underexamined issue in higher education research: how pandemic-trained graduates, who lacked traditional hands-on laboratory work and in-person industry immersion, have fared in the labor market. By focusing on this distinct group, the study not only informs curricular adjustments within BukSU but also contributes valuable insights for Philippine HEIs and policymakers navigating the long-term implications of remote learning on graduate employability.

Furthermore, this study addresses that gap by tracing the employment outcomes of BSIT graduates from BukSU across three consecutive cohorts (2020–2022), most of whom studied under flexible, remote learning conditions. By examining employment status, job experiences, competencies, and program-job alignment, the study provides a timely assessment of how the pandemic-era education shaped the transition of IT graduates into the workforce. The results contribute evidence to guide curriculum recalibration, strengthen work-integrated learning, and support policy development in Philippine higher education.

2. Framework of the Study

The framework of this study illustrates the relationship between the factors affecting labor fit among COVID-era IT graduates, as presented in Figure 1. The present study analyzes three independent variables: academic and socio-demographic profiles, employment profile and job experiences, and graduate competencies, and their effects on the dependent variable, job fit (Mora et al., 2007; Ronald W. McQuaid & Lindsay, 2005).

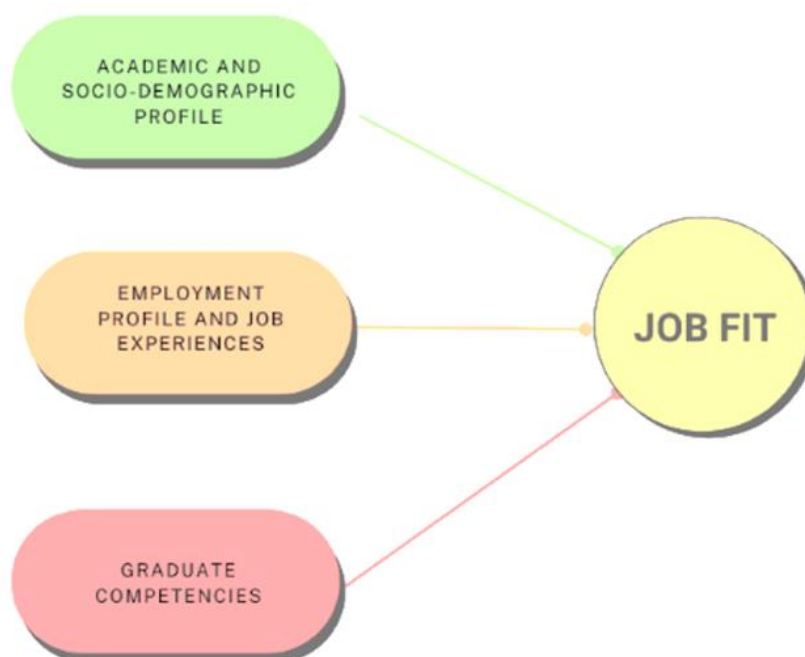


Figure 1. Schematic Diagram Showing the Framework of the Study.

The academic and socio-demographic profiles of graduates, including their age, gender, academic achievement, and socioeconomic status, are important in influencing their career options and professional pathways (Nazareno et al., 2021). Knowledge about these attributes provides us with insights into how individuals' personal and educational backgrounds influence their employment outcomes.

The employment profile and job experiences comprise information such as graduates' employment status, working industry, position held, salary range, and challenges faced at work (Mainga et al., 2022). It is measured in terms of the time it takes for graduates to get a job, the type of jobs they have (quality of employment) and how well their experiences in their career correspond to what they studied.

The graduate competencies variable refers to the technical and functional competencies acquired in the BSIT program that are considered essential for the workplace (Malinao et al., 2022). Such skills include both technical (e.g., programming, cybersecurity, networking) and non-technical or soft skills (e.g., communication, teamwork, and problem-solving), as well as adaptability to industry

demands. Knowing what competences are most valued by companies helps determine how well the curriculum is working and allows us to consider improving it.

The outcome or dependent variable, job fit, refers to the correspondence of an academic field in which a graduate was trained to their job position (Grosemans et al., 2021). It examines whether their occupational tasks, skill use, and career direction match what they have studied. A strong job fit implies that the BSIT program has successfully developed skills demanded by the industry, whereas a weak job fit implies areas of mismatch between the skills supplied and those demanded.

Through investigating these linkages, the current research aims to develop a comprehensive understanding of the impact of various job fit determinants. The results would help in designing the curriculum, improving career counseling, and in strategic planning to increase the employability and career success of future IT graduates.

3. Literature Review

The COVID-19 pandemic created an unprecedented disruption in higher education worldwide, compelling universities to abruptly shift to remote and online modalities. This transition not only reshaped how students acquired knowledge but also introduced long-term implications for graduate readiness and labor market integration. For instance, Marinoni et al. (2020) reported that universities globally faced reduced student mobility, loss of internships, and weakened industry linkages during the pandemic. Similarly, Crawford et al. (2020) noted that HEIs had to rapidly adapt digital teaching methods, often without adequate preparation, which affected both teaching quality and graduate employability.

Graduate employability has long been a key measure of the effectiveness of higher education, particularly in computing-related disciplines. Clarke (2018) emphasized that employability is not simply about securing a first job but also about sustaining career adaptability and lifelong learning. Jackson (2016) highlighted that employers in IT-related fields value both discipline-specific technical competencies and transferable skills such as problem-solving, teamwork, and communication. The pandemic accelerated this demand, as graduates were suddenly required to demonstrate independence and digital collaboration skills in largely remote workplaces (Osman, 2020).

In the Philippine context, tracer studies have been widely used to evaluate program relevance and inform curricular reforms. Amahan et al. (2024) revealed that Filipino IT graduates often transition quickly into the workforce, yet many are concentrated in entry-level roles within the BPO sector. Bringula et al. (2016) similarly noted that while local IT graduates display technical readiness, gaps remain in entrepreneurial and innovation-driven skills. Antipova (2021) noted that the pandemic exacerbated inequalities in access to technology, which in turn affected graduate employability outcomes, particularly in rural regions.

Globally, scholars have also examined how pandemic-era education influenced job alignment and career pathways. Tymon (2013) observed that job-skills mismatch has been a persistent issue even before the pandemic, but its effects intensified as internships and hands-on training were curtailed. Drnach-Bonaventura (2025) further argued that the “pandemic generation” of graduates must be studied closely, as their education was shaped by conditions absent in prior cohorts, making them a distinct group in the labor market.

The World Bank emphasized that COVID-19 introduced long-lasting effects on both education and employment, particularly in developing economies (Khamis et al., 2021; Von Wachter, 2020). Graduates who studied exclusively online may face limitations in applying theoretical knowledge to practical tasks—an issue that is especially pressing in information technology, where hands-on learning, industry immersion, and problem-based applications are critical.

