



Tracer Study of Bachelor of Science in Mathematics Graduates: Unveiling Career Trajectories

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DOI: <https://doi.org/10.55248/gengpi.4.1123.113142>

ABSTRACT

This research paper traced the employability of the Bachelor of Science in Mathematics (BS Mathematics) graduates of Ilocos Sur Polytechnic State College (ISPSC) – Tagudin Campus from the batch AY 2014 – 2015 to AY 2021 – 2022. The study employed the descriptive survey method where the main instrument used was the modified Graduate Tracer Study of the Commission on Higher Education (CHED). Total enumeration was applied since there were only 32 graduates from 2015 – 2022. Frequency, percentage and ranking were used to describe the gathered data from the alumni. Findings revealed that majority of the traced alumni were: female; single; currently employed and they are based locally. Most of them have an average gross monthly income ranging from P15,000 to less than P20,000. They are currently employed as either officials of government and Special-Interest Organizations, Corporate Executives, Managers, Managing Proprietors and Supervisors or clerks and has greatly used their communication skills in their workplace.

Keywords: Alumni, Career, Descriptive survey, Employability, Tracer study

Introduction

The Bachelor of Science in Mathematics remains a foundational degree program known for cultivating analytical thinking, problem-solving skills, and quantitative reasoning. This research endeavours to highlight the pivotal role of mathematics in shaping graduates' careers, address existing gaps, and pave the way for optimizing the Bachelor of Science in Mathematics program to meet the dynamic needs of the contemporary job market.

Tracer studies are crucial for evaluating the outcomes and effectiveness of academic programs, including the Bachelor of Science in Mathematics. It offers valuable insights into the strengths and weaknesses of the program. By understanding the career paths and success of graduates, universities can adapt and improve the curriculum to better meet the demands of the job market and ensure that students are well-prepared for diverse career opportunities.

Several tracer studies have been conducted globally, examining the impact and trajectories of mathematics graduates. For instance, a study by Torres, et al. (2018) analyzed the career paths of mathematics graduates from a specific university, highlighting how their skills were applied in various sectors such as finance, education, and technology. This study coincides with that of Smith et al. (2020), which highlighted the versatility of mathematics graduates in diverse industries and underscores the adaptability and applicability of mathematical skills in addressing complex challenges across sectors. Likewise, Garcia and Chang (2019) highlighted the significance of critical thinking, problem-solving, and quantitative skills acquired during the program and showcasing their applicability in various professional settings. To equip graduates with relevant skills, Torres et al. (2018) emphasized the importance of aligning the Bachelor of Science in Mathematics curriculum with evolving industry demands. This would be strengthened through a continuous curriculum enhancement to be abreast with the challenging needs of time.

The study of Brown and Jackson (2017) and Nguyen and Kim (2021) underscored the impact of internships or practical training on graduates' employability. The research delves into specific elements of these experiences that contribute most to graduates' readiness for the workforce, aiding in refining internship programs within mathematics education. Thereby, identifying the most impactful aspects can guide universities in enhancing their practical training programs.

Moreover, Chen and Wang (2021) investigated the job satisfaction levels among Bachelor of Science in Mathematics graduates. Their study also analyzed the percentage of graduates pursuing further education in specialized mathematics fields, indicating the interest in continuous learning and skill development.

Despite these valuable insights, research gaps persist, calling for further investigations. Longitudinal analyses, regional disparities, and a deeper understanding of the skills gap between educational outcomes and industry demands are areas requiring more attention, as indicated by various researchers.

This research study seeks to trace the journey of the Bachelor of Science in Mathematics graduates of and to explore how their education has influenced their career paths and professional development.

Objectives

The main objective of this study is to trace and determine the employability of the Bachelor of Science in Mathematics graduates of Ilocos Sur Polytechnic State College – Tagudin Campus from 2015 – 2022.

Specifically, it sought to:

1. determine the demographic profile of the graduates in terms of:
 - a. gender
 - b. civil status and
 - c. nature of employment;
2. determine the employment profile of the graduates in terms of:
 - a. employment status
 - b. location of current work
 - c. gross monthly income and
 - d. first job level position;and
3. determine the most acquired skill in the College that the graduates use in their work

Methodology

The descriptive survey method was used in the study to trace the employability of graduates from 2015 - 2022. The researchers made use of the modified CHED Graduate Tracer Survey Questionnaire (GTS) employing the use of Online Google Form. Total enumeration was employed since there were only 32 graduates under consideration. However, only 30 graduates responded to the survey. The graduates were contacted through Facebook, messenger and others were shared by their batchmates for an easier collection of responses. Data were described using frequency, percentage and ranking.

