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**Research Article**

# Understanding Graduate Pathways: A Tracer Study on the Post-Graduation Outcomes of BS Electronics Engineering Graduates from Mindanao State University – General Santos

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**Abstract**

This study aimed to examine the post-graduation outcomes of Bachelor of Science Electronics Engineering (ECE) graduates from Mindanao State University – General Santos (MSU-GSC) for the years 2018 to 2023, focusing on employment trends, career development, and curriculum responsiveness to industry needs. A descriptive research design was employed through a graduate tracer study using an online survey disseminated via institutional emails, social media, and direct messages. Out of 103 graduates, 70 responded, providing data on employment status, licensure achievements, plans for further studies, and the perceived relevance of academic training to their careers. Results showed that the program had been generally effective in developing core engineering competencies, as evidenced by a high licensure rate and employment in relevant technical roles. Graduates reported strong preparation in foundational engineering principles, teamwork, and critical thinking. However, gaps were identified in the integration of emerging technologies, sustainability concepts, practical training, and laboratory resources, limiting exposure to real-world applications and industry practices. Challenges such as limited internship-to-employment transitions, lack of entrepreneurial engagement, and occasional unemployment due to insufficient experience also emerged. Overall, the findings demonstrated that while the BS ECE program successfully prepared graduates for technical roles and professional licensure, targeted enhancements in curriculum design, industry collaboration, and experiential learning were necessary to maintain relevance and competitiveness in a dynamic labor market.

Keywords: *electronics engineering, tracer study, program impact, curriculum responsiveness, career development*

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## Introduction

The transition from higher education to professional employment was a pivotal stage that significantly influenced graduates' career trajectories. A systematic examination of post-graduation outcomes offered essential insights into the effectiveness of academic programs in equipping students with the competencies required for industry demands, entrepreneurial endeavors, and advanced education. In engineering education, particularly in Electronics Engineering, tracking graduates' career progress was essential to evaluate curriculum relevance, alignment with industry

needs, and the overall impact of academic experience on professional success.

Graduate tracer studies served as an essential tool in higher education research, providing empirical evidence on employment trends, skill utilization, and professional development (Achmad et al., 2023; Albina & Sumagaysay, 2020). Research indicated that the employability of engineering graduates depended not only on technical proficiency but also on soft skills, adaptability, and industry linkages established during their academic years (Ezika et al., 2022). Moreover, emerging technologies and interdisciplinary competencies needed to be incorporated into engineering education to keep pace with a rapidly evolving job market (Ramos et al., 2024; Teichler, 2018). The role of strong industry-academe collaboration had also been well-documented as a key driver in aligning academic outputs with labor market expectations (Wrench, 2015).

Despite these insights, gaps remained—particularly in local contexts where program-specific, institution-based data were limited. While national or regional-level tracer studies provided generalized findings, few explored the direct connection between curriculum outcomes and employment results in specific degree programs within public universities in Mindanao. Lozarita (2017) conducted a tracer study on Electronics Engineering graduates from the University of Mindanao, offering important but geographically limited insights. Similarly, Curbano and Bustamante (2018) examined Industrial Engineering graduates from a private institution in Luzon, and Estacio (2023) investigated graduate skill relevance in an unnamed local university. More recently, Abana et al. (2019) studied the employability of engineering graduates from Saint Louis University, highlighting curricular effectiveness and employment sectors. Loquias (2015) also assessed the employability of Electronics Engineering graduates from Camarines Sur Polytechnic Colleges, underlining the importance of curriculum-industry alignment. While these studies contributed to national discourse, few were situated in Mindanao and fewer still focused on the BS Electronics Engineering program in public universities. The current research sought to address this gap by providing empirical, program-specific evidence from Mindanao State University – General Santos (MSU-GSC).

Mindanao State University – General Santos had long been committed to academic excellence and the holistic development of its students. However, limited empirical data existed on the career paths of its BS Electronics Engineering (ECE) graduates, necessitating a thorough tracer study to evaluate their employability, career achievements, and professional development. While the program consistently produced a significant number of licensed electronics engineers, including topnotchers, it remained unclear how these academic accomplishments translated into employment opportunities and career progression. Additionally, there was insufficient evidence to determine whether the program effectively met its Program Educational Objectives (PEOs), which defined the expected competencies of graduates.

To address these gaps, the study aimed to (1) identify the factors that influenced students' decision to pursue BS Electronics Engineering and analyze their demographic profiles in relation to post-graduation outcomes; (2) evaluate the perceived effectiveness of the BS ECE curriculum in preparing graduates for professional development, including the attainment of PEOs; (3) identify licensure achievements, further study plans, and factors contributing to employment, unemployment, and job retention; (4) assess the relevance and application of academic training and acquired skills in graduates' current employment settings; and, (5) determine the employment status, career trajectories, and organizational affiliations of BS Electronics Engineering graduates from MSU-GSC (2018–2023).

By examining the post-graduation experiences of BS ECE graduates from 2018 to 2023, this research generated insights to inform curriculum enhancements, strengthen industry-university linkages, and ensure the program's continued relevance. Beyond contributing to program development, the study offered scholarly value by linking graduate outcomes with curriculum responsiveness, thus filling a gap in program-level tracer studies in regional higher education institutions. Its findings were valuable not only to academic stakeholders but also to employers, prospective students, and policymakers. Ultimately, this study sought to equip the BS ECE program with the necessary adaptations to meet evolving industry demands and support the long-term success of its graduates.

## Materials and Methods

This study employed a descriptive research design through a graduate tracer study to evaluate the post-graduation experiences of Bachelor of Science in Electronics Engineering (BS ECE) graduates from Mindanao State University - General Santos (MSU-GSC) between 2018 and 2023. A descriptive research design was employed to quantitatively capture and summarize characteristics of the target population. This design

was appropriate for tracer studies, as it facilitated the exploration and interpretation of graduate employment trends, career progression, and curriculum responsiveness (McCombes, 2023).

