
The transition of graduates of the Faculty of Engineering Universitas Negeri Yogyakarta (UNY) into the labor sector

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ABSTRACT

This study aims to learn about the transition of Universitas Negeri Yogyakarta, Faculty of Engineering graduates to the world of work. This research is included in the quantitative research using the tracer study method, in which 573 graduates filled out the tracer study questionnaire. The results found that several transitional graduates from the Faculty of Engineering with tracer studies included many graduates who wanted to continue to work; when graduates looked to get a job opportunity, they faced a waiting period was less than six months. It shows that the highest distribution the jobs was in the private sector. Graduates also have the relevance and suitability of the field of study to work, and the average graduate income level is above the Labor Minimum Wage (UMP).

Keywords: graduates, labor sector, minimum tracer study

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INTRODUCTION

In the era of the Industrial Revolution 4.0, education must be able to create professional skills to overcome existing challenges, both in finding and creating a job (Albina & Sumagaysay, 2020). One of the curricula in higher education must be appropriate and consistent with the demands that are needed in the labor sector and the industrial world (Albina & Sumagaysay, 2020; Martín, 2014). Benchmarking activities in universities could develop better if the graduates have a good track record in the labor sector. In addition, some universities also have policies to create new relationships with the labor sector (Ramirez et al., 2014). To find out the existence and job opportunities that are being carried out by college graduates, universities need a tracer study (Puspitasari & Etikasari, 2019).

Tracer study is a tool to measure the success of an institution or university to find out changes and needs in the world of work and the industrial sector (Azizah et al., 2019). More tangible objectives in the tracer study such as improving education, training, and learning, increasing the transition of graduates from education to employment, and integration between skills both soft and hard skills, for the industrial and also the business world (Kalaw, 2019). Universities need to

do tracer studies because they require feedback from each graduate. Feedback from tracer studies could have implications for universities to improve the quality of the education system and management (Andari et al., 2021; Nugroho & Nugroho, 2018). Tracer study could also be used as an indicator in the assessment of accreditation completeness (Kherid et al., 2021). Tracer studies for universities already have a reference from the Ministry of Education within the link address: <https://tracerstudy.kemdikbud.go.id>.

Universitas Negeri Yogyakarta is one of the universities that have many graduates spread throughout Indonesia from various study programs. The benefits obtained from tracer study can be found in several ways including (1) as a form of the latest alumnae database, (2) becoming an entrance for study programs to collaborate with related companies through alumnae, (3) as an input for universities and study programs in curriculum improvement, as the basis for building alumni networks, and most recently, (4) as a prerequisite for the independent campus policy (Indrihapsari, 2022). The graduates from the Faculty of Engineering UNY become the most outstanding ones to be accepted in the labor sector. To monitor and find out its graduates, the Faculty of Engineering has a tracer study system that can be accessed at the link address: <https://tracer.uny.ac.id/>.

Some research on tracer studies has been discussed strongly to intensify the employment rate of vocational schools (Khirotdin et al., 2019), reconstruction of the Mining Engineering curriculum in the Era of the Industrial Revolution 4.0 (Heriyadi et al., 2021), tracer study of Electronic Engineering graduates (Fajaryati et al., 2015), graduate performances (B. Santoso et al., 2019), studies for graduates majoring in Culinary and Fashion Engineering Education (Fitrihana et al., 2014), primary education graduates and secondary education graduates (Aclan et al., 2018), graduates from the bachelor of Fashion Education study program Faculty of Engineering in Surabaya State University (Mayasari et al., 2022), graduates of education in Faculty of Engineering Yogyakarta State University (Sukardi, 2011), graduates of the Fine Arts Education Study Program (Kherid et al., 2021), employability of visually impaired graduates (Odame et al., 2021), the relevance between the competency curriculum of Civil Engineering graduates in the labor sector (Arfandi, 2013) and Elementary School Teacher Education in PGRI Semarang University (Azizah et al., 2019; Sukamto et al., 2021), and predictions of job graduates (Abdulloh et al., 2022). However, the tracer study with the Faculty of Engineering at Universitas Negeri Yogyakarta students has not yet been discussed among the researchers. Thus, this presentation describes the transition of graduate students of the Faculty of Engineering at Universitas Negeri Yogyakarta with a tracer study that includes the distribution of graduates who continue to the labor sector, the time that they need on looking for a job, the waiting period, the distribution of them to get a job successfully, the suitability of job fields, and the level of their incomes.

