Outcomes, Challenges, and Employment Mismatch of Industrial Technology Graduates

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ABSTRACT

The International Labor Organization (ILO) emphasized the Philippines' extraordinary unemployment rate of 17.7% in April 2020, affecting more than 1.7 million youths aged 15 to 24. This scenario prompted the Philippine Institute of Development Studies (PIDS) to ascertain that 40% of Filipinos possess qualifications beyond their job requirements, highlighting considerable employment discrepancies. The research investigated the employment results, difficulties, and discrepancies faced by industrial technology graduates from a public institution in the Ilocos Region, uncovering a predominantly favorable trend (67.3%) in job outcomes. Nonetheless, a considerable percentage of graduates are confronting the difficulties of the job market, leading to elevated unemployment rates. The chi-square test findings reveal a moderate correlation between gender and the kind of job, while showing a weak correlation between graduation years and employment type. The correlation between employment misalignment and graduation year reveals a statistically significant disparity ($F = 9.674$, $p < 0.05$) and underscores the necessity for ongoing observation of graduates as they traverse the labor and job markets. The ANOVA results indicate that qualification ($F = 5.975$, $p < 0.05$) and skill ($F = 4.944$, $p < 0.05$) discrepancies account for the difference seen among graduates in various sectors of specialty. Moreover, a statistically significant correlation exists between qualification ($P = .004$, $r = .191$) and skill ($P = .010$, $r = .174$) and the graduates' view of the job market. These findings indicate that addressing qualification and skill mismatches should be associated with enhancing the perception of graduates within the job market.

Keywords: Employment Outcomes, TVET Skill Mismatch, Labor Market, Tracer Study, Industrial Technology Graduates

INTRODUCTION

The World Bank recognizes the Philippines as one of the top labor markets in the East Asia-Pacific region. With a median age of 23, the country has a sizable and increasing youthful population that may be effectively used as a demographic advantage with the right infrastructure and education spending. The International Labour Organization (ILO) pointed out that the COVID-19 pandemic has had a significant influence on the workplace in the Philippines as it quickly evolved into an unprecedented worldwide economic and labor market disaster. This, both directly and indirectly, affects the new graduates, and unemployment increases. According to the ILO report, the Philippines had its worst-ever unemployment rate in April 2020. The most current projection for Q2 2020, or April 2020, was 17.7%. In comparison to the 2.3 million jobless in April 2019, it is comparable to nearly 7.3 million people, a more than threefold rise. The labor market today offers a considerable challenge for graduates entering it at a time of difficult economic conditions. The measures that graduate take to further acquire and then transfer expertise, abilities, and other forms of career advantage determine how successfully they can attain attractive opportunities after graduation. It may become more difficult to predict early employment trajectories if the labor market is depleted during this crucial transitional phase (Thomason et al., 2022).

One method by which Higher Education Institutions (HEI) and Technical Vocational Education and Training (TVET) institutions determine if the amount of education they provide is adequate for industry demands is through the employability of graduates. The World Bank also highlights that the Philippines' economic development depends heavily on the field of industrial technology. Tracing the employment outcomes of the

graduates is a rigorous way of identifying their whereabouts after they join the mainstream of society. People looking for their first job during a recession are more likely to accept lower pay and less desirable working circumstances than they might in more favorable economic situations, and they are also more likely to be employed in a position that is not in line with their level of competence (Lauder & Mayhew, 2020). To ascertain the correlation between the standards established by the Commission on Higher Education (CHED) as outlined in the Policies, requirements, and Guidelines of Graduate Education and the quality of graduates from universities and colleges, HEI conducts tracer studies (Rojas & Rojas, 2016).

As one of the institutions of higher learning in Region 1, Mariano Marcos State University (MMSU) views tracer studies of graduates as crucial instruments for institutional growth, particularly in light of how quickly the labor market is evolving. The institution will be able to organize input from past students about their learning experiences, working environments, and overall academic programs (Domingo, 2013). According to the Department of Labor and Employment (DOLE) survey conducted in October 2022, Ilocos Region has a 63 percent labor force participation rate among people ages 15 and older. However, there is a 4% unemployment rate and a 10.50% underemployment rate. The study by Dela Cruz (2023) found that graduates seem to find the challenge of finding work relevant to the field daunting. Some graduates are not adequately equipped for success when they enter the job market and the world of business. Graduates' acquired abilities do not correspond to what is required for proficiency in the sector. This is further supported by a survey conducted by the Philippine Institute of Development Studies, which found that 40% of Filipinos believe they are overqualified for their jobs, demonstrating a work mismatch. Since job mismatch has been identified as a factor that adversely affects macroeconomic efficiency in addition to individual income level, job satisfaction, and group performance, it should not be disregarded as having a substantial impact on labor market performance (Adarlo, 2020).

A different recent study that attempted to estimate the detrimental impacts of joining the job market during recessions on university graduates' careers in the Netherlands (Berge, 2018) learned that two of the biggest losses experienced by people who graduated during a period of the economic crisis were linked to the amount of money they made during their initial years and the vertical misalignment between their fields of study and employment.

Researchers have carried out graduate tracer studies in the Ilocos region (Domingo, 2013, Villanueva, Jr., and Binay-an, 2021) to find out how well a university has done at improving the skills of its students, to learn about the employability and job status of its graduates, and to get their comments on the degree programs they attended at the institution. There were reports on employability and employment mismatch by the Philippine Statistics Authority (PSA) showing the extent of the mismatch among employees in the Ilocos region. However, there is limited research in the field of industrial technology, particularly in Ilocos Norte. Also, there is insufficient and scarce information about the direct effect of their study on the labor market profile of Ilocos Norte, particularly in the context of the pre- and post-pandemic.

Data provided by DOLE shows the presence of unemployment and underemployment in the labor market of Ilocos Norte. This study addresses the problems related to the employment outcomes, challenges, and mismatch among industrial technology graduates of a state university in Ilocos Region. It should be recognized that employment mismatch has a significant influence on labor market performance since it has been shown to harm macroeconomic efficiency in addition to individual income level, job satisfaction, and performance. However, there isn't much research being done on industrial technology in Ilocos Norte. Furthermore, there is a dearth of information about the study's direct effects on the labor market profile of Ilocos Norte, particularly in the industrial technology related sectors.