The study was conducted within the academic setting of MSU-GSC, a public higher education institution in Southern Mindanao offering the BS ECE program.. The institution served as a key provider of engineering education in the region, making it a relevant setting for analyzing graduate employability in a local context.

Graduate tracer studies had been instrumental in assessing graduate employability, career progression, and the alignment of academic programs with industry requirements (Loquias, 2015; Lozarita, 2017). The target population comprised BS ECE graduates from 2018 to 2023, as presented in Table 1. Purposive sampling was used to identify respondents who met specific inclusion criteria: (1) graduates of the BS Electronics Engineering program from 2018 to 2023, and (2) individuals who could be contacted and were willing to respond to the online survey. This approach ensured the inclusion of graduates with relevant post-graduation experiences and provided valuable insights into employment trends and career development (Ezika et al., 2022). A total of 103 graduates were contacted, and 70 respondents successfully participated in the study, resulting in a response rate of 67.96%. A majority (75.71%) of the respondents came from public secondary schools, affirming MSU-GSC's role in providing accessible education. Geographically, most graduates were from General Santos City (52.86%), with others coming from nearby municipalities such as Koronadal City (12.86%), Polomolok (10.00%), and Sarangani Province (7.14%). A few graduates hailed from farther areas such as Palawan and the Davao Region, demonstrating the program's regional reach. These findings aligned with Schomburg (2016), who emphasized the importance of educational accessibility in shaping enrollment and mobility patterns.

Despite these efforts, the study had potential limitations. The perspectives of non-respondents may differ from those who participated, introducing the possibility of non-response bias. Additionally, the use of purposive sampling and reliance on voluntary responses may have led to self-selection bias, where graduates with more favorable or accessible post-graduation experiences were more likely to respond (Bethlehem, 2010).

Data were collected using an online survey administered via Google Forms. The survey instrument was adapted from the Commission on Higher Education (CHED) Graduate Tracer Survey (GTS) questionnaire, a standardized tool designed to assess graduate employability and improve curriculum development. The questionnaire was tailored to align with the specific objectives of this study. Data collection took place from May to July 2024, focusing on BS ECE graduates from 2018 to 2023, with periodic reminders issued to encourage participation. The survey was disseminated through multiple channels, including institutional emails, social media groups, and direct messages on personal and professional networks, to maximize response rates.

Collected data were analyzed using descriptive statistics, such as frequency distribution, weighted mean, and percentages (Ulanday & Toquero, 2024). Prior to participation, informed consent was obtained from all respondents, ensuring they were aware of the study's purpose and their rights as participants. Confidentiality and anonymity were maintained throughout the research process, adhering to ethical standards and institutional guidelines. Participation was voluntary, and respondents had the option not to participate or to withdraw from the study at any stage without any repercussions (Balba, 2019).

**Table 1.**

*Respondent Distribution by Academic Year*

| Academic Year | Number of Graduates | Number of Respondents | Percentage |
|---|---|---|---|
| 2018 - 2019 | 23 | 9 | 39.13% |
| 2019 - 2020 | 35 | 19 | 54.29% |
| 2020 – 2021 | 9 | 7 | 77.78% |
| 2022 - 2023 | 36 | 35 | 97.22% |
| **TOTAL** | **103** | **70** | **67.96%** |

## Results and Discussion

The findings of the tracer study addressed the objectives, namely: (1) to identify the factors that influenced the graduates' decision to pursue the BS Electronics Engineering program and to analyze their demographic profiles in relation to post-graduation outcomes; (2) to evaluate the perceived effectiveness of the BS ECE curriculum in preparing graduates for professional development, including the attainment of industry-required competencies and professional licenses; (3) to identify licensure achievements, further study plans, and factors contributing to employment, unemployment, and job retention; (4) assess the relevance and application of academic training and acquired skills in graduates' current employment settings; and, (5) determine the employment status, career trajectories, and organizational affiliations of BS Electronics Engineering graduates from MSU-GSC (2018–2023).

### Course Selection Factors and Graduate Profile

As presented in Tables 1 and 2, the tracer study recorded a 67.96% overall response rate, which increased significantly among more recent graduates, peaking at 97.22% for the 2022–2023 batch. The gender distribution was nearly balanced, with 51.43% male and 48.57% female respondents. Most graduates (98.57%) were single, indicating that they were in the early stages of their personal and professional development.

Figure 1 illustrated that the most influential factor in course selection was the availability of BS ECE at their chosen institution (16.19%). Other significant motivators included the opportunity to work abroad (13.81%), prospects for career advancement (9.52%), academic performance (8.57%), and the promise of immediate

**Table 2.**

*Demographic Profile of Graduates*

| Personal Demographic Information | Frequency | Percentage |
|---|---|---|
| Gender | | |
| Male | 36 | 51.43% |
| Female | 34 | 48.57% |
| Civil Status | | |
| Single | 69 | 98.57% |
| Married | 1 | 1.43% |
| **Secondary School Classification** | | |
| Public | 53 | 75.71% |
| Private | 17 | 24.29% |
| **Place of Residence** | | |
| Davao Region | 2 | 2.86% |
| General Santos City | 37 | 52.86% |
| Koronadal City | 9 | 12.86% |
| Norala | 1 | 1.43% |
| Palawan | 1 | 1.43% |
| Polomolok | 7 | 10.00% |
| Sarangani Province | 5 | 7.14% |
| Sto. Niño | 1 | 1.43% |
| Sultan Kudarat | 4 | 5.71% |
| Surallah | 2 | 2.86% |
| Tupi | 1 | 1.43% |