METHOD

This research uses the tracer study method, where a survey is carried out as the method of this research (Sukardi, 2011). The stages in tracer study consist of three stages as follows:

Table 1. Tracer Study Stages

Stage 1		Stage 2		Stage 3
concepts and instruments development	→	Data collections	→	Data analysis and report writing

The first stage is to develop the concept and tracer study instruments. At this stage, a survey strategy is carried out, creating instrument grids, conducting instrument trials, and duplicating survey questionnaires (Schomburg, 2003). The development of the instrument refers to the instruments of the Ministry of Education, Culture, Research, and Technology and adjusts the question items according to the institution's needs. The research includes the distribution of graduates of the Faculty of Engineering UNY showing that they prefer to continue and be ready to work when they start looking for a job, the classification of waiting times that they need, the number of companies applied for before obtaining the first job, the number of companies that respond to their applications and invite them to have interviews, the type of a job of their currently working, the suitability of the job fields, the level of education that the current job requires, as well as earnings.

The next stage is data collection. Data collection was conducted by distributing questionnaires with Google Forms. Respondents consisted of graduate students of the Faculty of Engineering UNY in 2020 who filled out a tracer study in 2022 is presented in Table 2 below.

Table 2. Tracer Study Respondents

Courses	Number of Graduates 2020	%	Number of graduates who fill out the Tracer Study 2022	%
Bachelor of Education in Electrical Engineering	38	6,08%	33	5,76%
Bachelor of Education in Mechatronics Engineering	37	5,92%	31	5,41%
Bachelor of Education in Electronic Engineering	27	4,32%	24	4,19%
Bachelor of Education in Informatics Engineering	29	4,64%	24	4,19%
Bachelor of Mechanical Engineering Education	58	9,28%	55	9,60%
Bachelor of Automotive Engineering Education	72	11,52%	65	11,34%
Bachelor of Civil Engineering and Planning Education	65	10,40%	57	9,95%
Bachelor of Culinary Engineering Education	67	10,72%	62	10,82%
Bachelor of Fashion Engineering Education	32	5,12%	32	5,58%
Associate degree (D3) in Electrical Engineering	16	2,56%	12	2,09%
Associate degree (D3) of Electronics Engineering	17	2,72%	16	2,79%
Associate degree (D3) of Mechanical Engineering	51	8,16%	46	8,03%
Associate degree (D3) of Automotive Engineering	23	3,68%	22	3,84%
Associate degree (D3) Of Civil Engineering	12	1,92%	11	1,92%

Associate degree (D3) in Culinary Technology	35	5,60%	35	6,11%
Associate degree (D3) of Fashion Technology	17	2,72%	17	2,97%
Associate degree (D3) in Cosmetology Technology	29	4,64%	29	5,06%
Total	625	100%	573	100%

Table 2 shows that the number of graduates in 2020 who filled out tracer studies mostly from the Bachelor of Automotive Engineering Education (11,52%), Bachelor of Civil Engineering and Planning Education (10,40%), and Bachelor of Culinary Engineering Education (10,72%). For the number of graduates in 2022, the graduates who fill out the tracer studies are mostly from the Bachelor of Automotive Engineering Education (11,34%), Bachelor of Culinary Engineering Education (10,82%), and Bachelor of Civil Engineering and Planning Education (9,95%). There are 573 graduates from the total respondents who filled out the 2022 tracer study will be further analyzed. Meanwhile, in this third stage, this research uses Microsoft Excel with the total percentages from the results of questionnaires that they have filled in as the data analysis techniques.

RESULTS AND DISCUSSION

To improve the quality and performance of a university, the Ministry of Education and Culture Number through the regulation with the ref. Number 3/M/2021 establishes Key Performance Indicators (IKU) which become the prior strategic planning of each program based on the principles of several key points in setting performance and preparing work plans, and budgets, compiling performance documents or agreements, reports, and carrying out performance achievement evaluations.