The primary objective of this study is to investigate the relationship between the challenges affecting employment and the employment mismatch of Industrial Technology Graduates, with respect to their demographic, year of graduation, and employment outcomes. Specifically, it aims to:

1. identify the perceptions of the industrial technology graduates on the challenges affecting employability;

2. assess the level of agreement on the employment mismatch of the industrial technology graduates;

3. determine the distribution of employment outcomes, i.e., nature of employment and nature of work, among males and females.

4. identify the significant difference between the year of graduation and employment outcomes, e.g., employment status.

5. investigate if there is a significant difference between the year of graduation of industrial technology graduates and:

5.1. perception of the labor market affecting employability during the recession

5.2. employment Mismatch

6. investigate if there is a significant difference in the field of specialization and employment mismatch among industrial technology graduates.

7. determine the significant relationship between perceptions of the challenges affecting employment and employment mismatch among Industrial Technology graduates.

METHODOLOGY

Research Design

The study adopted a quantitative research design to investigate the employment outcomes, challenges, and mismatches experienced by industrial technology graduates of a state university in Ilocos Region. It uses a descriptive-correlation research design in order to interpret the extent of relationships, tendencies, and differences among industrial technology graduates regarding the challenges affecting employability and employment mismatch.

Population and Sample

The profile of the participants in the study consisted of Industrial Technology graduates in the last 3 years with a total of 393 graduates. A population sample of 229 respondents were considered using the stratified sampling method with a 98% confidence level and 5 percent margin of error. The strata used in the study was based on their year of graduation. To provide better grasp and to avoid generalization, the year of graduation is further stratified using field of specialization for each batch of graduates.

Even though participant attrition and non-retrieval led to a reduction in the final dataset from the target sample ($n = 229$), the collected sample of 220 indicated that the demographic proportions across graduation years and specializations in the final retrieved sample remained consistent with the original population distribution ($p > .05$), confirming the absence of significant non-response bias.

Age. The majority of graduates fall under the age range of 21–23 years old and account for 50 percent of the total population. Additionally, 45.90 percent of the respondents are aged between 24 and 27 years old. The remaining bracket, comprising 4.10 percent, is composed of graduates aged 28 and above.

Sex. Among the respondents, there are 160 (72.70%) males, compared to 60 (27.30%) females.

Field of specialization. The largest group among the specializations of industrial technology is Electrical technology, accounting for 28.20 percent. It is followed by Automotive Technology (26.4%), Food Processing and Service Management (19.5%), Civil and Drafting Technology at 7.3 percent, Computer Technology at 6.8%, Electronics technology at 6.4%, and Garment Technology at 5.5% of the respondents.

Data Collection

A systematic approach to data collection was employed in the study. After finalizing the research survey questionnaire, a letter was presented to the Dean of the College of Industrial Technology requesting the list of graduates. With the identified respondents, an online survey via Google Forms was floated through the emails and Facebook Messenger accounts of the respondents.

The data gathering lasted for 2 weeks and obtained 220 responses among the graduates. The survey was voluntary in nature, and confidentiality of the responses was held with the utmost consideration. The survey link was provided to the respondents, allowing them to access and complete the questionnaire at their convenience. Also, a deadline was set, and reminders were sent to non-respondents to maximize the response rate.

Once the survey responses were collected, thorough validation was conducted to ensure the integrity of the collected data. Since the responses were stored in Google Forms, the researcher downloaded a copy for data cleaning and coding. Categorical variables were coded with their respective codes. After validating the coded data, it was transferred to Statistical Package for the Social Sciences (SPSS) version 22 for data analysis and interpretations, along with the research objectives, and finally to draw conclusions and recommendations.

Validity and Reliability of Instruments

To ensure the validity and reliability of the instrument used in this study, it was pilot tested on 10 graduate students, 10 faculty members of MMSU-CIT, and 20 graduates of industrial technology. Cronbach's coefficients were calculated to measure the content validity of statements included in the survey questionnaire. The perception of the labor market (.867), the perception of unemployment and underemployment (.979), the qualification mismatch (.938), and the skills mismatch (.808).

This result indicated that statements included in the questionnaire demonstrate good to excellent levels of internal consistency, as the coefficient values range from .808 to .979 and are greater than.60. This further implies that the questionnaire is valid and reliable in soliciting responses related to perceptions of the labor market, perceptions of unemployment and underemployment, qualification mismatch, and skill mismatch.

Statistical Techniques

Utilizing the quantitative method, statistical treatments were employed to test the hypotheses of this study using SPSS version 22. The frequency count and percentage were employed to describe the demographic profile, employment data, and factors affecting the employability of graduates.

The mean and standard deviation were used to describe the level of agreement on the perceptions of the respondents on challenges affecting employability during the recession. The same statistical measures were also used to descriptively interpret the level of mismatch among the industrial technology graduates. To descriptively interpret the level of agreement, the following range of means and its descriptive interpretation were used:

Range	**Interpretation**
4.50-5.00	Highly Agree
3.50-4.49	Agree
2.50-3.49	Neutral
1.50-2.49	Disagree
1.00-1.49	Highly Disagree

The chi-square test was utilized to examine if there is a significant difference in the distribution of the nature of employment and the nature of work among male and female graduates. Similarly, it is also used to analyze the significant difference between the year of graduation and employment status.

Further, to investigate the significant differences in the perception of the factors affecting employability during the recession and the employment mismatch to the years of graduation of industrial technology graduates, a one-way analysis of variance (ANOVA) was utilized. Field of specialization was also considered a determinant of employment mismatch, and a one-way ANOVA was used to determine if there were significant differences in employment mismatch when grouped according to the field of specialization.

Lastly, the Pearson-r correlation was utilized to investigate the significant relationship between the perception of industrial technology graduates of the labor market during the recession and employment mismatch.

To interpret the significant relationship descriptions, the following range of means, descriptions, and interpretations was used:

Range	Description	Interpretation
4.50-5.00	Highly Agree	Highly Match
3.50-4.49	Agree	Match
2.50-3.49	Neutral	Neither match nor mismatch
1.50-2.49	Disagree	Mismatch
1.00-1.49	Highly Disagree	Highly Mismatch

Theoretical Framework

This study followed the theories and grounded its assumptions on Human Capital Theory, Job Search Theory, and Job Matching Theory.