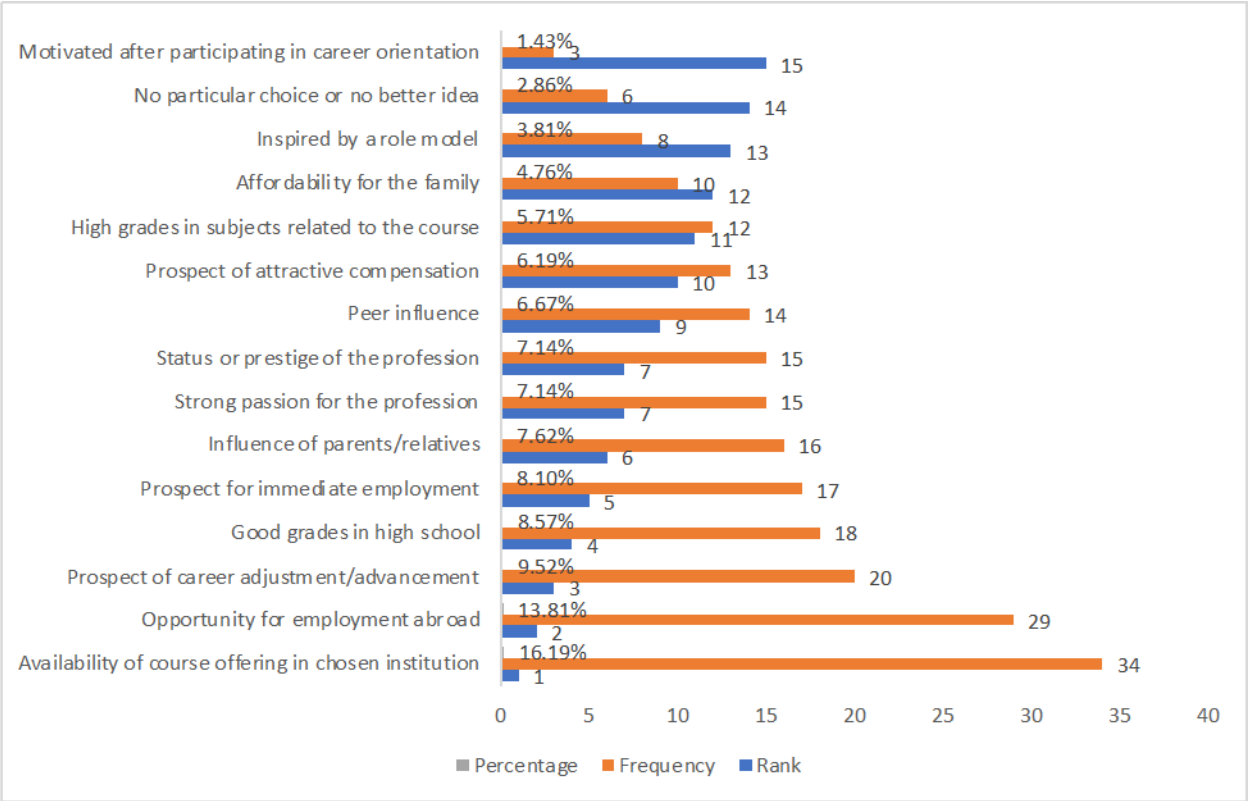



**Figure 1.**

*Factors Influencing Students' Decision to Pursue BS Electronics Engineering (BS ECE)*

employment (8.10%). Family influence (7.62%), passion for the profession (7.14%), and the perceived prestige of the field (7.14%) were also cited. Career orientation programs (1.43%) had minimal influence, suggesting a need to strengthen pre-college career guidance—a point supported by Gokuladas (2010), who found that employment prospects and accessibility were key in course selection decisions.

## Curriculum Effectiveness and Attainment of PEOs

The objective aimed at determining whether the BS ECE curriculum effectively supported graduates' professional growth and helped them achieve the expected Program Educational Objectives (PEOs) was illustrated in Figure 5. Most graduates agreed or strongly agreed that the program successfully met the PEOs. The strongest agreement (30%) was recorded for PEO3, which focused on participatory planning and stakeholder collaboration, indicating confidence in teamwork and engagement skills.

Graduates also gave favorable responses to PEO1 (application of scientific principles) and PEO2 (strategic planning and implementation), indicating strong preparation in foundational engineering competencies. These findings aligned with the learning outcomes identified by González and Wagenaar (2008) as essential for engineering education.

However, PEO4 (application of cutting-edge technologies) and PEO5 (designing sustainable solutions related to peace and cultural heritage) received higher neutrality and disagreement ratings. Specifically, 19% of respondents were neutral toward PEO4, and PEO5 received the highest neutrality (19%) and disagreement (13%) ratings. This implied that the curriculum lacked sufficient integration of emerging technologies and sustainability concepts. These gaps echoed findings by Lozano et al. (2015), who emphasized the importance of embedding sustainability and cultural awareness in engineering curricula to meet global development goals.

## Licensure, Further Studies, and Employment Outcomes

In the objective to examine the certification achievements of graduates, their intentions regarding further studies, and the underlying causes of their employment status and retention patterns, Table 3 showed that 60% of the respondents