Results and Discussion

The results of the study were divided into three parts. First, is the demographic profile of the graduates. Second, is the employment profile of the graduates and the last part discusses the most acquired skills acquired in the College that the graduates were able to apply in their field of work.

A. Demographic Profile of the Graduates

A.1 Gender. Figure 1 shows the distribution of gender of the respondents

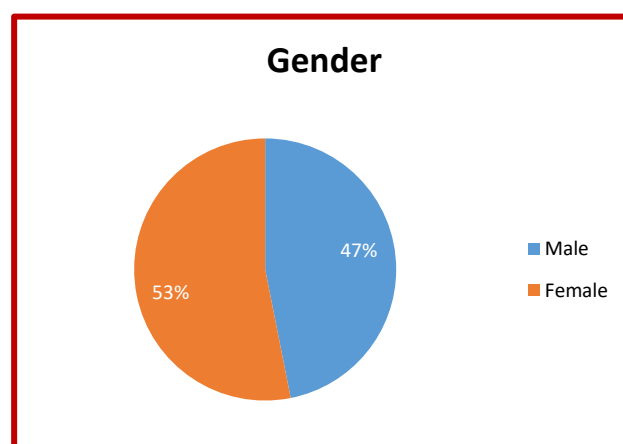


Fig. 1. Percentage distribution of the respondents in terms of Gender

Based from the gathered data, majority of the BS Mathematics graduates are female, which has a percentage of 53%. Both sexes are properly represented as their values are close enough though the male has only 47%. Tracer studies frequently examine how gender influences various aspects of graduates' experiences in the workforce and higher education. A tracer study conducted by Smith, J., et al. (2017) investigated the career trajectories of male and female graduates, revealing that while initial employment rates might be similar, women faced challenges related to career advancement and salary progression compared to their male counterparts.

Another study by Johnson, L., et al. (2019) examined the impact of gender on the pursuit of further education after graduation. It found that males and females might have different motivations and priorities when considering postgraduate studies, potentially influenced by societal expectations or career aspirations.

These studies highlight the importance of considering gender in tracer studies to understand the nuanced experiences and challenges faced by male and female graduates in their career paths.

A.2 Civil Status. Figure 2 shows the distribution of civil statuses of the respondents.

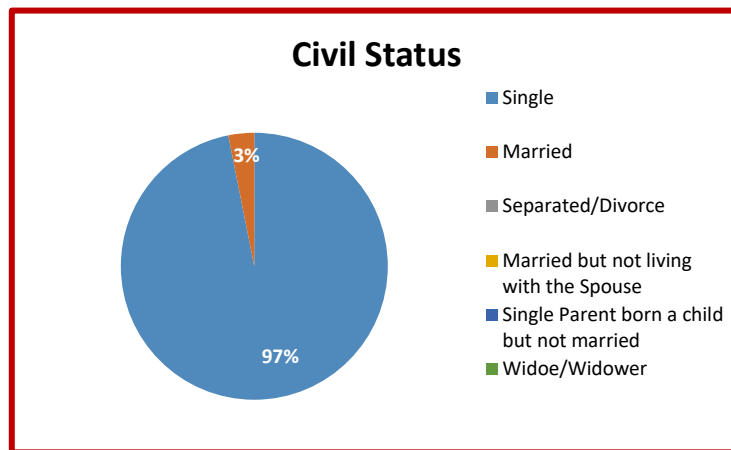


Fig. 2. Percentage distribution of the respondents in terms of Civil Status

Data shows that most of the respondents are still single with a percentage of 97% while 3% of them are married. Understanding how civil status relates to employment outcomes or further educational pursuits among graduates can provide insights into potential correlations or impacts on career choices and opportunities. For instance, a study by Yap, M. H., et al. (2015) explored the employment outcomes of graduates in relation to various demographic factors, including civil status. The study found that there were differences in employment rates and career progression based on marital status among the surveyed graduates.

Another study conducted by Chen, Y. T., et al. (2018) examined the influence of marital status on career development and found that married individuals tended to prioritize stability and long-term career growth, while single individuals might focus more on career mobility and exploration.