Taken together, the literature indicates two important gaps. First, most existing tracer studies in the Philippines assess broad cohorts across multiple years but do not isolate the unique experiences of pandemic-era graduates. Second, while the employability of IT graduates has been widely studied, little attention has been paid to how remote-only learning shaped their career pathways and competency application.

This study addresses these gaps by focusing specifically on COVID-era IT graduates from BukSU. By tracing their employment outcomes, competencies, and job-program alignment, the study provides timely evidence on how remote learning shaped labor market integration. In doing so, it contributes not only to institutional curriculum reform but also to national and international discussions on sustaining graduate employability in the digital, post-pandemic economy.

4. Methodology

4.1. Research Design

This study employed a quantitative descriptive research design, which is appropriate for tracer studies that aim to present the demographic and academic profile, employment status, job experiences, competencies, and job-program alignment of graduates. The descriptive design enabled the systematic collection and analysis of numerical data to summarize patterns and trends, providing an accurate picture of the post-graduation outcomes of COVID-era IT graduates. This design was chosen because it allows for the identification of relationships and distributions without manipulating variables, making it suitable for assessing employability and career pathways in a specific cohort.

4.2. Research Locale

This study was carried out in the College of Technologies of BukSU, Malaybalay City, Bukidnon, Philippines. The study concentrated on the BSIT students.

4.3. Participants

The participants in this study include graduates from the 2020 (2 graduates), 2021 (1 graduate), and 2022 (53 graduates) batches of the BSIT program at BukSU. All graduates from batches 2020 and 2021 were successfully traced and responded to the survey. For batch 2022, 42 out of 53 graduates responded to the tracer survey, representing a substantial portion of the cohort and providing a reasonable sample size for descriptive analysis. While the study aimed for full participation from all BSIT graduates, the final response rate was determined by the number of voluntary survey completions. To ensure the validity and reliability of the findings, the study set a minimum participation threshold of at least 50% of the total graduate population, which was surpassed.

A purposive sampling approach was employed, as the study specifically targeted BSIT graduates who completed their degrees during the COVID-19 pandemic (2020–2022). To increase the participation rate, snowball sampling was also used, wherein initial respondents were encouraged to refer fellow graduates who may have been difficult to reach through institutional contact records.

Selection criteria for inclusion required that participants: (1) had completed all academic requirements and officially graduated with a BSIT degree on the year 2020, 2021 and 2022, (2) were listed in the official graduation records provided by the Registrar and validated by the Alumni Relations Unit, and (3) consented to participate in the survey following Republic Act 10173 - Data Privacy Act of 2012. Graduates were contacted using institutional records and invited to respond to the online BukSU alumni tracer survey form. The snowball sampling technique was also employed to maximize reach and inclusivity, enabling graduates to refer peers who may have been difficult to contact initially.

All respondents were provided with information about the aims, process and potential applications of the study before they answered the questionnaire. No compensation was paid for the time spent on these interviews, as participation was voluntary and subjects were guaranteed confidentiality and the freedom to withdraw without penalty. This strategy facilitated diversity in the sample, as the cohort was recruited broadly across demographic and work status categories, and with various post-graduation trajectories.

4.4. Instrument

The instrument used in this study was an adapted and revised Commission on Higher Education (CHED) Graduate Tracer Survey. The questionnaire was designed to capture personal, academic, and employment information of graduates, and was modified to include additional items specific to this study's objectives.

The survey consisted of four main sections:

- Socio-Demographic and Academic Profile of Graduates – included age, gender, tribe/ethnicity, residence, disability status, year of graduation, honors received, pursuit of further studies, and highest educational degree obtained.
- Employment Profile and Job Experiences – covered employment status, industry of employment, scope of company operation, salary range, awards received, lengths of months or years to land the graduates their first job, and green jobs.
- Graduate Competencies – respondents rated which competencies (e.g., ICT, communication, problem-solving, entrepreneurial) they found most useful in their jobs. This section used checklist-type responses with frequency counts converted into percentages.
- Job Fit and Job Satisfaction – included questions on the extent to which their current job aligned with their degree program and how satisfied they were with their current employment. Job satisfaction was measured using a 5-point Likert scale (1 = Very Dissatisfied, 2 = Dissatisfied, 3 = Neutral, 4 = Satisfied, 5 = Very Satisfied). Job-program alignment was assessed through categorical options (Aligned, Partially Aligned, Not Aligned).

The additions to the standard CHED questionnaire primarily addressed the competencies and job satisfaction dimensions to capture the nuanced impact of pandemic-era education on employability outcomes. The questionnaire was content-validated by the Alumni Relations Unit and the IT Alumni Coordinator before dissemination.

4.5. Data Collection and Analysis

The data were gathered through a purposive and snowball sampling system, carried out by the Alumni College Coordinators and the department faculty. This approach ensured the wider dissemination of the survey to graduates with diverse backgrounds and experiences, thereby enriching the perspectives captured in the study. The technical support officer from the Alumni Relations Unit maintained the data, which became available to the department upon submission of the official data request form. This form requires the endorsement of the department head and approval of the University Data Privacy Officer to safeguard the confidentiality of alumni information, in compliance with Republic Act 10173 – the Data Privacy Act of 2012.

For the analysis, the collected survey data were processed using descriptive statistical techniques. For categorical variables, such as gender, year of graduation, employment status, job industry, and competencies, frequency counts and percentage distributions were computed to describe patterns and trends. For continuous variables such as age and salary ranges, means and

standard deviations were calculated where appropriate to summarize central tendency and variability.

To assess employment outcomes, results were presented in terms of employment rates, type of contract, time to first job, and salary brackets. For the competency section, responses were tallied and converted into percentage rankings to identify the most and least frequently cited skills used in the workplace. For job-program alignment, categorical responses were analyzed by computing proportions of graduates who reported alignment, partial alignment, or non-alignment between their jobs and degree program. For job satisfaction, Likert-scale responses were summarized using frequency distributions and mean scores to reflect overall satisfaction levels.

The results were then organized into tables and figures to provide a comprehensive overview of the demographic profile, employment characteristics, competencies, and job-program alignment of BukSU's COVID-era IT graduates.

5. Results

This section discusses and interprets the results of the tracer study conducted among the COVID-era IT graduates of BukSU. The results, organized around the key goals of the study, focus on the socio-demographic and academic profiles of graduates, their working status and job experiences, the competencies they perceived as helpful in their respective workplaces, and the level of appropriateness of their jobs to their academic preparation.

