

# Mechanical Engineering Graduates of School Years 2012-2017: A Tracer Study

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**Abstract** — The findings of the tracer research of Bachelor of Science in Mechanical Engineering graduates of the University of Cebu-Main Campus who graduated between 2012 and 2017 are discussed in this paper. The main objective of this study was to assess the graduates' professional standing to formulate an action plan for the University of Cebu College of Engineering Program. It was determined that the study will evaluate the relevance and effectiveness of the BSME curricula, the graduates' knowledge, abilities, and values in the workplace, as well as other educational aspects affecting their careers. The researchers used a descriptive design utilizing the questionnaire adopted from the CHED tracer study. A total of 136 graduates responded to this study. Most graduates have careers that are relevant to their degree programs. The undergraduate curriculum's key merit was its relevance to professional requirements. The survey did, however, identify extracurricular activities and a few elective disciplines as possibilities for improvement. To align with the global education system, the institution must promote student mobility, quality assurance, and research clusters as key priorities.

**Keywords**— Academic Competency, Mechanical Engineering, Professional Standing, Graduation, Tracer Study.

## I. INTRODUCTION

The building of one's curriculum must include tracer study as a vital source. Universities and institutions can gauge how satisfied graduates are with the atmosphere, services, and facilities at their institutions through tracer studies. The university can evaluate the applicability of its many curricula, which will help raise the standard of instruction there.

Determine the employment status of Mechanical Engineering graduates from 2012 to 20217. The institution's constant goal is to produce graduates with the knowledge and skill set necessary to meet local and international standards, enhancing the value of a tracing study. Through this study, the university will be able to assess the importance and applicability of the programs it offers, improve those programs, and offer its constituents a high-quality education.

The usefulness and applicability of the BSME curricula, the graduates' knowledge, abilities, and values in the workplace, as well as other educational aspects affecting their employment, will all be examined in the study.

### A. Statement of the Problem

The University of Cebu's Mechanical Engineering Graduates from the S.Y. 2012 – 2017 will be evaluated in the study to ascertain their professional status. An intervention plan that is suggested will be built on the findings.

The research aimed to address the following questions in particular:

1. In terms of the following personal traits, the graduates' gender, and the Date of Graduation are very significant.
2. the graduates' present employment situation and job title.
3. the graduates' need for the program's educational goals.
4. Professional Mechanical Engineering education (such as Powerplant, Industrial Plant, and Machine Design), Science and Engineering Mathematics, and Courses in General Education all play a role in determining how applicable the knowledge and skills students acquire in school are to their chosen field of employment.
5. the graduates should possess to make the curriculum more applicable to the jobs of today.
6. When graduates are classified by year of graduation, there is a considerable difference in how relevant they believe the program's educational objectives are.
7. The possible intervention strategy.

### B. Cited Sources

The Commission on Higher Education (CHED), PACUCOA Accreditors, carefully examines the learning requirements in various universities for higher education considering the rising complexity of the twenty-first century. One of these crucial elements is a tracer study that will be done on university graduates. University Graduate Tracer Studies are frequently becoming a well-known practice all around the world. According to [2], "One of the present researchers' recommendations is for academic leaders, alumni, and business representatives to review the curriculum regularly to make sure that graduates are prepared with the knowledge and skills needed in the industry. This will help to further improve the marketability of BSIT and BSCS programs and the employability of the graduates they produce".

It was also researched that despite conflicting results on personality and entrepreneurial attributes, even though business skills improved, the program raised graduates' hopes for the future [3].

A research study also revealed that stakeholder groups were blaming each other for who should be held accountable for the skills gap, with factors related to impractical university curricula, ongoing changes in the labor market, and students' passivity in planning and developing their careers being perceived as the most influential [4].

“It has been discovered that regardless of the job in question, some of the most sought-after skills are related to interpersonal relations, adaptability, and negotiation skills, which communicative competencies have also been studied using pedagogical, linguistic, and communicative approaches. It is believed that communicative competence can greatly help new graduates develop their potential socially and professionally” [5]. Additionally, "competitive graduates in the labor market generally depend on the programs' solid curricula. To compete for jobs in diverse industries, graduates are competing with one another. Many graduates struggle to find employment due to the lack of opportunities available [6].

Therefore, it has become difficult to overlook the employability of graduates in the global market [7]. These types of studies are now the primary methods for identifying the areas of strength and weakness among an institution's alumni. According to [8], "Graduate tracer studies (GTS) are important to Higher Education Institutions because they enabled such institutions to accommodate changes in the society, particularly the demands of the actual and potential employers, through evaluation and constant review of their curricula. So, the current investigation is carried out.