The Human Capital Theory by Gary Becker proposes that a person's investments in education, training, and skill development are analogous to those made in human capital. This idea says that education helps people develop knowledge and skills, which enhances their production and raises their employability in the workforce. MMSU graduates' capacity to find job during the recession may be studied through the study's analysis of the education and training they earned at MMSU. The Industrial Technology program's specific skills and knowledge may be analyzed, as well as how these expenditures in human capital have benefited graduates' job success.

Furthermore, the employment search theory employed by Faggian (2014) and Klehe and van Hooft (2018) serves as a conceptual framework for examining the objective-oriented aspects of job hunting. It is based on the premise that individuals possess insufficient information on work and compensation, and that securing a desirable position requires time. The search hypothesis also gives an explanation for the frictional unemployment encountered by people who change occupations. The theory can illuminate the job-seeking strategies employed by graduates of Industrial Technology from Mariano Marcos State University (MMSU) during the recession. This examination may explore the many strategies and techniques employed by graduates in their job search, including online job platforms, networking events, career expos, or direct submissions. Comprehending the efficacy of diverse job search methodologies may assist in assessing their impact on the employment results of MMSU graduates, encompassing factors such as job quality, remuneration, work satisfaction, and career advancement. The duration of the job hunt and the challenges faced may be analyzed to understand the difficulties graduates have in finding appropriate employment opportunities during the economic downturn.

The job matching hypothesis (Burdett, 1978; Jovanovic, 1979), utilized by Faggian (2014), posits that the fundamental aim of education and training is to equip graduates for their future employment responsibilities, and was applied in this research. The concept asserts that productivity, compensation, and the probability of securing employment are negatively impacted when a graduate's actual skills and abilities are misaligned. As a result, graduates' level of expertise and the level of skill expected by employers must be equal. The area of expertise necessary for the role must align with that of the graduates. The extent to which graduates are able to employ the appropriate abilities can also be used to establish job fit. The extent to which graduates can utilize their knowledge, skills, and dispositions in a professional setting may also serve as a criterion for assessing job compatibility (Akindahunsi et al., 2021; Bernard, Veldhuis, & Rooij, 2001). Understanding the elements that impact job matching, such as industry expectations, technology changes, and the relevance of educational curriculum, can give vital insights into the problems graduates have in finding the optimum job-person fit during the recession.

RESEARCH AND DISCUSSIONS

The main purpose of the study is to investigate the relationship between the challenges affecting employment and the employment mismatch of Mariano Marcos State University Industrial Technology Graduates, with respect to their demographic, year of graduation, and employment outcomes. The results are as follows:

Perception of Industrial Technology Graduates on the Challenges Affecting Employability Job Search Method

Table 1. Job Search Method Employed by Industrial Technology Graduates S.Y. 2023-2025

Statements	***f***	***%***
I responded to an advertisement I found online	*63*	*28.6*
I am a walk-in applicant	*178*	*80.9*
I was recommended by someone	*183*	*83.2*
I was assisted by University's Job Placement office	*9*	*4.1*
I am working in our family business	*6*	*2.7*
I attended a Job Fair	*17*	*7.7*
I applied to the company where I had my on-the-job training	*50*	*22.7*
Legend: f =Frequency; %= Percentage		

The approaches in job search considered by graduates of industrial technology in finding a job is shown in Table 1. It was revealed that the highest employment method, at 83.90 percent, was through recommendation. This may mean that personal recommendations play a significant role in increasing the chances of employment for industrial technology graduates. Furthermore, being a walk-in applicant is also a helpful job search method at 80.90 percent. On the other hand, responding to online advertisements (63%), and applying to the company where graduates had their on-the-job training (22.70%), were frequently selected as good job search methods. It is also worthy to note that assistance from University Job Placement only garnered 4.10%, while working on family businesses (2.70%) and attending job fairs (7.70%) were the least considered job search methods by the graduates.

The employment outcomes of industrial technology graduates vary based on the method of job application. The data implies that recommendation, online job advertisements, and walk-in applications were effective job application methods as they resulted in high employment rates. Personal recommendations play a crucial role in securing employment, thus building a strong network and significantly enhancing job prospects. On the other hand, graduates who just relied on the university placement office or intended to work on family businesses have the lowest employment rates.

The finding suggests that graduates should employ diverse sets of job search methods to maximize their employment prospects and find the most effective job search method. Graduates should explore online job advertisements, consider direct application approaches, build a strong professional network for recommendation, and participate in job fairs. Furthermore, universities should enhance their job placement services and provide better linkages for graduates to find employment.

Table 2. Reasons for Job Acceptance

Statements	**f**	**%**
It fit into my career plan	102	46.4
It was the best job offer I ever received	176	80
It was an opportunity to progress in the organization	88	40
To see if I would like the type of works it involved	66	30
To gain and broaden my experience in order to get the type of job I really want	73	33.2
It was in the right location	46	20.9
The job was well-paid	143	65
In order for me earn a living,	172	78.2
In order for me to pay off debts	118	53.6
To work in my family business	14	6.4
Legend: f =Frequency; %= Percentage		

Table 2 reflects the perception of industrial technology graduates upon accepting a job. Among the respondents, 176, or 80.0%, thought that their current job was the best job offer they received, a way of earning a living (78.20%), well paid (65.00%), a way to pay off debts (53.60%), and it fitted into their career plan (46.40%). On the other hand, only 6.4 percent responded to work in their family business.

Furthermore, some graduates saw a long-term reason for accepting a job, like an opportunity to progress in the organization (40.00%) or the type of work it involved (30.00%). For practical purposes, 46 percent, or 20.90%, would accept a job if it were in the right location.

The data highlight various influences on the job acceptance decision-making of industrial technology graduates. Career alignment, competitive job offers, opportunities for career progression, location considerations, and financial stability play important roles in the decision-making process.