5.1. Socio-Demographic and Academic Profile of Graduates

The following presents the socio-demographic and academic profile of the 56 graduates who participated in the study (see Table 1). The gender distribution reveals a relatively balanced cohort, with 29 males (51.79%) and 27 females (48.21%), reflecting a near-equal representation of male and female students in the BSIT program (see Figure 2). This balance suggests that the program continues to be inclusive and appealing to both genders, an important factor in maintaining equity in the tech workforce.

Table 1. Socio-Demographic and Academic Profile of Graduates

Graduates Profile	Frequency	Percentage
Socio-Demographic Profile of Graduates		
Gender		
Male	29	51.79%
Female	27	48.21%
Tribe/Ethnicity		
Agusanon	1	1.79%
Bisaya	3	5.35%
Boholano	1	1.79%
Bukidnon	9	16.07%
Cebuano	12	21.43%
Ilonggo/Ilongga	4	7.14%
Surigaonon	1	1.79%

Graduates Profile	Frequency	Percentage
None	14	25.00%
No Data	11	19.64%
Disability		
None	56	100%
City/Municipality		
Cabanglasan, Bukidnon	6	10.71%
Kibawe, Bukidnon	2	3.57%
Lantapan, Bukidnon	1	1.79%
Malaybalay City, Bukidnon	23	41.07%
Maramag, Bukidnon	0	0%
Pasay City, Metro Manila	2	3.57%
Quezon, Bukidnon	1	1.79%
San Fernando, Bukidnon	2	3.57%
Valencia City, Bukidnon	2	3.57%
Kibawe, Bukidnon	5	8.93%
No Data	12	21.43%
Academic Profile of Graduates		
Year Graduated		
2020	2	100%
2021	1	100%
2022	53	100%
Awards Received upon Graduation		
Cum Laude	2	3.57%
Magna Cum Laude	0	0%
Summa Cum Laude	0	0%
None	54	96.43%
Pursued further Studies after Graduation		
Master's	0	0%
Doctorate	0	0%
Others	0	0%
Highest Educational Degree Obtained		

Graduates Profile	Frequency	Percentage
Baccalaureate	56	100%
Master's Degree	0	0%
Doctorate Degree	0	0%

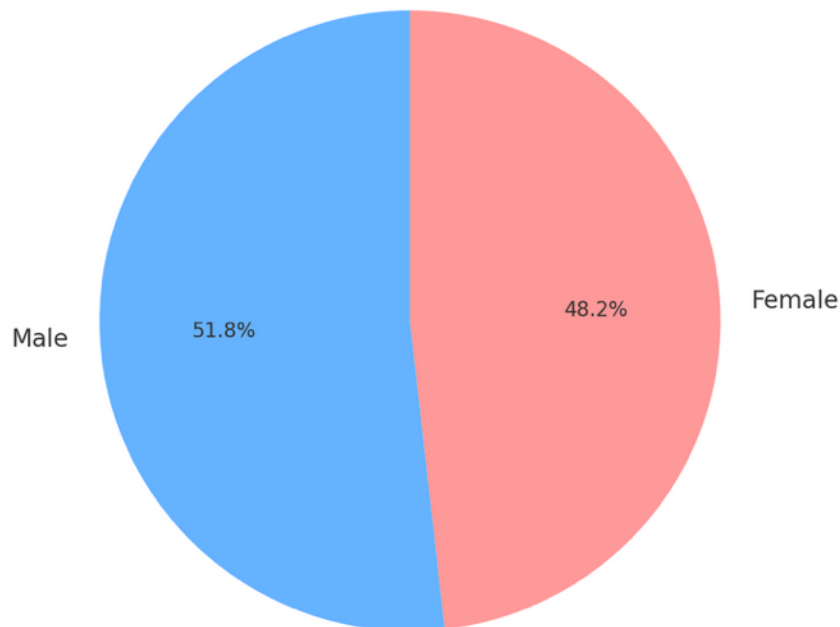


Figure 2. Gender Distribution of Graduates

The ethnic distribution shows that 21.43% of graduates identify as Cebuano, followed by 16.07% from Bukidnon and 7.14% from Ilonggo/Ilongga. Notably, 25% selected “None” and 19.64% did not disclose their ethnic identity (see Figure 3). This may indicate either a preference for ethnic neutrality or gaps in data reporting. Nevertheless, the presence of various ethnolinguistic groups illustrates the cultural diversity of the program’s student population.

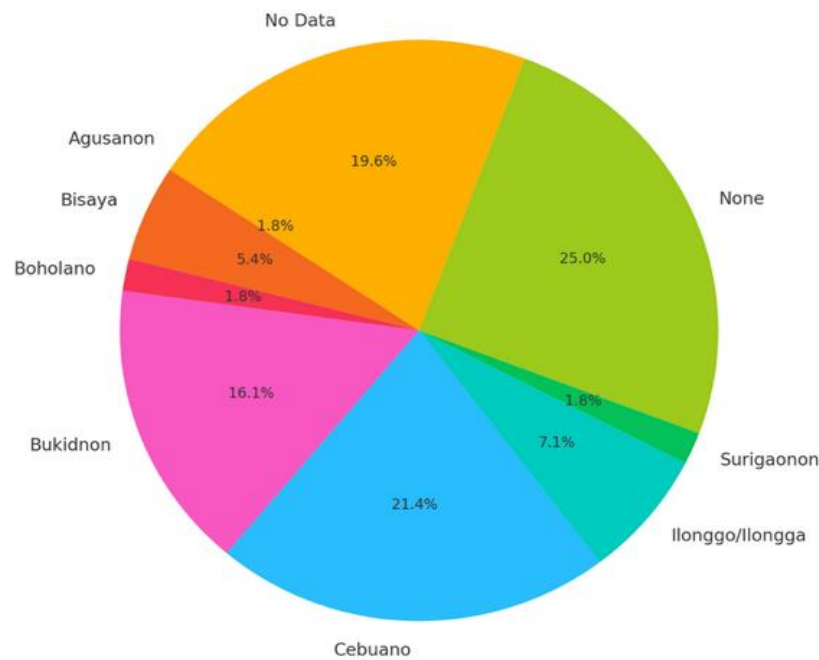


Figure 3. Ethnicity Distribution of Graduates

In terms of residence, a significant number of graduates (41.07%) reside in Malaybalay City, highlighting the city's central role as a major educational and employment hub in the province. Other graduates come from nearby municipalities such as Cabanglasan (10.71%) and Valencia City (3.57%), while a small number are based in Metro Manila. However, 21.43% of respondents did not provide location data, suggesting limitations in contact tracing or survey completion. All respondents reported having no disability, indicating that the cohort did not include persons with disability (PWDs) or that such data may not have been fully captured during the survey process.

Academically, the entire group earned their degrees within the 2020–2022 period, with the majority graduating in 2022, signifying that most were part of the pandemic-era cohort who underwent remote and online learning due to COVID-19 restrictions. Notably, only two graduates (3.57%) earned Latin honors (*cum laude*), and none pursued graduate studies post-graduation. This lack of postgraduate engagement may reflect either a strong preference for immediate employment or barriers such as financial constraints, lack of awareness, or limited access to graduate education.