These studies indirectly suggest that civil status might play a role in the career choices and trajectories of graduates, which could be a relevant consideration in tracer studies analyzing employment outcomes and educational paths.

A.3. Nature of Employment. Figure 3 shows the distribution of the respondents in terms of their nature of employment.



Fig. 3. Percentage Distribution of the respondents in terms of their Nature of Employment

The graph shows that 66% of the graduates were able to land a job, while 34% of them are self – employed or entrepreneurs. Studies by Clark and Evans (2019) and Wang and Liu (2022) delved into graduates' involvement in self-employment or entrepreneurial activities to track the number of graduates who had started their businesses or engaged in freelance work. This concludes that the nature of employment status is a crucial aspect often examined in tracer studies to better understand the employment conditions and statuses of graduates after completing their education.

B. Employment Profile of the Graduates

B.1. Employment Status. Figure 4 shows the distribution of graduates in terms of employment status.

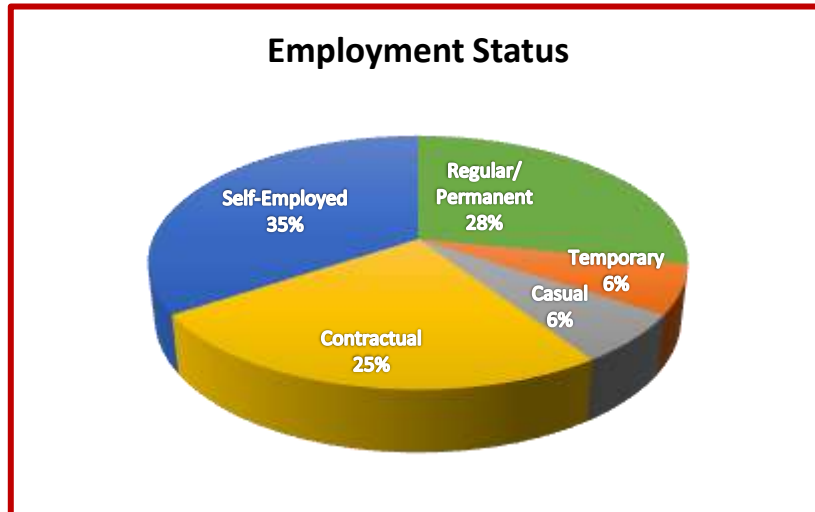


Fig. 4. Percentage distribution of respondents in terms of their Employment Status

As shown in the graph below, only 28% of the respondents had landed on a regular or permanent status and majority of them are self – employed with a 35% result. This implies that a regular conduct of tracer study sheds light on the diverse employment statuses of graduates and how tracer studies play a crucial role in assessing the immediate and long-term outcomes of their education in the job market. Such investigation would trace the different factors related to employment status and further analyze whether graduates secured full – time employment, part – time roles, or experience unemployment after graduation.

B.2. Location of Current Work. Figure 5 shows the distribution of graduates in terms of place of work.



Fig. 5. Percentage distribution of respondents in terms of Current Place of Work

The respondents conveyed that most of them are working locally, 97% and 3% working abroad. This indicates that the BS Math graduates are working in the country, but not limited to their birthplace only, as some are assigned in urban places.

B.3. Gross Monthly Income. Figure 6 shows the distribution of graduates in terms of their gross monthly income.