II. METHODOLOGY

The researchers will employ a descriptive research design, in which the researcher just describes the current situation without trying to influence any of the variables [1]. Graduates of the University of Cebu's BSME program from the years 2017 to 2021 are among the target respondents for the tracer study. All the graduates from the specified year will make up the responses. The list of graduates provided by the university's registrar's office will be the basis for the researchers' identification of the graduates.

Researchers from the University of Cebu's BSME department will be undertaking this study. The faculty anticipate gathering, tabulating, analyzing, and delivering reliable judgments because they have a wide range of knowledge in various Mechanical Engineering procedures.

A. Data Gathering

When gathering data, the researchers will take a quantitative method. Based on the study's goals, a survey questionnaire will be created.

Google Docs Survey Facility will be utilized to create the online survey for the Tracer Study and PEO. It'll be accessible through the official Gmail account for the ME Department. Three sections make up the questionnaire: POE, Skill-Competencies learned in school and the profile and history of the interviewees.

The online Tracer Study / PEO survey questionnaire will be sent individually through the latest email address of the alumni. To attain a minimum return of accomplished survey forms, the researchers will also utilize the Private Group Page / Group Chat on Facebook and Messenger.

Quantitative data will be generated using the appropriate statistical methods.

Throughout the Study, the researchers will uphold confidentiality and appropriate research etiquette.

TABLE 1: Distribution of Research Respondents

School Year	No. of Graduates	Sample	Percentage
2012-2013	87	29	33.33%
2013-2014	97	32	32.99%
2014-2015	63	24	38.10%
2015-2016	57	28	49.12%
2016-2017	110	23	20.91%
<b>TOTAL</b>	<b>414</b>	<b>136</b>	<b>32.85%</b>

III. RESULTS AND DISCUSSION

TABLE 2: Profile of the BSME Graduates

	Frequency	Percentage
<b>Gender</b>		
Male	111	81.62%
Female	25	18.38%
<b>Civil Status</b>		
Single	91	66.91%
Married	40	29.41%
Born a child but not married	5	3.68%
<b>Region of Origin</b>		
7	115	84.56%
8	14	10.29%
10	7	5.05%

Table 2 shows that eighty-one-point sixty-two (81.62%) are male. Most of the respondents are single and are from Region 7, which comprises eighty-four-point fifty-six percent (84.56%) of the sample.

TABLE 3: Current Employment Status of the Graduates

	Frequency	Percentage
Employed	129	94.85%
Unemployed	7	5.15%
Never	0	0.00%

Table 3 presents the employment status of the graduates. Out of 136 respondents, 129, or 94.85% were employed and 7, or 5.15% were unemployed.

TABLE 4: Graduates with advanced studies and their reasons

	Frequency	Percentage	Rank
For promotion	9	6.62%	3
For professional development	22	16.18%	2
No reason	2	1.47%	4
No advanced studies have taken	103	75.74%	1

Table 4 shows that one-hundred-three (103) had not taken advanced studies, twenty-two (22) chose to have advanced or further study for professional development, nine (9) for promotion, and two (2) without any reason.

TABLE 5: Employment Data of Graduates

	Frequency	Percentage
<b>Present Employment Data</b>		
Regular or Permanent	58	42.65%
Casual	13	9.56%
Contractual	45	33.09%
Self-employed	20	14.71%
<b>Place of Work</b>		
Local	87	63.97%
Abroad	49	36.03%
<b>Gross Monthly earnings on the first job</b>		
P5,000.00 to less than P10,000.00	27	19.85%
P10,000.00 to less than P15,000.00	54	39.71%
P15,000.00 to less than P20,000.00	27	19.85%
P20,000.00 to less than P25,000.00	14	10.29%
P25,000 and above	14	10.29%

Table 5 shows the employment data of the graduates. Fifty-eight or 42.65% of the employed graduates are regular or permanent employees; thirteen or 9.56% are casual; forty-five or 33.09% are contractual, and twenty, or 14.71% are self-employed.

Following the Philippine Standard Occupational Classification (PSOC) [9], results revealed that eighty-seven, or 63.97% work locally, and forty-nine, or 36.03% work abroad.

On their first jobs, twenty-seven or 19.85% of the graduates made fifteen thousand to less than twenty thousand gross monthly income. Fourteen or 10.29% were making twenty-five thousand and above gross monthly income.

TABLE 6: Field of Employment of Graduates

	Frequency	Percentage
<b>Line of business of the company</b>		
Manufacturing	15	11.03%
Electricity, Gas, and Water Supply	14	10.29%
Construction	25	18.38%
Wholesale and Retail Trade	13	9.56%
Real Estate, Renting and Business Activities	20	14.71%
Education	30	22.06%
Other community, social and personal activities	9	6.62%
Private households with employed persons	5	3.68%
Extra-territorial Organizations and Bodies	5	3.68%
<b>The best reason for accepting the jobs</b>		
Salaries and benefits	43	31.62%
Career challenge	51	37.50%
Related to special skills	33	24.26%
Proximity to residence	9	6.62%

Table 6 presents the field of employment of the graduates. The result showed that the majority, or 22.06% of the respondents, work in the academe, followed by construction which is 18.38% of the respondents. The best reason for accepting the job is career challenge or 37.50%, followed by salaried and benefits, 31.62%.