In summary, the demographic and academic data reveal a diverse yet locally concentrated cohort of IT graduates, shaped by the unique challenges of the COVID-19 pandemic. The results highlight potential areas for institutional improvement, such as enhanced data tracking, strengthened honors support, and expanded access to graduate education, to support graduate competitiveness and professional growth in the evolving digital economy.

5.2. Employment Profile and Job Experiences of Graduates

The employment profile of BukSU's BSIT graduates (see Table 2) provides a critical lens for assessing the program's relevance and effectiveness, especially in the context of the COVID-19 pandemic. Among the 56 graduates traced, a total of 40 (71.43%) reported being employed at the time of the survey. Specifically, all graduates from the 2020 and 2021 batches were employed (100%), while 69.81% of the 2022 graduates—the main pandemic-era cohort—secured employment.

Table 2. Status of Employment of Graduates

Variables	Frequency	Percentage
Employed		
• 2020	2	100.00%
• 2021	1	100.00%
• 2022	37	69.81%
Employment Status		
• Regular/Permanent/Tenured	24	60.00%
• Temporary	3	7.50%
• Casual	4	10.00%
• Contractual	8	20.00%
• Self-Employed	1	2.50%
Industrial Classification		
• Agriculture, Forestry, or Fishing	0	0%
• Mining and Quarrying	0	0%
• Manufacturing	0	0%
• Energy Industry	0	0%
• Transport and Storage	0	0%
• Financial and Insurance Activities	0	0%
• Real Estate, Renting, and Business	0	0%
• Public Administration and Defense	0	0%
• Education	3	7.50%
• Human Health and Social Work	0	0%
• Private Households and Employed Persons	0	0%
• Extra-territorial Organizations	0	0%
• ICT	25	62.59%
• Ecommerce	0	0%
• Accommodation and Food	0	0%
• Arts, Entertainment, Recreation	0	0%
• Water supply, sewerage, waste	0	0%
• Professional, scientific, technical	0	0%
• Others	12	30.00%
Company Operation		
• Local	39	97.50%
• International	1	2.50%

Variables	Frequency	Percentage
Monthly Salary Ranges		
• Below 10,000 pesos	2	5.00%
• 10,000 to 20,000 pesos	24	60.00%
• 21,000 to 30,000 pesos	7	17.50%
• 31,000 to 40,000 pesos	2	5.00%
• 41,000 to 50,000 pesos	2	5.00%
• 51,000 to 70,000 pesos	0	0%
• 71,000 to 100,000 pesos	0	0%
• Above 100,000 pesos	1	2.50%
• Not comfortable sharing the information about their salary	2	5.00%
Awards Received in Relation to Job Performance		
• International	0	0%
• Local	0	0%
Length of Months or Years it took to land the Graduates their First Job		
• Less than 3 months after graduation	20	50.00%
• Less than 6 months after graduation	14	35.00%
• Less than a year after graduation	2	5.00%
• Over a year after graduation	2	5.00%
• More than 2 years after Graduation	2	5.00%
Green Job		
(A green job is employment that supports environmental preservation, sustainable development, and reduced human impact by improving energy efficiency, minimizing waste, and conserving resources across industries like renewable energy, agriculture, and construction.)	1	2.50%

In terms of employment status (see Figure 4), the majority of employed graduates (60%) hold regular, permanent, or tenured positions, reflecting promising long-term employability and job stability. Meanwhile, a notable share remains in less secure roles: 20% are employed on a contractual basis, 10% in casual positions, and 7.5% in temporary roles. Only one respondent (2.5%) reported being self-employed, suggesting that entrepreneurship or freelance work has not yet become a prominent path for this cohort.

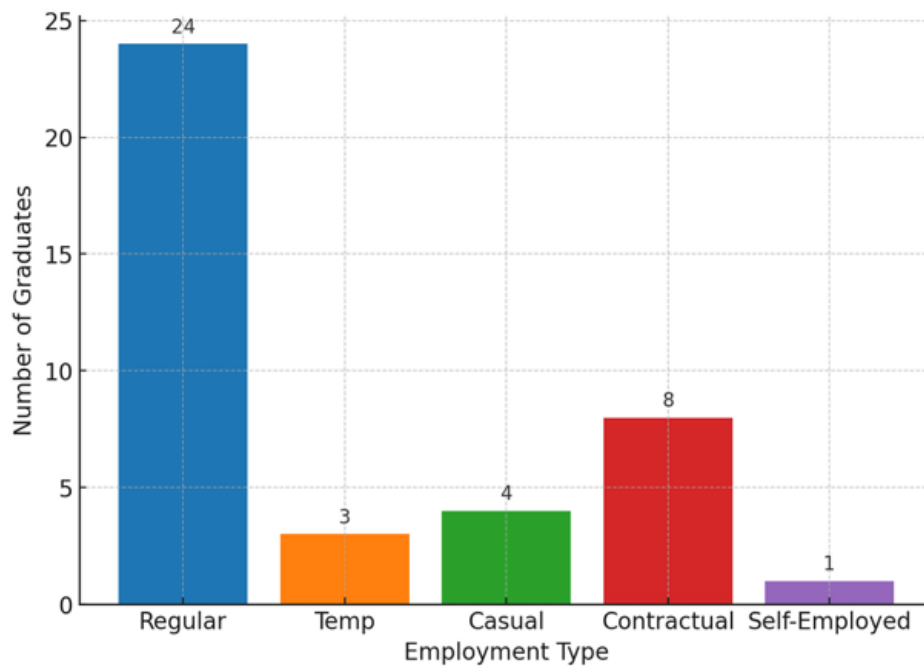


Figure 4. Employment Status of Graduates

A closer look at the industries employing these graduates (see Figure 5) reveals a concentration in the Information and Communication sector, which accounts for 62.59% of employment. This aligns with national trends in the Philippines, where the IT-BPO industry remains a primary absorber of ICT graduates. However, 30% of respondents indicated working in the "Others" category—suggesting either a diverse range of non-traditional IT roles or a lack of detailed classification in the survey. Education was the only other sector with notable representation, employing 7.5% of the graduates. It is worth noting that there was no representation in emerging or high-value sectors such as manufacturing, health informatics, financial technology, or scientific and technical services—highlighting a potential gap in curriculum-industry alignment.