Table 3. Factors influencing job retention or staying on current job

Statements	**f**	**%**
Salaries and wages	203	92.3
Related to special skill	186	84.5
Proximity to residence	85	38.6
Family influence	66	30
Career challenge	87	39.5
Related to course of study	160	72.7
Peer influence	168	76.4
Legend: f =Frequency; %= Percentage		

Table 3 presents the factors influencing job retention or reasons for staying at their current job. It can be gleaned from the table that the majority of the graduates stayed on their current job because of salaries and wages, at 92.30 percent. Moreover, skills relevance is a factor in staying in the job, as 84.50 percent account for the relatedness of their special skills and the course of their study (72.70%). On the other hand, peer influence (76.40%) is also a determinant of whether employees stay in their current job. Meanwhile, family influence is the least important reason for staying on the job, with 30.00 percent.

The factors influencing job retention as identified in the table were also relevant to the decision-making process of staying at the current job. Salaries, special skills, proximity to residence, family influence, career challenges, courses of study, and peer influence help shape employees in their current job to be more effective and efficient as an employee or worker. Furthermore, understanding these factors may help employers and stakeholders tailor recruitment strategies, offer competitive compensation packages, and create meaningful career challenges.

Graduates' perception of the labor market

Table 4 presents the respondents' perception of the labor market. It can be observed from the table that the general agreement of the graduate to the challenges of the labor market is a 4.30 overall mean rating with .469 standard deviation, which suggests a relatively high level of agreement among respondents regarding their perception of the labor market.

The data indicates that respondents perceived and agreed that it is hard to find a job they want (4.20), fall in the number of available opportunities (4.49), be supported during the recruitment process (4.24), have the sufficient experience required by employers (4.28), challenge the recruitment process (4.25), and be able to access different types of opportunities (4.33).

Table 4. Perception of the Labor Market

Statements	M	SD	Interpretation
I have found it a challenge to find graduate jobs I want to apply for	4.20	.562	Agree
I have noticed a fall in the number of available opportunities	4.49	.737	Agree
I have felt supported by employers during the recruitment process	4.24	.627	Agree
I have the sufficient experience that employers require	4.28	.710	Agree
I have found recruitment process challenging	4.25	.638	Agree
I feel able to access different types of opportunities	4.33	.621	Agree
Overall Mean	4.30	.469	Agree

Legend: 4.50-5.00- Highly Agree; 3.50-4.49- Agree; 2.50-3.49- Neutral; 1.50-2.49 - Disagree; 1.00-1.49 - Highly Disagree; M=Mean, SD= Standard Deviation

These findings indicate the competitiveness of the labor market and the importance of continuous skill development, effective employer support, and adaptability in navigating the labor market. While it is true that graduates may perceive themselves as qualified for a job position, they should leverage this perception to explore various industries, roles, and career paths, allowing for personal and professional growth.

Overall, the data suggests that respondents have a general positive perception of the labor market, but with some variations in their experience and perspective as they venture into opportunities in the labor market.

Perceptions on Unemployment and Underemployment

Table 6 sheds light on various aspects of graduates' perceptions of unemployment and underemployment. It can be noted that the overall mean of 4.24 indicates a general agreement on the significant impact of unemployment and underemployment.

The data revealed that graduates are concerned about the negative effects of unemployment and underemployment on their outlook (4.08), that it may become long-term (4.35), affect their well-being and

morale (4.23), that their skills will not be valued in the labor market (4.20), and question the value of their degree (4.31). This would indicate that graduates have feared that their marketability and recognition of skills in the context of unemployment and underemployment may be low.

Table 5. Perceptions on Unemployment and Underemployment

Statements	M	SD	Interpretation
It negatively affected my outlook	4.08	.701	Agree
It felt like something that could become long- term	4.35	.806	Agree
It affected my confidence about what I can offer employers	4.15	.707	Agree
It affected my well-being and morale	4.23	.724	Agree
It made me concerned that my skills would not be valued	4.20	.706	Agree
It made me question the value of my degree	4.31	.686	Agree
It gave me the chance to develop experience and new skills	4.28	.620	Agree
It gave me the chance to reflect on what I want from my career	4.31	.610	Agree
Overall Mean	**4.24**	**.561**	**Agree**
Legend: 4.50-5.00- Highly Agree; 3.50-4.49- Agree; 2.50-3.49- Neutral; 1.50-2.49 - Disagree; 1.00-1.49 - Highly Disagree, M=Mean, SD= Standard Deviation			

On a positive note, graduates highly agreed at 4.28 mean rating that unemployment and underemployment gave them chance to develop new experience and acquire new skills.

The graduate expressed that unemployment and underemployment negatively affected their outlooks, confidence, well-being, and career considerations. These findings underscore the importance of addressing unemployment and underemployment issues and providing a support system to assist graduates in navigating these challenges. By addressing these concerns, graduates may be empowered to overcome the obstacles posed by unemployment and underemployment lurking amidst the pandemic and even after the pandemic.

Overall, the summary of the results on the perception of the factors affecting employability. It can be gleaned from the table that the overall agreement of the industrial technology graduates on the challenges of the factors affecting employability is 4.25, with a level of agreement on the impact of the labor market, and unemployment and underemployment. The relatively low standard deviations suggest a moderate level of agreement and consistency among the respondents. Although there is some variability, it does not significantly affect the overall interpretation of their level of agreement.

Specifically, the result indicates that on average, the perception of the labor market (4.30) has an impact and may be considered a factor affecting employability. The relatively low dispersion of .469 suggests that there is a relatively high level of agreement among the respondents.

Further, the perception of unemployment and underemployment at 4.24 with .561 standard deviation suggests that, on average, there is general agreement on its impact on the employment of industrial technology graduates. This also implies that graduates recognize the adverse consequences of high unemployment rates and the prevalence of underemployment when securing employment.

Finally, the finding indicates a consensus among the graduates regarding their perceptions of the factors affecting employability. Graduates must understand the labor market dynamics as it can be valuable for individuals seeking employment. By recognizing this influence, graduates can better prepare themselves to meet the demands and requirements of the industry. Policymakers and stakeholders should focus on the creation of better opportunities to reduce unemployment and address issues of underemployment. These insights can contribute to more effective measures to enhance graduates' employability and promote a resilient and inclusive labor market.