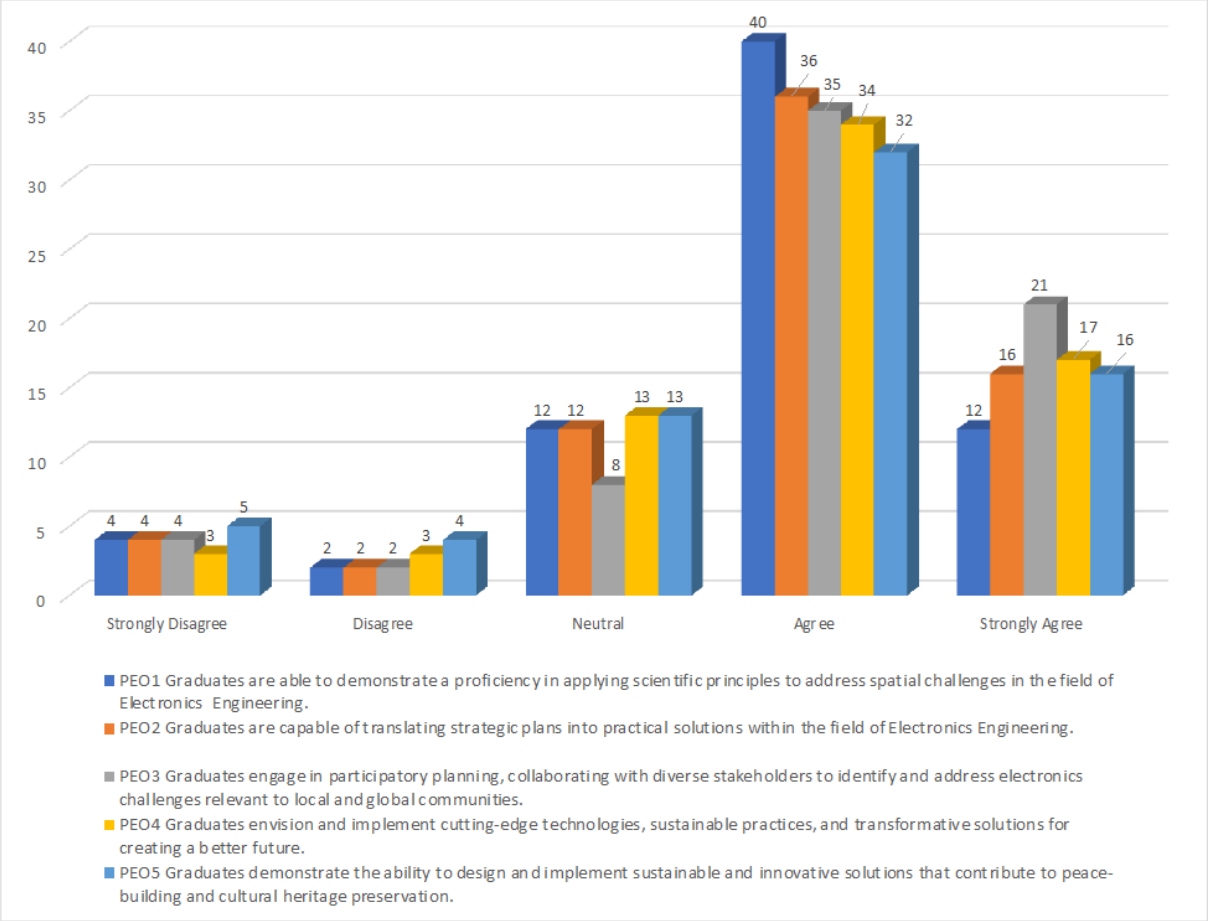



**Figure 5.**

*Attainment of BS ECE Program Educational Objectives (PEOs)*

**Table 3.**

*Professional Licenses Earned after Graduation and Plans for Further Studies*

| | Frequency | Percentage |
|---|---|---|
| ***Professional Classification*** | | |
| Electronics Engineer | 16 | 22.86% |
| Electronics Technician | 2 | 2.86% |
| Both an Electronics Technician and Electronics Engineer | 42 | 60.00% |
| Both an Electronics Engineer and a Licensed Teacher | 3 | 4.29% |
| No Licensure Exam Taken | 7 | 10.00% |
| ***Plans for Graduate Studies*** | | |
| Yes, I plan to in the next 1-3 years. | 29 | 41.43% |
| Yes, I am currently taking my graduate degree. | 1 | 1.43% |
| Yes. I have already earned my graduate degree. | 0 | 0.00% |
| No. Not at the moment but I am considering it. | 37 | 52.86% |
| No. Taking graduate studies is not part of my plan. | 3 | 4.29% |