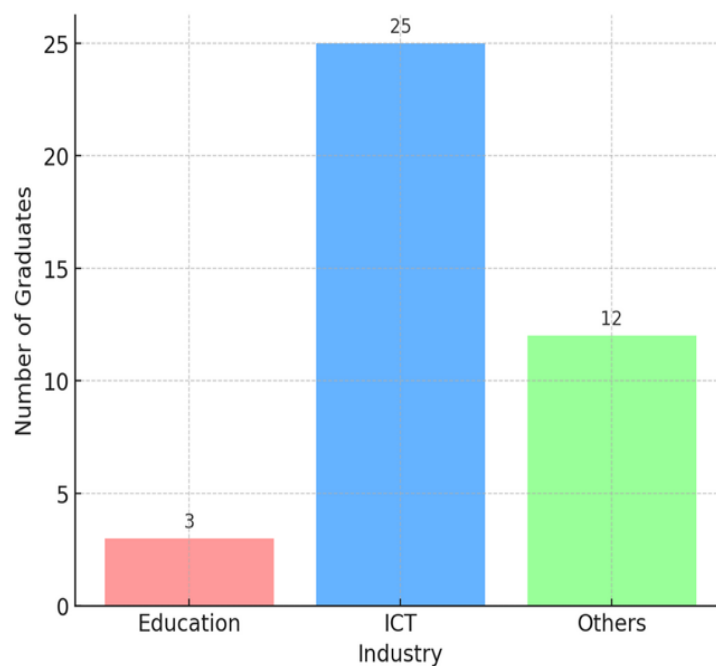


Figure 5. Industry of Employment Among Graduates

Moreover, the employment landscape is overwhelmingly local (97.50%), with minimal international placement (2.50%), suggesting limited global mobility among graduates. This indicates a localized employment trajectory, which, while advantageous for regional labor market integration, may reflect limitations in graduates' global competitiveness or access to international opportunities.

When it comes to compensation (see Figure 6), 60% of employed graduates earn between ₱10,000 to ₱20,000 per month—typical of entry-level roles in the local IT and BPO sector. A smaller portion (17.5%) earns ₱21,000 to ₱30,000, while only one graduate reported earning above ₱100,000. These figures suggest that while employment is relatively high, wages remain modest, with limited access to high-income roles.

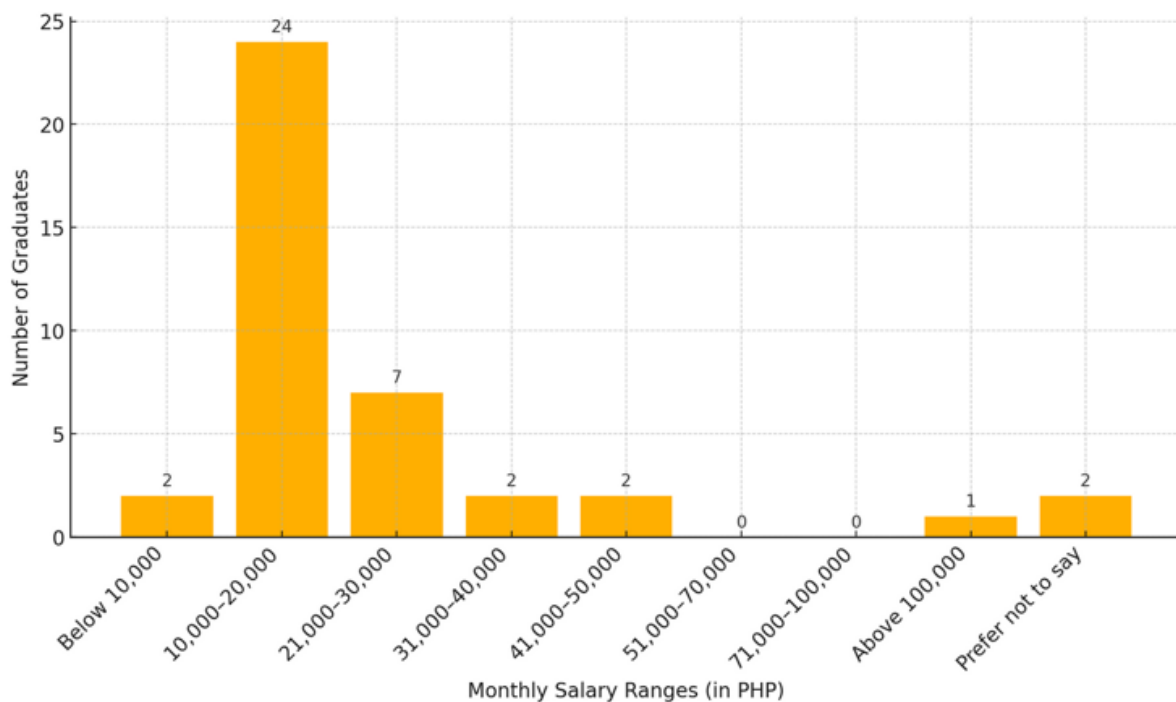


Figure 6. Monthly Compensation of Graduates

In terms of job acquisition speed, half of the graduates (50%) found employment within three months after graduation, and 85% were employed within six months—indicating favorable short-term employability. Only a small number experienced prolonged job hunting: 5% took over a year, and another 5% reported employment delays beyond two years. These figures reflect reasonable workforce absorption despite the challenges of remote learning and economic disruptions caused by the pandemic.

Notably, none of the graduates reported receiving local or international job-related awards. This might reflect limited exposure to performance evaluation systems or a lack of recognition programs in entry-level roles. Lastly, only one graduate (2.5%) reported working in a green job—defined as employment that supports environmental sustainability. This suggests a critical opportunity to promote eco-conscious roles and integrate green competencies into the IT curriculum.

In summary, the findings indicate that BukSU's BSIT graduates, particularly those who were fully trained online during the pandemic, demonstrate strong initial employability in the local ICT sector. However, employment remains heavily concentrated in traditional IT roles, with limited representation in high-growth industries, low international placement, and modest income levels. These outcomes underscore the need to strengthen curriculum relevance, promote entrepreneurship, enhance global competitiveness, and explore emerging fields—including green IT and digital sustainability.

5.3. Competencies of Graduates Found Useful in their Jobs

The following shows the graduate competencies (see Table 3), which play a vital role in determining employability and job performance in the dynamic field of IT.

Table 3. Job-Relevant Competencies Reported by Graduates

Competencies	Frequency	Percentage	Rank
Communication Skills	24	45.28%	2
Human Relations skills	16	30.19%	3
Entrepreneurial skills	9	16.98%	4
Problem-solving skills	24	45.28%	2
Critical Thinking skills	24	45.28%	2
ICT skills	32	60.38%	1
Other skills	0	0%	5

The analysis of competencies perceived by BSIT graduates as useful in their current employment reveals that ICT skills remain the most essential, cited by 60.38% of respondents. This underscores the program's success in delivering core technical competencies necessary for integration into the ICT and BPO industries, where most graduates are employed.