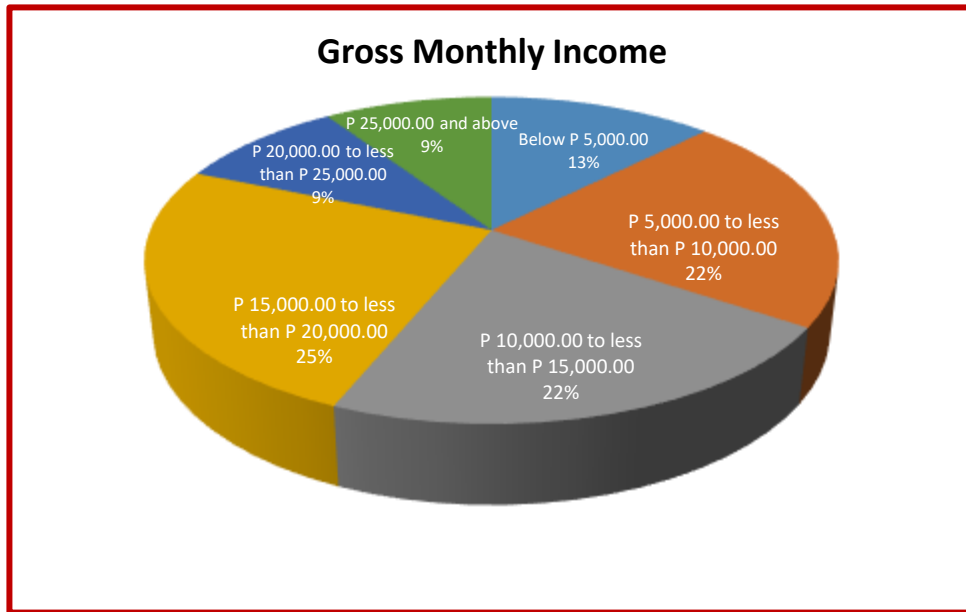


Fig. 6. Percentage distribution of respondents in terms of Gross Monthly Income

Among the respondents of the survey revealed that most of them are earning above the minimum wage ranging from P15,000 to less than P20,000. This means that income levels may vary depending on the field of study such as engineering, medicine, or technology, typically offer higher-paying jobs compared to others. In some cases, the industry and geographical location where graduates seek employment significantly affect income levels where certain industries and regions offer higher wages due to demand, cost of living, or other economic factors. Thus, the conduct of tracer studies can offer valuable insights into how education influences income levels, providing policymakers, educators, and students with data to make informed decisions about educational paths and career choices in the future.

B.4. First Job Level Position. Figure 7 shows the distribution of graduates in terms of their first job level position.

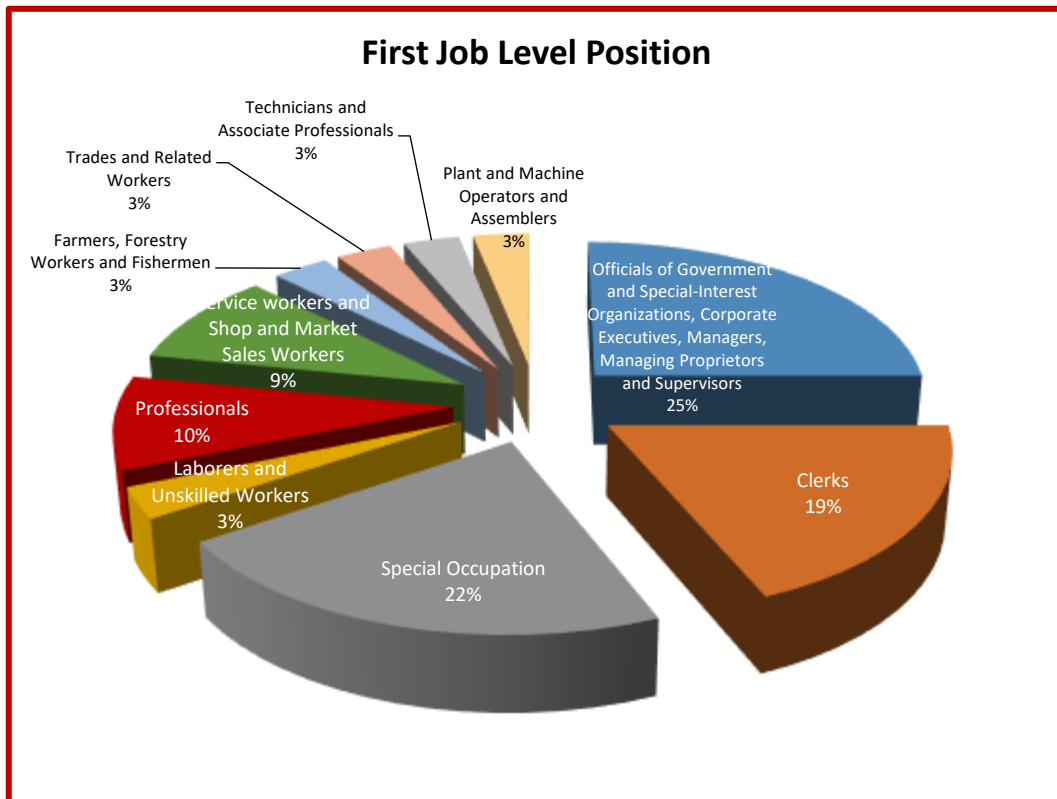


Fig. 7. Percentage Distribution of Respondents in terms of First Job Level Position

The graph shows that the top three first job level positions of graduates were (1) Officials of Government and Special-Interest Organizations, Corporate Executives, Managers, Managing Proprietors and Supervisors; (2) Special Occupation; and (3) Clerks.