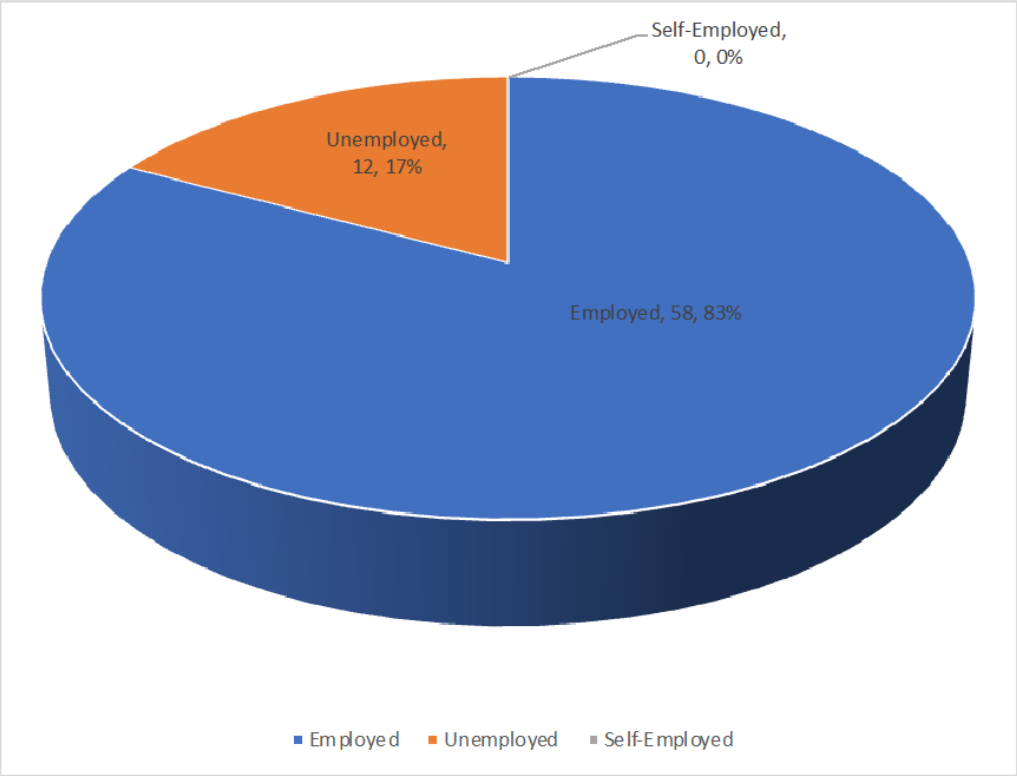



**Figure 2.**

*Employment Status of Graduates*

obtained dual professional licenses (Electronics Engineer and Electronics Technician), while 22.86% held only the Electronics Engineer license. Only 10.00% had not taken any licensure exam. These outcomes supported the assertion of Caballero et al. (2011) that licensure positively influenced employability in technical professions.

Regarding further studies, 52.86% of graduates expressed a desire to pursue postgraduate education but had not made concrete plans, while 41.43% planned to enroll in graduate programs within 1–3 years. Only 1.43% were currently pursuing graduate studies, and no graduate had yet earned a postgraduate degree. A small proportion (4.29%) had no plans for further education.

Employment data in Figure 2 revealed an 82.86% employment rate, suggesting successful workforce integration for most graduates. However, the complete absence of self-employed individuals (0.00%) highlighted a lack of entrepreneurial activity. This reflected trends observed by the OECD (2019a), which noted low entrepreneurial engagement among engineering graduates in the Philippines.

Among the unemployed (17.14%), the top reason cited was lack of work experience (27.78%), followed by lack of job opportunities (16.67%) and preference for better-paying jobs (11.11%). Others reported prioritizing exam preparation (11.12%) or experiencing personal constraints (5.56%), such as family obligations or health issues. These findings aligned with research on the mismatch between academic preparation and job market demands, where graduates may face challenges in translating credentials into appropriate employment opportunities (Yorke, 2006; Tomlinson, 2008).

The tracer study further revealed a notable blend of job stability and mobility among Electronics Engineering graduates. Shown in Table 6, approximately 45.9% of respondents reported that their first job remained their current employment, while a slightly larger proportion, 52.5%, had since transitioned to other roles. This suggested a balanced dynamic where many maintained long-term employment but a fair share engaged in early career shifts—possibly in pursuit of better alignment, growth, or compensation.

In terms of job search duration, nearly half (48.4%) secured employment within one to two years, while 40.3% found work within six months, and a modest 8.1% landed a job in less than a month. This distribution reflected a labor market where immediate employment was feasible, but many still contended with extended job-search periods.

First-job duration further confirmed varied

**Table 6.**

*First Job Profile of BS ECE Graduates*

| Category | Frequency | Percentage |
|---|---|---|
| ***Graduates Whose First Job Was Also Their Current Job*** | | |
| No | 32 | 52.46% |
| Yes | 28 | 45.9% |
| ***Time Interval Between Graduation and First Job Acquisition*** | | |
| Less than a month | 5 | 8.06% |
| 1 to 6 months | 25 | 40.32% |
| 1–2 years | 30 | 48.39% |
| 2–3 years | 1 | 1.61% |
| ***Duration of Graduates' First Job*** | | |
| Less than a month | 1 | 1.56% |
| 1 to 6 months | 15 | 23.44% |
| 1–2 years | 17 | 26.56% |
| 2–3 years | 3 | 4.69% |
| 3–4 years | 5 | 7.81% |
| Above 4 years | 2 | 3.13% |
| Still in first job | 17 | 26.56% |
| No response / N/A | 4 | 6.25% |
| ***Methods Used to Obtain First Job*** | | |
| Recommended by someone | 23 | 35.94% |
| Information from friends | 7 | 10.94% |
| Response to advertisement/online | 10 | 15.63% |
| Walk-in applicant | 5 | 7.81% |
| Job fair / career caravan | 5 | 7.81% |
| Return of service | 3 | 4.69% |
| School-affiliated source | 1 | 1.56% |
| Others / unclear | 10 | 15.63% |
| ***Job Level in First Job*** | | |
| Technical | 29 | 45.31% |
| Managerial/Supervisory | 6 | 9.38% |
| Planning/Training | 3 | 4.69% |
| Rank and File/Entry | 6 | 9.38% |
| Teaching | 6 | 9.38% |
| No response / N/A | 8 | 12.5% |
| ***Initial Monthly Earnings in First Job*** | | |
| Below ₱5,000 | 2 | 3.13% |
| ₱5,000–₱9,999 | 7 | 10.94% |
| ₱10,000–₱14,999 | 15 | 23.44% |
| ₱15,000–₱19,999 | 10 | 15.63% |
| ₱20,000–₱24,999 | 8 | 12.5% |
| ₱25,000–₱29,999 | 6 | 9.38% |
| ₱30,000 and above | 1 | 1.56% |
| Prefer not to declare | 9 | 14.06% |
| ***Perceived Relevance of BS ECE Curriculum to First Job*** | | |
| Yes | 44 | 68.75% |
| No | 20 | 31.25% |

early-career experiences: 26.6% were still in their first job, 26.6% stayed in it for 1–2 years, and 23.4% remained for only 1–6 months, highlighting both retention and turnover tendencies. Regarding job acquisition, 35.9% found their first job through recommendations, 15.6% via advertisements or online platforms, and 10.9% through friends. The reliance on personal networks underscored the importance of social capital in early employment strategies.