Equally important are communication skills, problem-solving abilities, and critical thinking skills, each reported by 45.28% of respondents. Employers increasingly recognize these soft skills as vital for effective collaboration, task management, and innovation in technology-driven environments. Their high rating affirms the value of embedding soft skills across various learning outcomes in the curriculum.

Human relations skills were identified by 30.19% of respondents, reflecting the continued importance of interpersonal dynamics in both client-facing and team-based work environments. Meanwhile, entrepreneurial skills were acknowledged by only 16.98%, suggesting limited exposure or application of these competencies in their current roles, which are mostly within structured corporate settings.

Notably, no graduates indicated "Other skills" beyond those listed, implying that the provided categories sufficiently captured the core competencies considered valuable in the workplace.

In summary, the data support that while the BSIT program provides a solid foundation in both technical and essential soft skills, further enhancement of entrepreneurial education is needed to align with emerging career pathways, including freelance, startup, and innovation-driven opportunities.

5.4. Job Fit of Graduates

The graduate job fit, which refers to the degree of alignment between a graduate's academic training and their current employment, encompasses the relevance of their acquired knowledge, skills, and competencies to their professional roles.

Table 4. Job Fit Between Career and Degree

Year of Graduation	No. of Graduates	No. of Traced Graduates	% of Traced Graduates	No. of Job-Program Aligned Traced Graduates	% of Job-Program Aligned Traced Graduates
2020	2	2	100%	2	100%
2021	1	1	100%	1	100%
2022	53	42	79.25%	32	76.19%

The assessment of job fit, defined as the alignment between a graduate's academic training and their current employment, provides valuable insights into the effectiveness and industry relevance of the BSIT program at BukSU. As shown (see table 4), all traced graduates from the 2020 and 2021 cohorts—although small in number—reported a 100% job-program alignment, indicating a strong match between their degree and current job roles.

For the batch 2022, which represents the largest cohort and the group most affected by pandemic-era remote learning, 42 out of 53 graduates (79.25%) were successfully traced. Of these, 32 graduates (76.19%) reported being employed in roles aligned with their BSIT degree. This relatively high percentage suggests that a significant portion of the recent graduates were able to transition successfully into ICT-related occupations, even in the context of virtual academic training.

These results demonstrate a favorable job fit across all three graduating cohorts, with particularly strong alignment for earlier batches. However, the 2022 data also point to a modest level of job-skills mismatch (23.81%) among pandemic-era graduates. This mismatch may be attributed to several factors, including limited internship and laboratory exposure during remote learning, over-reliance on traditional employment sectors, or gaps between industry needs and curricular focus.

While all traced graduates from 2020 and 2021 reported full job-program alignment, these cohorts were very small (2 graduates in 2020 and 1 graduate in 2021). Thus, their results should be viewed as descriptive rather than comparative. In contrast, the 2022 cohort, with 42 traced respondents, provides a more substantial basis for analysis. Among this group, 76.19% reported job alignment, highlighting a modest level of mismatch that is more representative of the larger pandemic-era cohort.

6. Discussion

The findings of this tracer study provide critical insights into the post-pandemic realities faced by IT graduates and raise significant implications for HEIs offering computing programs. Overall, BukSU's pandemic-era BSIT graduates demonstrated relatively strong workforce absorption despite the unprecedented disruptions to their education. This echoes similar findings in other Philippine HEIs, such as the University of Cebu and Nueva Ecija University of Science and Technology, where graduate employability remained favorable even amid economic uncertainty and educational transformation (Khamis et al., 2021; Von Wachter, 2020).

However, the concentration of graduates in the ICT sector and the predominance of local employment suggest that opportunities remain constrained in both scope and geography. These trends are consistent with observations from Albina and Sumagaysay (2020), who noted that while IT graduates are often employed quickly, they are largely absorbed into limited roles within the BPO industry, with minimal exposure to global or high-value-added careers. The modest compensation levels and prevalence of temporary or contractual positions also indicate underemployment, mirroring broader concerns raised by Kaharudin et al. (2023) about a job-skills mismatch in the Philippine labor market.

Another important observation is the decline in job-program alignment among the largest cohort trained during the pandemic compared to earlier years. This suggests that prolonged online learning may have impacted the practical application of these graduates' skills, possibly due to reduced internship opportunities, a lack of hands-on laboratory work, or limited interaction with faculty and industry mentors. This finding supports Grosemans et al. (2021), who emphasized that job fit is closely tied to experiential learning and guided transitions from school to work.

It is important to note that the full alignment observed in 2020 and 2021 cannot be directly compared to the 2022 outcomes due to the extremely small number of respondents from those years. These early cohorts provide valuable descriptive insights but do not offer a statistically reliable comparison with the larger 2022 group. Therefore, the interpretation of job fit trends in this study primarily reflects the experiences of the 2022 graduates, who constitute the majority of the COVID-era cohort.

The competencies identified as most useful—ICT skills, communication, problem-solving, and critical thinking—affirm the enduring value of both technical and soft skills in today's digital economy. However, the relatively low importance attributed to entrepreneurial competence underscores a curriculum gap in preparing graduates for alternative career pathways such as freelancing, tech entrepreneurship, or remote work platforms. This challenge, noted in Malinao et al. (2022), highlights the importance of integrating innovation, startup thinking, and gig economy skills into IT programs.

Ethnic diversity among graduates is another notable feature of this study, reflecting the program's inclusive nature. Yet, the high proportion of non-disclosed identities may signal limitations in data reporting or reluctance to identify ethnolinguistic backgrounds. HEIs like BukSU can address this by fostering culturally sensitive survey practices and encouraging transparency in graduate data.

Finally, the absence of postgraduate engagement among respondents suggests that most graduates prioritized immediate employment over advanced studies. This trend points to the need for HEIs to strengthen graduate advising, provide financial support, and open more accessible pathways to lifelong learning.

The current study fills this research gap by offering the first detailed assessment of COVID-affected IT graduates in the Philippines, providing a data-driven foundation for policy and curricular reforms. As the Philippine higher education landscape continues to evolve toward hybrid and flexible learning models, the insights gained here will be instrumental in ensuring that academic programs remain responsive to both local development needs and global digital trends.

By systematically examining pandemic-era IT graduates, this study makes three contributions to the field of educational research. First, it provides one of the earliest tracer-based accounts of cohorts whose education was significantly shaped by online and flexible learning. Second, it highlights the specific weaknesses in program-job alignment attributable to reduced experiential learning opportunities. Third, it generates evidence that can inform curriculum recalibration in computing programs, ensuring that both technical and entrepreneurial competencies are developed in ways that prepare students for local and global opportunities in the post-pandemic labor market.