TABLE 7: Strategies to Find the First Job

Method of applying on their first job	Frequency	Percentage	Rank
Response to an advertisement	19	13.97%	4
As walk-in applicant	44	32.35%	1
Recommended by someone	43	31.62%	2
Information from Friends	28	20.59%	3
The company contacted me and offered a job opportunity	2	1.47%	5
<b>Length of time it took to land on the first job</b>			
Less than a month	61	44.85%	2
1 to 6 months	68	50%	1
7 to 11 months	7	5.15%	3
<b>Length of stay in the first job</b>			
1 to 6 months	25	18.38%	2
7 to 11 months	41	30.15%	1
1 year to less than 2 years	24	17.65%	3
2 years to less than 3 years	7	5.15%	7
3 years to less than 4 years	9	6.62%	6
4 years to less than 10 years	16	11.76%	4
20 years +	14	10.29%	5

Table 7 presents the strategies of the respondents in finding their first job. The results showed that forty-four or 32.35% of

the respondents found their first job as walk-in applicants. The last rank was through the company contacting them and offering a job opportunity, which comprised 1.47% of the strategies used by the employed respondents. Most of the graduates landed their first jobs in one to six months, while some in less than a month.

TABLE 8: Jobs Related to the Degree Obtained in College

	Frequency	Percentage
Related to Degree	102	75%
Not Related to Degree	34	25%
<b>Total</b>	136	

Table 8 presents the job associated with the degree obtained in college. One hundred and two or 75% of the employed graduates claimed that their jobs are related to their degree obtained in college. Thirty-four, or 25%, claimed that their jobs are associated with their degree.

Undergraduates perceive a net financial gain from their investment in higher education; however, this is decreasing due to rising tuition prices, student debt, and interest payments, which are lowering earning premiums. They feel more employable on a personal level as they progress, but less employable on a market level due to graduate market competition and cost/benefit resource conflict [10].

TABLE 9: Academic Competencies Utilized in the Current Job

Indicator	Frequency	Rank
Communication Skills	98*	3
Human Relation Skills	83*	4
Knowledge and Technical Skills	121*	1
Information Technology Skills	83*	4
Problem-solving skills	106*	2
Leadership Skills	106*	2
Research Skills	60*	5

\*Multiple responses.

Table 9 presents the academic competencies used by most respondents in their current job. Knowledge and Technical skills are the number one academic competency used by graduates in their current position, followed by Leadership and Problem-solving skills, among others.

#### IV. CONCLUSIONS

##### A. Conclusion

The results of this study are significant for several reasons. First, the research findings were crucial in resolving difficulties with the university's curriculum, causes of underemployment among graduates, length of the job search, and income. Second, additional consideration must be given to research, information technology, and interpersonal skills. Third, those studying for a Bachelor of Science in Mechanical Engineering will have a clear awareness of the factors that make college grads more marketable, which will serve as a springboard for their career preparation. Finally, by providing students with seminars and workshops before they graduate to assist them to develop job entrance skills, the University of Cebu can improve its career advising program.

According to the researchers, the most University of Cebu graduates with a Bachelor of Science in Mechanical

Engineering were employed permanently in fields related to their degree programs, making use of their specialized knowledge, technical skills, leadership abilities, and problem-solving abilities. While most graduates received good pay in their first jobs, others made less than the minimum wage. During this study, a few graduates were jobless because of duties to their families. Fortunately, the time it takes graduates to find their first jobs is shorter—usually between a month and six months.

### B. Recommendations

Based on the study's findings, the researchers recommend the following:

- i. Academic leaders, faculty, and industry representatives must periodically review the curriculum to make sure that graduates have the knowledge and skills necessary to be highly employable in the industry, which will improve the marketability of the BSME program and the employment prospects of its graduates.
- ii. After graduating and passing the board test, students should obtain highly appropriate on-the-job training that gives them a variety of work opportunities and valuable experience to assess the engineering skills they need to learn.
- iii. So that students won't have to pick up these skills through on-the-job training, the institution should make investments in its laboratory facilities to meet industry requirements.
- iv. Given that most employers seek graduates with experience using engineering software, one of the university's long-term aims for increasing the employability of its graduates should be to invest.
- v. Additional tracer studies from different programs are included as the last point of reference for enhancing the engineering curriculum.

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