Job roles skewed heavily toward technical functions, with 45.3% entering technical positions, while managerial/supervisory, entry-level/rank-and-file, and teaching roles each accounted for 9.4%. Planning and training roles represented 4.7%, indicating that most graduates began in roles aligned with technical competency.

Importantly, 68.8% of respondents affirmed that their job was related to their academic curriculum, reinforcing the program's relevance. However, the remaining 31.2% whose jobs were unrelated pointed to opportunities for broadening interdisciplinary competencies and offering targeted career guidance.

Figure 4 on job retention indicated that salary and benefits (26.11%) were the primary reason graduates remained in their current roles. Job relevance (17.20%), career growth (13.38%), and the opportunity to gain experience (12.74%) were also key motivators. Practical considerations such as proximity to residence (11.46%) further influenced retention. Social influences and flexible arrangements had minimal impact. These results were consistent with Herzberg's two-factor theory, which recognized compensation as a hygiene factor and professional development as a motivator driving job satisfaction (Herzberg, 1966).

**Relevance of Academic Training to Professional Practice**

In the objective intended to evaluate how well the academic experiences and skills developed during the BS ECE program translated into professional practice, as reported in Table 7, 94% of graduates acknowledged that their education was at least somewhat relevant to their current job, although only 34% found it highly relevant. A significant majority identified limitations such as insufficient hands-on experience (81%), inadequate laboratory facilities (69%), and a lack of practical or industry-specific knowledge (57%).

Despite these shortcomings, graduates recognized the curriculum's strength in developing critical thinking (84%) and teamwork skills (69%). However, only 36% reported sufficient practical experience, underscoring the need to reinforce experiential learning.

Graduates proposed several solutions: increasing practical training (90%), integrating theory with real-world applications (81%), and expanding mentorship and internship opportunities (79% and 74%, respectively). These suggestions

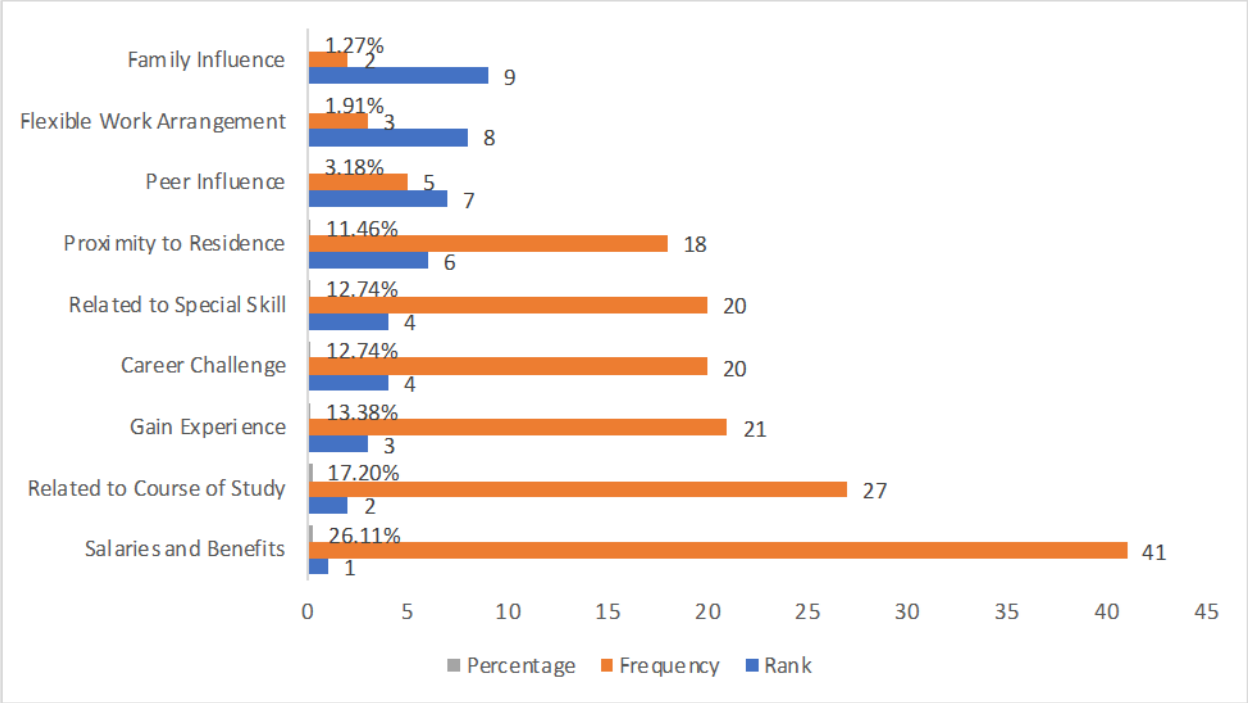



**Figure 4.**

*Reasons for Staying in Current Job*

**Table 7.**

*Survey Results of College Curriculum Effectiveness in Graduate Professional Development*