Employment Mismatch in Industrial Technology

Table 6 illustrates the qualification and skill mismatch of the industrial technology graduates in their current employment. The overall mean of 3.50, which can be described as general agreement can be interpreted as

match between their degree and their qualification and skill match to their current employment. However, it is worth noting that .841 standard deviation means that there is a high dispersion of rating around the mean. This would suggest that even if there is a general match of qualification and skill to their degrees, there is a relative number of graduates who have mismatches in terms of their qualification and skills.

Table 6. Level of Agreement on the Employment Mismatch of Industrial Technology Graduates

A. Qualification Mismatch	**M**	**SD**	**Description**	**Interpretation**
My current job is appropriate to my level of education	3.60	.873	Agree	Match
My current job is appropriate to my field of study	3.52	1.053	Agree	Match
My current job is appropriate to my trainings	3.45	.994	Neutral	Neither match nor mismatch
My formal education helps me in meeting the demands of my current job	3.50	.994	Agree	Match
The extent of the job I perform in my current work is compatible to my educational attainment	3.48	1.000	Neutral	Neither match nor mismatch
The basic task I perform in my current job requires less than my basic training and educational attainment	3.44	1.016	Neutral	Neither match nor mismatch
The basic task I perform in my current job requires more than my basic training and educational attainment	3.45	1.057	Neutral	Neither match nor mismatch
Composite Mean	**3.49**	**.898**	**Neutral**	**Neither match nor mismatch**
B. Skill Mismatch				
My knowledge and skills fit in/meet the requirements of my current job	3.59	.858	Agree	Match
My skills are higher than what I needed and required for my work	3.55	.999	Agree	Match
My skills are lesser than what I needed and required for my work	3.41	.958	Neutral	Neither match nor mismatch
My present tasks are too simple	3.46	.981	Neutral	Neither match nor mismatch
I have enough opportunity to use my knowledge and skills in my current job	3.57	.926	Agree	Match
I have enough skills to cope with more demanding duties than those that are required to perform in my current job.	3.48	.967	Neutral	Neither match nor mismatch
I need further training in order to cope with my present duties	3.45	1.017	Neutral	Neither match nor mismatch
Composite Mean	**3.50**	**.836**	**Agree**	**Match**
Overall Mean	**3.50**	**.841**	**Agree**	**Match**

Legend: 4.50-5.00- Highly Agree (Highly Match); 3.50-4.49- Agree(Match); 2.50-3.49- Neutral(Neither match nor mismatch); 1.50-2.49 – Disagree(Mismatch); 1.00-1.49 - Highly Disagree(Highly Mismatch), M = Mean; SD= Standard Deviation

For qualification mismatch, it can be noted with the composite mean of 3.49 levels of agreement and can be interpreted as a neutral match in qualification and employment. It is worthy to note that graduates expressed neutral opinions on the current job's appropriateness to their training (3.45), job performance compatibility with educational attainment (3.48), the current job requiring less than basic training and educational attainment (3.44), and the current job requiring more basic training and educational attainment (3.45). Moreover, the

neutral perception of the graduates and the high standard deviation among individual indications suggest a wide range and diversity in perceptions among the respondents. Further, the result highlights the importance of understanding individual experiences when addressing mismatches in educational qualifications and employment.

For skill mismatch, the composite mean of 3.50 indicates a relative level of agreement among respondents that their skills match their current job. This is supported by their agreement to the statements: My knowledge and skills fit in with or meet the requirements of my current job (3.59); my skills are higher than what is needed and required in my work (3.55); and I have enough skills to cope with more demanding duties than those that are required to perform in my current job (3.57). On the other hand, a neutral agreement was recorded on the statement: My skills are lesser than what I needed and required for my work (3.41), my present tasks are too simple (3.46), I have enough skills to cope with more demanding duties (3.48), and I have enough opportunity to use my knowledge and skills in my current job (3.45).

Moreover, it can be observed that the composite means are relatively the same with qualification mismatch (3.49) and skill mismatch (3.50). Further, it is important to note the irregular distribution of the standard deviation among the different statements. While it is true that the mean score suggests a match, it is important to consider the individual responses that vary to some extent. Some respondents may strongly agree with the statements, while others may have a more neutral or weaker agreement.

Overall, the consensus of the graduates' agreement suggests that both qualification and skill mismatch exist to some extent, with a higher perception of skill mismatch. Based on these findings, it is important to enhance the alignment between an employee's qualifications and skills and the requirements of a job. It is also important to consider individual variability to improve the overall mismatch among graduates. This result is supported by Cuadra et al. (2019) that there is large percentage of graduates with degrees directly relevant to and required for their present sectors of employment, and many graduates are working in fields unrelated to their areas of specialization (Villanueva Jr. and Binay-an, 2020).

Association graduates' demographic profile and their employment outcomes

Sex and nature of employment

Table 7 presents the contingency table and the result of the chi-square test showing the association between sex and the nature of employment among industrial technology graduates. The table shows that for males, 17 are permanent, 108 are contractual, 17 are none, and 18 are others.

Table 7. Contingency table and chi-square result of nature of employment and sex

Contingency Table							
			Nature of Employment				Total
			Permanent	Contractual	None	Others	
Sex	MALE	Count	17	108	17	18	160
		Expected Count	19.60	109.10	16.00	15.30	160
	FEMALE	Count	10	42	5	3	60
		Expected Count	7.40	40.90	6.00	5.70	60
Total		Count	27	150	22	21	220
		Expected Count	27.00	150.00	22.00	21.00	220

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.353[a]	3	.340
Likelihood Ratio	3.532	3	.317
Linear-by-Linear Association	3.272	1	.070
N of Valid Cases	220		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.73.

***Null Hypothesis**: There is no significant difference in the distribution of the nature of employment between males and females.*

Df =degree of freedom

The relation between variables is significant, with chi-square test results (3, N = 220) = 3.353, p (.340) >0.05. The value of 0.340 from the chi-square test is greater than the alpha value of 0.05 and statistically not significant, suggesting that there is no significant difference in the distribution of the nature of employment among males and females.

This finding implies that sex (male or female) is not a determinant of the nature of employment. That regardless of their sex, they may be employed as permanent, contractual, or others.