7. Conclusion

This tracer study assessed the post-graduation outcomes of BukSU's BSIT graduates from Batches 2020 to 2022, with particular attention to those who completed a significant portion of their education during the COVID-19 pandemic. The findings offer important insights into graduate employability, competency relevance, and job-program alignment in a period shaped by remote learning and disrupted workplace transitions.

The study revealed a strong employment rate, with 71.43% of graduates currently employed and 100% job placement among the 2020 and 2021 cohorts. The 2022 cohort, which constituted the largest group and the most exposed to online learning modalities, demonstrated a 79.25% traceability rate, with 76.19% of them employed in roles aligned with their degree—indicating that the BSIT program has largely succeeded in maintaining relevance despite pandemic-related disruptions.

In terms of competencies, ICT skills (60.38%) were most frequently cited as useful in the workplace, followed by communication skills, problem-solving, and critical thinking (each at 45.28%). These results highlight the program's strengths in cultivating both technical and foundational soft skills. However, entrepreneurial skills (16.98%) were least cited, suggesting a gap in preparing graduates for self-employment, freelancing, or startup careers—an area of growing importance in the digital economy.

The employment landscape remained predominantly local (97.50%), with most graduates working in the ICT sector (62.59%), earning modest salaries between ₱10,000 and ₱20,000 per month (60%). While job acquisition was relatively fast—with 85% employed within six months—the prevalence of contractual, casual, and temporary roles suggests that job security and compensation remain areas for improvement.

Overall, the BSIT program effectively equipped graduates with the essential skills required for entry-level employment. However, the results also expose areas that require strategic intervention, including improving global competitiveness, enhancing job alignment, integrating entrepreneurial and sustainability competencies, and diversifying industry linkages. These findings affirm the importance of continuously recalibrating the curriculum to meet evolving labor market demands and to prepare graduates not just for employment—but for resilience, innovation, and long-term success in the ICT sector.

While this study contributes valuable insights, several limitations must be acknowledged. First, the small number of respondents from the 2020 and 2021 cohorts limits the reliability of comparisons with the larger 2022 group, making their results more descriptive than generalizable. Second, the study relied on self-reported survey data, which may be subject to recall bias or selective reporting. Third, the findings are specific to a single institution in Northern Mindanao and may not fully represent pandemic-era IT graduates in other regions or contexts. Despite these limitations, the study provides a useful foundation for institutional policy, curriculum reform, and future tracer studies focusing on digitally trained graduates.

8. Suggestion

Drawing from the findings and discussion, the following recommendations are proposed to strengthen the BSIT program and improve graduate outcomes:

1. **Broaden Industry Linkages.** Since most graduates are employed locally, concentrated in the ICT and BPO sectors, the university should diversify its partnerships with industries such as software development, health informatics, e-governance, and cybersecurity. This would expand graduates' career opportunities beyond geographically and sectorally constrained options.
2. **Enhance Work-Integrated Learning.** The decline in job-program alignment among the largest pandemic-trained cohort highlights the need for stronger practical training. Strengthening internship programs, laboratory access, and faculty-industry mentoring will help ensure that skills are applied in real-world contexts despite disruptions caused by remote learning.
3. **Integrate Entrepreneurial and Gig-Economy Skills.** Given that entrepreneurial competence was rated as least useful, IT programs should intentionally embed innovation, freelancing, and startup

incubation opportunities into the curriculum. This will prepare graduates for alternative career pathways such as self-employment and participation in digital work platforms.

4. **Strengthen Graduate Support Systems.** The absence of postgraduate engagement suggests that most graduates prioritized immediate employment over advanced study. To encourage lifelong learning, HEIs should expand academic advising, scholarships, and flexible graduate programs that support both further studies and continuous upskilling.

5. **Promote Inclusive Data and Ethnic Sensitivity.** The high rate of non-disclosure in ethnolinguistic identity points to a need for culturally sensitive survey practices. The institution should foster trust and transparency in the gathering of alumni data to ensure that the diverse backgrounds of graduates are fully represented and recognized in institutional planning.

Collectively, these recommendations aim to enhance the graduate outcomes of the BSIT program—not just by securing employment—but by ensuring that graduates are resilient, future-ready, and empowered to thrive in diverse and evolving ICT landscapes.

Declarations

Author Contributions. Sales G. Aribe Jr.: literature review, data analysis, review-editing, final manuscript writing. John Lloyd Q. Rojo: conceptualization, methodology, original manuscript preparation. All authors have read and approved the published on the final version of the article.

Conflicts of Interest. The authors declare no conflict of interest.

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Ethical Approval. This study complied with the ethical standards for research involving human participants. Ethical clearance was obtained from the BukSU Ethics Committee prior to data collection. While no reference number was issued, approval was formally granted and documented. Participation in the survey was voluntary, and informed consent was secured from all respondents. Data were collected and processed in accordance with Republic Act 10173 – Data Privacy Act of 2012, ensuring confidentiality and anonymity of all participants.

Data Availability Statement. No personally identifiable information will be disclosed in any report. All data was stored in the encrypted central database of the BukSU Alumni Relations Unit, accessible only to authorized researchers, and retained for five years before secure disposal.

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References

- Albina, A. C., & Sumagaysay, L. P. (2020). Employability tracer study of Information Technology Education graduates from a state university in the Philippines. *Social Sciences & Humanities Open*, 2(1), 100055. <https://doi.org/10.1016/j.ssaho.2020.100055>
- Amahan, P., Usita, M., Garcia, A., Escultor, M., & Alvarez, J. (2024). Tracer study of information technology graduates from the San Jose Campus of Occidental Mindoro State College, Philippines from 2018 to 2022. *Mindoro Journal of Social Sciences and Development Studies*, 1(1), 10–15.
- Andaya, M., San Pedro, J. R., So, C. L., & Tanyag, B. (2024). Employability of Computing Students in the Age of Disruption: A Graduate Tracer Study. *European Journal of Education and Pedagogy*, 5(1), 82–87. <https://doi.org/10.24018/ejedu.2024.5.1.793>
- Antipova, A. (2021). Analysis of the COVID-19 impacts on employment and unemployment across the multi-dimensional social disadvantaged areas. *Social Sciences & Humanities Open*, 4(1), 100224. <https://doi.org/10.1016/j.ssaho.2021.100224>