| Category | Response Options | Frequency | Percentage |
|---|---|---|---|
| ***Experiential Learning Activities Participation*** | | | |
| | Yes, extensively | 8 | 11% |
| | Yes, moderately | 30 | 43% |
| | Yes, minimally | 26 | 37% |
| | None | 6 | 9% |
| ***Direct Application of College Courses to Professional Role*** | | | |
| | Yes, many | 21 | 30% |
| | Yes, some | 45 | 64% |
| | No, none | 4 | 6% |
| ***Alignment of College Education with First Job Requirements*** | | | |
| | Very Aligned | 14 | 20% |
| | Aligned to some extent | 48 | 69% |
| | Not very aligned | 7 | 10% |
| | Not aligned at all | 1 | 1% |
| ***Relevance of College Education to Job Responsibilities*** | | | |
| | Highly relevant | 24 | 34% |
| | Somewhat relevant | 42 | 60% |
| | Not very relevant | 4 | 6% |
| | Not relevant at all | 0 | 0% |
| ***Gaps in the College Curriculum*** | | | |
| | Lack of practical skills development | 40 | 57% |
| | Insufficient emphasis on industry-specific knowledge | 40 | 57% |
| | Inadequate preparation for real-world challenges | 29 | 41% |
| | Limited opportunities for hands-on experience | 57 | 81% |
| | Inadequate laboratory equipment/facilities | 48 | 69% |
| ***College Curriculum Contributions to Professional Development*** | | | |
| | Developed relevant technical skills | 36 | 51% |
| | Enhanced critical thinking and problem-solving abilities | 59 | 84% |
| | Improved communication skills | 41 | 59% |
| | Facilitated teamwork and collaboration | 48 | 69% |
| | Provided opportunities for practical experience (e.g., internships, projects) | 25 | 36% |
| ***Desired Enhancements in the College Curriculum*** | | | |
| | More practical training | 63 | 90% |
| | Greater emphasis on industry-specific knowledge | 52 | 74% |
| | Enhanced career guidance and counseling | 39 | 56% |
| | Increased opportunities for networking and internships | 52 | 74% |
| | Diverse elective subjects not only focusing entirely on programming | 1 | 1% |
| | General guidance on professional fields for knowledge application | 1 | 1% |
| | More exposure to the semiconductor industry | 1 | 1% |
| ***Proposed Curriculum Improvements*** | | | |
| | Enhance integration of theoretical knowledge with practical applications | 57 | 81% |
| | Increase industry collaboration and partnerships | 56 | 80% |
| | Offer more specialized tracks or concentrations | 52 | 74% |
| | Provide mentorship opportunities with industry professionals | 55 | 79% |
| | Do not centralize all elective subjects to programming-based subjects only | 1 | 1% |

aligned with the recommendations of Jackson (2015), who emphasized the value of work-integrated learning in improving graduate employability.

In addition, respondents called for improved lab equipment, instructor accountability, and more specialized course tracks—such as Microelectronics—instead of limited options like Programming. The call to modernize facilities with oscilloscopes, frequency analyzers, and other relevant tools reflected the need to bridge the gap between academic preparation and industry standards, as echoed by Male, Bush, and Chapman (2011).

## Employment Status and Career Trajectories

The objective focused on understanding graduates' current employment status, their job roles, salary ranges, and the nature of their affiliations or organizational settings was presented in Tables 4 and 5. Graduates holding permanent positions comprised 60.34%, while 39.66% were in contractual, temporary, or casual roles. Most were employed in technical positions (41.38%), followed by teaching roles (15.52%) and managerial roles (10.34%). No respondent reported being in an executive-level position, which was expected given the early stage of their careers.

In terms of income, 18.97% earned ₱30,000 and above, while most respondents fell within the mid-income range. Only 1.72% earned below ₱5,000. Notably, 25.86% opted not to disclose their income, which might have reflected discomfort around income disparities or privacy concerns.

Only 15.52% of graduates were hired by an internship partner, suggesting that internship-to-employment pathways were underutilized. This contrasted with Wilton's (2012) findings that effective internship programs significantly

**Table 4.**

*Employment Data of Graduates*

| | Frequency | Percentage |
|---|---|---|
| ***Employment Category*** | | |
| Regular or Permanent | 35 | 60.34% |
| Contractual | 11 | 18.97% |
| Temporary | 9 | 15.52% |
| Casual | 3 | 5.17% |
| ***Position Level*** | | |
| Executive/President | 0 | 0.00% |
| Managerial/Supervisory | 6 | 10.34% |
| Planning/Training | 3 | 5.17% |
| Technical | 24 | 41.38% |
| Research | 0 | 0.00% |
| Teaching | 9 | 15.52% |
| Rank and File | 8 | 13.79% |
| Not indicated/No Response | 8 | 13.79% |
| ***Gross Monthly Income*** | | |
| Below 5,000 pesos | 1 | 1.72% |
| above 5,000 to almost 10,000 pesos | 1 | 1.72% |
| above 10,000 to almost 15,000 pesos | 4 | 6.90% |
| above 15,000 to almost 20,000 pesos | 6 | 10.34% |
| above 20,000 to almost 25,000 pesos | 10 | 17.24% |
| above 25,000 to almost 30,000 pesos | 10 | 17.24% |
| 30,000 pesos and above | 11 | 18.97% |
| Rather not Declare | 15 | 25.86% |
| ***Hired by MSU-GSC Internship Partner or Linked Organization*** | | |
| Yes | 9 | 15.52% |
| No | 49 | 84.48% |
| ***Current Job also the First Job Held*** | | |
| Yes | 28 | 48.28% |
| No | 30 | 51.72% |

**Table 5.**

*Employment Distribution and Organizational Affiliation of Graduates*

| | Frequency | Percentage |
|---|---|---|
| ***Industry Sector*** | | |
| Accommodation and Food Services | 0 | 0.00% |
| Administrative and Support Services | 4 | 6.90% |
| Agriculture, Hunting and Forestry | 1 | 1.72% |
| Arts, Entertainment and Recreation | 3 | 5.17% |
| Business Process Outsourcing (BPO) | 1 | 1.72% |
| Construction | 2 | 3.45% |
| Education | 9 | 15.52% |
| Electricity, Gas and Steam, and Air Conditioning Supply | 5 | 8.62% |
| Extra-Territorial Organization and Bodies (Fishing) | 1 | 1.72% |
| Financial and Insurance Activities | 1 | 1.72% |
| Human Health and Social Work Activities | 1 | 1.72% |
| Information and Communication | 12 | 20.69% |
| Manufacturing | 11 | 18.97% |
| Mining and Quarrying | 0 | 0.00% |
| Professional, Scientific and Technical Activities | 6 | 10.34% |
| Public Safety | 0 | 0.00% |
| Real Estate, Renting and Business Activities | | 0.00% |
| Transport and Storage | 1 | 1.72% |
| Water Supply, Sewerage, Waste Management and Remediation Activities | 0 | 0.00% |
| Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles | 0 | 0.00% |
| ***Type of Legal Organization*** | | |
| National Government | 9 | 15.52% |
| Local Government/City | 5 | 8.62% |
| Private Corporation/Stock Corporation | 32 | 55.17% |
| Private Partnership/Cooperative | 5 | 8.62% |
| Government Controlled Corporation | 3 | 5.17% |
| Non-Government/Non-Profit Organization | 4 | 6.90% |

improved graduate employment outcomes.