Sex and nature of work

Table 8 presents the contingency table and the result of the chi-square test showing the association between sex and the nature of work. It can be gleaned from the table that males are highly grouped in services and market sales (57) and technical works (49), while females, on the other hand, swarm around services and market sales (37).

The relation between variables is significant, with chi-square test results (4, N = 220) = 25.981, p <0.05. The p-value of 0.000 from the chi-square test is less than the alpha value of 0.05 and statistically significant. Also, the Cramer's V result of .344 indicates a moderate level of association between sex and the nature of work. This means that sex may determine the nature of work that graduates are doing in their respective employment.

Table 8. Contingency table and Chi-square result of nature of work and sex

Contingency Table								
			Nature of the Work					Total
			Prof	Cler	Serv	Tech	Others	
Sex	MALE	Count	16	8	57	49	30	160
		Expected Count	15.30	11.60	68.40	37.10	27.60	160
	FEMALE	Count	5	8	37	2	8	60
		Expected Count	5.70	4.40	25.60	13.90	10.40	60
Total		Count	21	16	94	51	38	220
		Expected Count	21.00	16.00	94.00	51.00	38.00	220

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.981[a]	4	.000
Likelihood Ratio	30.573	4	.000
Linear-by-Linear Association	6.317	1	.012
N of Valid Cases	220		
a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 4.36.			

***Null Hypothesis**: There is no significant difference in the distribution of the nature of work among males and females.*

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.344	.000
	Cramer's V	.344	.000
N of Valid Cases		220	

Values	**Interpretation**
0 -.1	little, if any, association

.1-.3	Low Association
.3-.5	Moderate association
.5 and above	High association

Overall, it can be concluded that there is a statistically significant association between sex and the nature of work. Thus, we can reject the null hypothesis.

The finding further implies that male graduates are likely to find service-related work, technical work, or a technical position in their employment. In consideration of the program outcomes in industrial technology, it is expected that graduates are equipped with technical know-how of the processes related to their field of study. The field of specializations such as automotive technology, electrical, civil and drafting, and electronics technology leads to service and technical work in the industry. Food processing, garments, and computer technology are more into service, clerical, and other work since the course is mostly dominated by female students.

Year of Graduation and Employment Status

Table 9 presents the contingency table and the result of the chi-square test showing the association between year of graduation and nature of employment among industrial technology graduates for school years 2023, 2024, and 2025. The table shows that of the graduates in 2023, 39 are employed, 4 are unemployed, and 8 consider themselves underemployed. Moreover, among the 46 graduates of 2024, 17 are employed, 9 are unemployed, and 20 are underemployed. Lastly, for the year 2025, 92 were employed, 18 are still looking for employment, and 13 are underemployed.

The relation between variables is significant, with chi-square test results (4, N = 220) = 30.144, p (.000) <0.05. The p-value of 0.000 from the chi-square test is less than the alpha value of 0.05 and statistically significant, thus indicating strong evidence against the null hypothesis. However, Cramer's V result of .262 indicates a low association between the year of graduation and the nature of employment.

Table 9. Contingency table and chi-square result of year of graduation and employment status

Contingency Table						
Variable			Employment Status			Total
			Employed	Unemployed	Underemployed	
Year of Graduation	2023	Count	39	4	8	51
		Expected Count	34.3	7.2	9.5	51.0
	2024	Count	17	9	20	46
		Expected Count	30.9	6.5	8.6	46.0
	2025	Count	92	18	13	123
		Expected Count	82.7	17.3	22.9	123.0
Total		Count	148	31	41	220
		Expected Count	148.0	31.0	41.0	220.0

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.144[a]	4	.000
Likelihood Ratio	28.102	4	.000
Linear-by-Linear Association	1.791	1	.181
N of Valid Cases	220		

a. 0 cells (0.0%) have an expected count less than 5. The minimum expected count is 6.48.

***Null Hypothesis**: There is no significant difference between the year of graduation and employment status.*

Symmetric Measures			
		Value	Approx. Sig.
Nominal by Nominal	Phi	.370	.000
	Cramer's V	.262	.000
	Contingency Coefficient	.347	.000
N of Valid Cases		220	

Cramer's V Interpretation

Values	Interpretation
0 -.1	Little if any association
.1-.3	Low Association
.3-.5	Moderate association
.5 and above	High association

Overall, we can conclude that there is a statistically significant association between years of graduation and the nature of employment. Thus, we can reject the null hypothesis.

This finding may further highlight the relationship between the year of graduation and employment status, suggesting that the year of graduation can have a relative impact on their employment outcomes. This finding suggests that economic conditions, job market trends, and industry demands may influence the likelihood of securing a job.

Analysis of year of Graduation and Perception of the Labor Market

Table 10 presents the result of the analysis of variance (ANOVA) to investigate the variations in the degree of agreement with the factors affecting the employability of the industrial technology graduates based on their year of graduation. The data revealed that there is no significant difference in the perception of industrial technology graduates toward the factors affecting employability when grouped according to their year of graduation. Moreover, there is no statistically significant variation in the perception of the labor market ($F = 2.388$, $p > .05$). Likewise, no significant variation is found in the perception of unemployment and underemployment among industrial technology graduates, where $F = .961$, $p = .384$, and $p > .05$.

This result implies that regardless of graduation, industrial technology graduates have the same level of perception of the impact of the factors affecting employability. Graduates acknowledge the challenges of the labor market and problems related to unemployment and underemployment as relative and significant indicators of finding employment. This also means that the null hypothesis is accepted, considering that there is no significant difference in the perception of the factors affecting employability in the different years of graduation.

Table 10. Analysis of the significant difference between year of graduation and perception of the labor market affecting employability

Variable	Category	N	Mean	SD	F	p
Perception of the labor market	2023	51	4.36	.379	2.388	.094
	2024	46	4.39	.384		
	2025	123	4.23	.522		
Perception of Unemployment and Underemployment	2023	51	4.26	.621	.961	.384
	2024	46	4.32	.417		
	2025	123	4.19	.581		

**Significant at p<0.05*

Null Hypothesis*: There is no significant difference between the year of graduation and the perception of the factors affecting employability.*

In conclusion, the analysis provides significant insight regarding the consistent perception of graduates across different years. It may help higher educational institutions and TVET training institutions develop appropriate interventions that can help address the needs of graduates in relation to their perceptions of the labor market, unemployment, and underemployment.