- Basabe, N., Estella, S., Ferolino, H., & Cataraja, G. C. (2023a). A Tracer Study of Bachelor of Science in Information Technology (BSIT): A Case Study of Graduates of the University of Cebu, Philippines. *Journal of Learning and Development Studies*, 3(2), 43–61. <https://doi.org/10.32996/jlds.2023.3.2.5>
- Basabe, N., Estella, S., Ferolino, H., & Cataraja, G. C. (2023b). A Tracer Study of Bachelor of Science in Information Technology (BSIT): A Case Study of Graduates of the University of Cebu, Philippines. *Journal of Learning and Development Studies*, 3(2), 43–61. <https://doi.org/10.32996/jlds.2023.3.2.5>
- Bringula, R. P., Balcoba, A. C., & Basa, R. S. (2016). Employable Skills of Information Technology Graduates in the Philippines: Do Industry Practitioners and Educators have the Same View? *Proceedings of the 21st Western Canadian Conference on Computing Education*, 1–6. <https://doi.org/10.1145/2910925.2910928>
- Clarke, M. (2018). Rethinking graduate employability: The role of capital, individual attributes and context. *Studies in Higher Education*, 43(11), 1923–1937. <https://doi.org/10.1080/03075079.2017.1294152>
- Crawford, J., Butler-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., Magni, P., & Lam, S. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Learning & Teaching*, 3(1). <https://doi.org/10.37074/jalt.2020.3.1.7>
- Drnach-Bonaventura, G. M., Hoffman, B. L., & Koperwas, M. L. (2025). Growing Curiosity: Three Strategies to Foster Engagement in Large Classroom Settings Among Generation Z Public Health Undergraduate Students. *Pedagogy in Health Promotion*, 11(1), 37–43. <https://doi.org/10.1177/23733799241269961>
- Grosemans, I., Vangrieken, K., Coertjens, L., & Kyndt, E. (2021). Education–Job Fit and Work-Related Learning of Recent Graduates: Head Start or Filling a Gap? *Journal of Career Development*, 48(5), 638–653. <https://doi.org/10.1177/0894845320904789>
- Hana Kaharudin, I., Ab Rahman, M. S., & Syamimi Wan Zin, W. N. (2023). The Literature Review on Job Mismatch and Unemployment Among Graduates. *International Journal of Academic Research in Business and Social Sciences*, 13(11). <https://doi.org/10.6007/ijarbss/v13-i11/19149>
- Jackson, D. (2016). Re-conceptualising graduate employability: The importance of pre-professional identity. *Higher Education Research & Development*, 35(5), 925–939. <https://doi.org/10.1080/07294360.2016.1139551>
- Khamis, M., Prinz, D., Newhouse, D., Palacios-Lopez, A., Pape, U., & Weber, M. (2021). *Early Labor Market Impacts of COVID-19 in Developing Countries*. World Bank, Washington, DC. <https://doi.org/10.1596/35047>
- Mainga, W., Murphy-Braynen, M. B., Moxey, R., & Quddus, S. A. (2022). Graduate Employability of Business Students. *Administrative Sciences*, 12(3), 72. <https://doi.org/10.3390/admsci12030072>
- Malinao, C. W. M., Sotto, M. M., Vera, J. M. D., Laguerta, J. M., & Domingo, W. G. (2022). An Inventory of Acquired Attributes of Graduates in a Higher Education Institution Versus Industry Required Attributes. *European Journal of Educational Research*, volume–11–2022(volume–11–issue–4–october–2022), 1937–1946. <https://doi.org/10.12973/eu-jer.11.4.1937>

- Marinoni, G., van't Land, H., & Jensen, T. (2020). *The impact of Covid-19 on higher education around the world* (IAU Global Survey Report, pp. 1–17). International Association of Universities. http://viduketha.nsf.gov.lk:8585/COVID19_Articles/GRA/The%20impact%20of%20Covid-19%20on%20higher%20569%20iau_covid19_and_he_survey_report_final_may_2020.pdf
- McQuaid, R. W., & Lindsay, C. (2005). The Concept of Employability. *Urban Studies*, 42(2), 197–219. <https://doi.org/10.1080/0042098042000316100>
- Mina, J. C., Reyes, E. J. G., & Salas, R. F. (2020). A Tracer Study of Bachelor of Science in Information Technology(BSIT) Graduates of Nueva Ecija University of Science and Technology (NEUST), San Isidro Campus. *International Journal of English Literature and Social Sciences*, 5(4), 1337–1344. <https://doi.org/10.22161/ijels.54.77>
- Mora, J.-G., García-Aracil, A., & Vila, L. E. (2007). Job satisfaction among young European higher education graduates. *Higher Education*, 53(1), 29–59. <https://doi.org/10.1007/s10734-005-2377-4>
- Nazareno, A., Lopez-Relente, M. J., Gestiaa, G., Martinez, M., De Lara, M. L., & Roxas-Villanueva, R. M. (2021). Factors Associated with Career Track Choice of Senior High School Students. *Philippine Journal of Science*, 150(5). <https://doi.org/10.56899/150.05.15>
- Osman, M. E. (2020). Global impact of COVID-19 on education systems: The emergency remote teaching at Sultan Qaboos University. *Journal of Education for Teaching*, 46(4), 463–471. <https://doi.org/10.1080/02607476.2020.1802583>
- Tymon, A. (2013). The student perspective on employability. *Studies in Higher Education*, 38(6), 841–856. <https://doi.org/10.1080/03075079.2011.604408>
- Villanca, A., Binayao, B., Caterial, M. Z., & Ablanque, V. (2020). Assessing the Vision, Mission, Goals and Objectives of a State University in Southern Philippines. *International Journal of Innovative Science and Research Technology*, 5(10), 189–194.
- Von Wachter, T. (2020). Lost Generations: Long-Term Effects of the COVID-19 Crisis on Job Losers and Labour Market Entrants, and Options for Policy. *Fiscal Studies*, 41(3), 549–590. <https://doi.org/10.1111/1475-5890.12247>

About the Contributor(s)

Sales G. Aribe Jr., DIT, is the Department Head of Information Technology and a member of the University Research Committee at Bukidnon State University, recently promoted to Professor I in recognition of his research leadership and academic contributions. He earned his Doctor in Information Technology as a CHED-SIKAP scholar at the Technological Institute of the Philippines – Quezon City in 2023. Since 2017, he has actively presented in numerous local and international conferences and published high-quality papers in prestigious journals indexed in Scopus, WOS, and ASEAN Citation. He also serves as a peer reviewer for various academic journals such as Elsevier, Scopus and IEEE conferences. His research interests include Data Mining, Neural Networks, Software Engineering, Artificial Intelligence, Bioinformatics, Fractal Analysis, and other related fields.

Email: sg.aribe@buksu.edu.ph

ORCID: <https://orcid.org/0000-0002-4018-2107>

John Lloyd Q. Rojo, is a faculty member of the Information Technology Department at Bukidnon State University, currently handling course in Technopreneurship. He is pursuing his Master in Information Technology at the University of the Immaculate Conception, furthering his academic and professional development. His research interests include network design and optimization, software development

and smart systems, reflecting a commitment to advancing innovation and practical solutions in the IT field.

Email: johnlloydrojo@buksu.edu.ph

ORCID: <https://orcid.org/0009-0008-8154-1795>

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