Job retention data showed that 48.28% of graduates remained in their first job, indicating a nearly even divide between those who stayed and those who shifted careers. This finding aligned with Ng et al. (2007), who observed that early-career professionals often changed jobs to pursue better opportunities or align with personal career goals.

The findings indicated that MSU-GSC BS ECE graduates were generally well-prepared in foundational competencies, employable in technical roles, and positioned for professional growth, though gaps remained in practical skills, emerging-technology exposure, and structured career pathways. Motivations for course selection such as program availability, overseas opportunities, and career advancement aligned with national trends where employability drove program choice (Gokuladas, 2010; Ong & Chua, 2019). Employment outcomes, including an 82.86% employment rate and high licensure attainment, were consistent with national engineering benchmarks (CHED, 2020), though the absence of self-employment underscored limited entrepreneurial engagement (OECD, 2019b).

Curricular effectiveness was strongest in teamwork, strategic planning, and scientific application, reflecting global engineering competencies (González & Wagenaar, 2008). However, limited exposure to cutting-edge technologies, sustainability, and interdisciplinary skills mirrored regional challenges in engineering

education (Lozano et al., 2015; Male et al., 2011). Graduates' feedback on insufficient hands-on training and laboratory facilities reinforced the need for expanded work-integrated learning, internships, and mentorship programs to bridge academia-industry gaps (Jackson, 2015).

Employment patterns, particularly in reliance on personal networks, varied job tenure, and a mix of technical and managerial roles highlighted the influence of social capital and early-career mobility (Tomlinson, 2008; Yorke, 2006). The partial mismatch between curriculum and job requirements suggested the need for industry collaboration, specialized course tracks, and targeted career preparation to enhance employability and career alignment as supported by Faustino et al. (2025), who argued for stronger academia–industry partnerships, and Alwi and Karim (2025), who called for curriculum modernization and experiential learning to bridge the skills gap. This finding also aligned with calls from the Philippine Institute for Development Studies (PIDS, 2024) to modernize curricula and increase institutional cooperation among academia, industry, and government to better respond to employer demands. Moreover, strengthening internships and workplace training through structured academic–industry partnerships had been highlighted as an effective strategy to bridge this gap.

### Study Limitations and Future Directions

Study limitations included reliance on self-reported data, uneven batch response rates, and the absence of employer perspectives. Future research could include longitudinal tracking, employer feedback, and comparative studies across engineering programs, as well as evaluations of interventions such as technology integration, internship expansion, and entrepreneurship training to further improve graduate outcomes.

## Conclusion

This paper generated insights into the post-graduation outcomes of BS Electronics Engineering graduates from Mindanao State University – General Santos between 2018 and 2023. The findings indicated that the program had been generally effective in developing graduates' core engineering competencies, as reflected in the high proportion of licensed professionals, the prevalence of employment in technical positions relevant to the field, and the positive evaluation of the Program Educational Objectives (PEOs). Graduates acknowledged strong preparation in foundational engineering principles, teamwork, and critical thinking, which are essential for professional success. However, neutral or lower ratings for PEOs related to emerging technologies and sustainable solutions revealed a gap in integrating industry practices and sustainability concepts into the curriculum. Furthermore, while most graduates secured employment within two years of graduation, the absence of entrepreneurial activity, limited internship-to-employment transitions, and instances of unemployment due to insufficient work experience underscored the need for greater emphasis on practical and industry-linked training. Concerns regarding inadequate laboratory facilities, limited hands-on experience, and the narrow range of specialized course offerings also highlighted opportunities for improvement. Overall, the results demonstrated that while the BS ECE program has been successful in preparing graduates for technical roles and professional licensure, targeted enhancements in curriculum design, industry collaboration, and experiential learning are necessary to ensure continued relevance and competitiveness in a dynamic labor market.

In response to these findings, it is recommended that the program enhance its curriculum to integrate emerging technologies and sustainability concepts, complemented by specialized tracks. Practical and industry-based learning should be strengthened through upgraded laboratory facilities, project-based activities, and real-world applications. Expanding industry partnerships is essential to increase internship opportunities, establish clear employment pathways, and involve practitioners as mentors. Entrepreneurial development may be fostered through targeted modules, workshops, and innovation-focused events. Career guidance must be reinforced to equip graduates with job search skills and address employment barriers, while soft skills development in communication, teamwork, and leadership should remain a priority. Finally, institutionalizing periodic graduate tracer studies and feedback mechanisms will enable the continuous monitoring of employment trends, skills alignment, and curriculum effectiveness, ensuring that program improvements are responsive to both industry needs and the evolving career pathways of graduates.

## Author's Contribution

TMO led this research endeavor, with invaluable support from the ECE faculty, particularly in formulating survey questions and facilitating the distribution of questionnaires. TMO conceptualized and designed the study, oversaw data collection, conducted data analysis and interpretation, and authored the initial manuscript

draft. RMCP, ACS, and JRA played a significant role in refining the research framework and survey instruments, as well as assisting in data collection. Additionally, they contributed to the manuscript's revision, ensuring its intellectual depth and coherence.

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