Analysis of Year of Graduation and Employment Mismatch

Table 11. Analysis of the significant difference between year of graduation and employment mismatch

Variables		N	Mean	SD	F	p
Qualification Mismatch	2023	51	3.73	.836	9.167	**.000**
	2024	46	3.02	.997		
	2025	123	3.57	.827		
Skills Mismatch	2023	51	3.58	.753	9.675	**.000**
	2024	46	3.04	.946		
	2025	123	3.64	.768		
Employment Mismatch	2023	51	3.66	.764	9.674	**.000**
	2024	46	3.03	.953		
	2025	123	3.60	.771		

Table 11 shows the result of the analysis of the significant difference between year of graduation and employment mismatch among the graduates of industrial technology from 2020–2022. It can be observed that qualification mismatch ($F = 9.167$, $p = .000$) has statistically significant differences and variations from different years of graduation. Similarly, skills mismatch has significant variation where $F = 9.675$, $p > .05$. Finally, the overall employment mismatch is also significantly different, posting $F = 9.674$, $p = .000$.

The data implies that there is a statistically significant difference in the employment matching of industrial technology graduates compared to the graduates of batches 2023-2025. This suggests that graduates from one batch may be experiencing a qualification and skill mismatch differently from other batches of graduates. This is also supported by the dispersion of the means, which shows the high variation of perceptions among graduates when grouped by year of graduation. The results further imply that graduates of 2023 may be facing greater challenges in terms of the alignment of their qualifications and skills with employment outcomes. This can be associated with the adverse effects of the pandemic, wherein graduates ventured into different markets for different employment opportunities, market demands, or the general economic condition of the industry.

Overall, the significant difference found between employment mismatch and years of graduation highlights the importance of continuous monitoring of graduates as they navigate the labor and job markets.

Table 12. Analysis of the significant differences in employment mismatch of industrial technology graduates based on their field of specialization

Variables		N	Mean	SD	F	p
Qualification Mismatch	Automotive Technology	58	3.38	.888	5.795	**.000**
	Civil and Drafting	16	3.79	.901		
	Computer Technology	15	3.00	.862		
	Electrical Technology	62	3.20	.873		
	Electronics Technology	14	3.55	1.114		
	Food Processing and Service Management	43	4.03	.650		
	Garments Technology	12	3.81	.606		
Skills Mismatch	Automotive Technology	58	3.44	.829	4.944	**.000**
	Civil and Drafting	16	3.83	.756		
	Computer Technology	15	3.23	.798		
	Electrical Technology	62	3.16	.822		

	Electronics Technology	14	3.74	.907		
	Food Processing and Service Management	43	3.91	.717		
	Garments Technology	12	3.71	.618		

**Significant at <0.05*

Null Hypothesis: There is no significant difference in the employment mismatch of industrial technology graduates based on their field of specialization?

Table 12 shows the result of the ANOVA on the significant difference between field of specialization and employment mismatch among the graduates of industrial technology from 2023-2025. It can be observed that qualification mismatch (F = 5.975, p =.000), <.005 has statistically significant differences and variations from different years of graduation. Similarly, skills mismatches have significant variation where F = 4.944, p =0.000, <.05.

The data implies that there are statistically significant differences and variations in the extent of employment mismatch among industrial technology graduates from batches 2023-2025, when grouped according to their field of specialization. This suggests that the field of specialization in their graduate program is a factor that leads to a mismatch of qualifications and skills with their current employment. This further implies that variation in field of specialization has unique requirements in the job market, and employers may prioritize certain qualifications and skills when hiring applicants from specific fields.

Moreover, the variations in qualifications and skills mismatch indicate that graduates from different fields of specialization face distinct challenges and opportunities in the labor market. Fields with greater mismatches, like Food Processing and Service Management, may find it difficult to align employment with their educational qualifications. This may further indicate the need for more training to enhance their expertise, and they may seek additional training or ask for help from career guidance experts to improve the alignment of their employment.

The study of Adarlo (2020) stated that although employment mismatch has been identified as a factor that negatively affects macroeconomic efficiency in addition to individual income levels, job satisfaction, and group performance, it should not be disregarded as having a substantial impact on labor market performance.

Table 13. Correlation between qualification and skill mismatch and the respondent's perception of the factors affecting employment.

Mismatch	**Factors affecting employment**	**r**	**P**	**Interpretation**
Qualification Mismatch	Perception of the labor market	.191**	0.004	**Significant**
	Perceived Impact of COVID	0.023	0.737	Not significant
	Perception of Unemployment and Underemployment	-0.046	0.498	Not significant
Skills Mismatch	Perception of the labor market	.174**	0.01	**Significant**
	Perceived Impact of COVID	0.043	0.528	Not significant
	Perception of Unemployment and Underemployment	0.052	0.439	Not significant

*.Correlation is significant at the 0.05 level (2-tailed)

**.Correlation is significant at the 0.01 level (2-tailed)

Absolute Value	**Strength of Correlation**
.91 until 1.00 or -.91 until -1.00	Very Strong
.71 until .90 or -.71 until -.90	Strong

.51 until .70 or -.51 until -.70	Moderate
.31 until .50 or -.31 until -.50	Weak
.01 until .30 or -.01 until -.30	Very Weak
0	No Correlation

Table 13 presents the correlation between employment mismatch and the factors and challenges affecting employment. It can be gleaned from the table that the respondent's perception of the labor market has a significant relationship with qualification mismatch (P =.004, r =.191) and skill mismatch (P =.010, r =.174). However, other predictors, such as the perceived impact of COVID and perceptions of unemployment and underemployment, do not display a statistically significant relationship. It is also worthy to note that the correlation coefficient displays a positive association between employment mismatch and perceptions of the labor market.

On the other hand, the strength of a relationship can be interpreted as a very weak relationship, which may have occurred by chance. Further, the result suggests that as the degree of qualification and skill mismatch increases, graduates who experience a greater mismatch between their qualifications and the requirements of the labor market tend to have a more negative perception of the labor market.