This implies that majority of the respondents acquired professional and/or managerial positions in their first job which is very much relevant to the course that they have taken.

C. Most Acquired Skills in the College that are beneficial in their Work

Figure 8 shows the most acquired skills by the graduates in the College that were beneficial to their work.

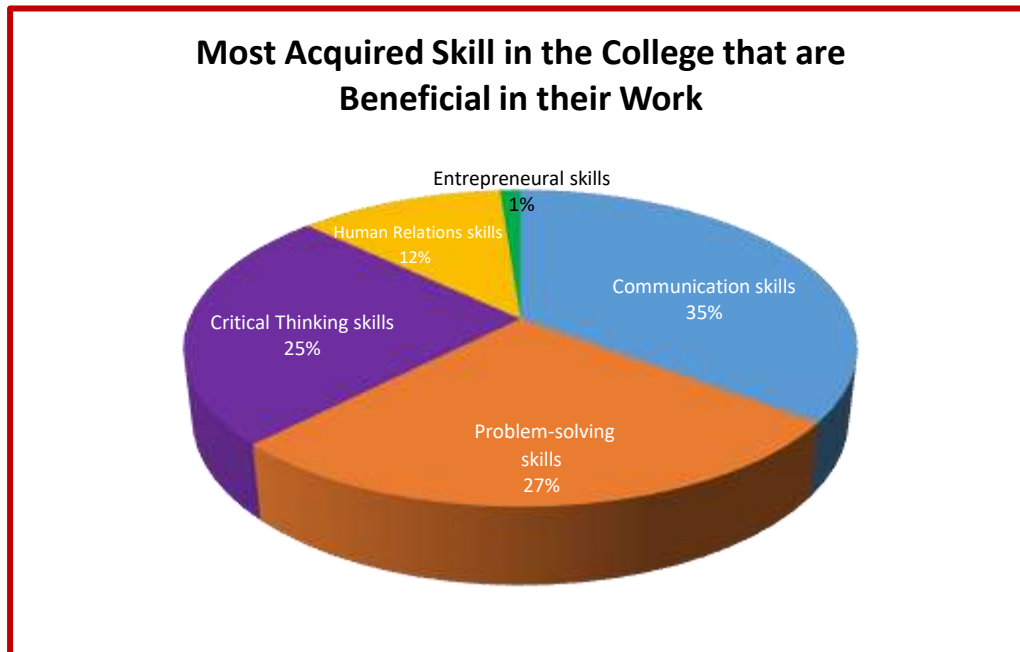


Fig. 8. Percentage Distribution of the Respondents in terms of Most Acquired Skills

The relationship between the most acquired skills in college and tracer studies, which track graduates' outcomes, including skill utilization in the workforce, has been a topic of research and discussion in various academic studies. Based from the gathered data, 35% of the respondents commonly used communication skills as the top most skills acquired in college that is being used in their workplace. This implies that the skills they have learned and acquired in college has greatly influenced and prepared them to secure employment after graduation.

This study lays the groundwork for exploring the multifaceted dimensions of tracer studies, encompassing employability, skills utilization, curriculum relevance, and the integration of interdisciplinary knowledge. By examining the findings and insights derived from the survey, it becomes evident how mathematics education shapes graduates' abilities to navigate and contribute to various sectors within the professional landscape.

The tracer study reflects the adaptability and relevance of a Bachelor of Science in Mathematics degree in today's diverse job market. The versatility of mathematical skills is evident in the varied industries where graduates have made significant contributions. The findings underscore the importance of promoting interdisciplinary education to bridge the gap between theoretical knowledge and real-world applications.

Conclusion and Recommendation

The tracer study of Bachelor of Science in Mathematics graduates highlights the multifaceted nature of career opportunities available to individuals with a mathematics background. The degree equips graduates with invaluable skills that transcend specific job roles and industries, fostering a workforce capable of addressing complex challenges in diverse professional settings. Continued research into career trajectories, skill relevance, and curriculum enhancement will aid in optimizing mathematics education, ensuring graduates are well-equipped for diverse and evolving career opportunities. Hence, research could focus on longitudinal studies tracking the long-term impact and career progression of mathematics graduates to provide deeper insights into their professional journeys.

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