The result further nullifies the hypothesis, which means we can reject the hypothesis that there is no significant relationship between job mismatch and perceptions of the factors affecting employment.

Overall, the finding has practical implications for addressing qualification and skill mismatches; thus, improving the perception of graduates in the labor market may improve mismatches and employment outcomes. The result attests the studies of Akindahunsi et al., (2021) and Bernard et at. (2001), where it is found that the extent to which graduates are able to use the relevant skills can also be used to determine job fitness. The degree to which graduates are able to apply their knowledge, abilities, and attitudes to the workplace may also be used to determine job fit This may entail policymakers and employers implementing innovations to improve the perception of fresh graduates in the labor market. Also, further research and contextual considerations are necessary to fully understand the implications of this relationship.

CONCLUSION

Based on the findings and results of this study, the research concludes that the employment outcomes of industrial technology graduates from the batches of 2023-2025 have a general positive trend despite the challenges of the recession and pandemic. To maximize employment prospects and opportunities, graduates should employ diverse job search methods such as online advertisement, direct applications, and networking approaches. Significantly, the university should also enhance the job placement services it provides to graduate students. It is crucial for graduates to have a clear understanding of the labor market, its characteristics, and its dynamics to better prepare themselves as applicants for the demands of the industry.

The consensus among graduates regarding the factors affecting employability and employment mismatch, but with a higher perception of skill mismatch, should be enhanced. This entails policymakers, universities, and industries strengthening their programs and activities to support graduates in their transition from university to industry.

It was also concluded that sex is not a determinant of the nature of employment for the graduates; however, field of specialization is a factor in the nature of work for graduates.

The years of graduation have a statistically significant association with the nature of work, suggesting that economic conditions, market trends, and the demands of the industry can influence the job prospects and outcomes of the graduates.

These analyses provide valuable insights on the employment matching of industrial technology graduates across different batches, indicating that each batch experiences qualification and skill mismatches differently.

Continuous monitoring of graduates' experiences in the labor market and job market is crucial, considering the

significant differences found in employment mismatch. Different fields of specialization face different challenges and opportunities. It should be considered by the graduates, educational institutions, employers, and even policymakers to enhance employability, promote inclusive labor markets, and address the challenges faced by fresh graduates of industrial technology and related fields in securing suitable employment opportunities.

Theoretical Conclusion

The results of the research indicated favorable consensus, validation, and endorsement for the Human Capital theory and Job Matching theory.

The research findings support the Human Capital and Job Matching theories, indicating that graduates must align their skills and qualifications with market demands. Human Capital theory emphasizes that enhancing relevant knowledge improves employability and income potential. The study also reveals a skills misalignment in industrial technology graduates, stressing the importance of aligning educational curricula with industry needs and fostering continuous collaboration between academia and employers to address skill gaps. Furthermore, it advocates for diverse job search strategies, suggesting that first-year students utilize internet postings, direct applications, networking, and career fairs to improve job visibility and adaptability in the changing job market. Job Matching theory is highlighted as important for graduates to achieve job satisfaction and career growth by securing roles that match their credentials. Collaboration between graduates and employers is essential to ensure alignment of skills with job requirements, while also considering factors beyond salary, such as career compatibility and location, to enhance job satisfaction and retention.

LIMITATION OF THE STUDY

In light of the facts, conclusions, and extent of the investigation, various constraints should be taken into account:

With respect to demographics and geography, the sample size is restricted. The data fails to deliver an in-depth study of the whole perspectives and experiences of those who have graduated in industrial technology. This may not provide a comprehensive depiction of the whole population of industrial technology graduates in Ilocos Norte. The applicability of the findings is restricted. Bias could exist in the perceptions, which includes the assorted demographic details of the respondents. These variables can markedly impact job results and can culminate in partial or unfounded judgments.

The duration and setting of the investigation are similarly restricted. It exclusively featured graduates from the classes of 2023 through 2025. The situational elements, such as economic status, and sector developments, remain unaddressed. At the heart of the research lies the self-reported data, reflecting the respondents' impressions and excluding the employers' perspective in terms of employability. It is mostly contingent upon self-regulated disclosures from the supplied questionnaire, potentially leading to biases and mistakes.

The sustainability aspect of the study is also not illustrated. The lack of extended data complicates the analysis of patterns or shifts in graduates' job outcomes over time.

By tackling these shortcomings, future scholars can gain a more trustworthy and extensive perspective on the job outcomes and inconsistencies of industrial technology graduates.

RECOMMENDATIONS

The following recommendations are hereby advised in light of the findings of this study:

Strengthening of the career services of the University. Educational institutions and TVET training providers should improve their job placement services and offer better assistance and connections to help graduates find

employment. This can involve setting up job fairs, hosting networking events, and offering career counseling and advice services.

Graduates should use a range of job-search strategies since the job and labor markets are vast and diverse. Graduate candidates should apply a range of job-search strategies to improve their chances of finding work. This entails using internet job postings, sending direct applications to potential employers, developing a strong professional network for referrals, and actively attending job fairs or industry events.

There is a need to enhance skills and qualification alignment. Graduate applicants should concentrate on matching their credentials and skills to the demands of the job market. This can be accomplished through pursuing ongoing education, getting more training or certificates, and keeping up with market trends and requirements. Educational institutions might also think about enhancing their curricula with additional instruction in practical and applicable skills. This can be accomplished by working closely with businesses. Programs like internships and apprenticeships can also close the knowledge and skill gap between the classroom and the real world by giving participants meaningful hands-on experience.

Further, constant and continuous monitoring of graduates is needed. It is crucial to continuously monitor and evaluate graduates' employment results and experiences in the labor market. This will make it easier to spot trends, problems, and chances for improvement. The research findings can help educational institutions create efficient interventions and make changes to their services and programs. In order for educational institutions to comprehend the changing demands of the labor market and industry, employers and stakeholders should work together. This collaboration may result in the creation of specialized recruitment tactics, aggressive remuneration plans, and interesting career challenges that complement graduates' credentials and abilities.

Further studies should be conducted in support of the findings of the study. The result of this study can be relevant literature, particularly in the context of Ilocos Norte, when analyzing the employability, outcomes, and mismatch among the graduates of industrial technology.

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