The criteria of the main Key Performance Indicators (IKU) related to graduates are students who have graduated from a college study program (Direktorat Jenderal Pendidikan Tinggi, 2021). Graduates of the Faculty of Engineering at Universitas Negeri Yogyakarta got information from various sources such as through the internet, online advertisements, coming job fairs, parent/sibling/lecturer relationships, newspapers/magazines advertisements, placements during internships, alumnae networks, walk-in interviews in company exhibition, commercial employment agencies, etc. When they are looking for a job, they have to pass the process of transition from college to the labor sector. They need the waiting periods for a while to find the job as their target for future outreach. The implementation of the tracer study of the Faculty of Engineering, Universitas Negeri Yogyakarta will answer the transition stages into the labor sector through several indicators including the waiting period level, the distribution of graduate jobs, the suitability of graduates' job fields, and their income levels.

Based on the data obtained using a tracer study, it was found that in 2020 625 people. The data shows that the alumnae who filled out the questionnaire in 2022 amounted to 573 people (92%) and those who did not fill out the questionnaire amounted to 52 people (8%). The results found

that 95% choose to continue looking for a job while the remaining 5% prefer to continue their studies as well. So, it can be said that one of the readiness factors within them is maturity. This is influenced by several factors such as motivation, psychological needs, ideals, health, and interests (Diah Baiti et al., 2017).

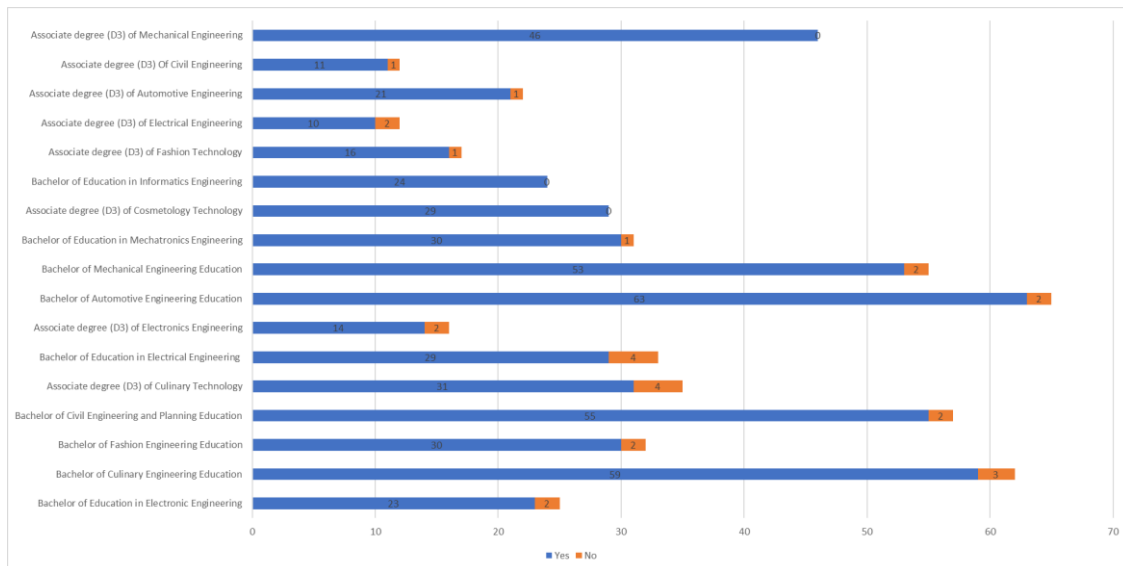


Figure 1. Distribution Faculty of Engineering Graduates who Prepared in the Labor Sector

The definition of a bachelor's degree (S1) is an undergraduate study program and the definition of D4/D3/D2 is a four-diploma or applied undergraduate study program which includes diploma three and diploma two (Direktorat Jenderal Pendidikan Tinggi, 2021). Based on Figure 1 above, the graduates who dominate to continue their work come from the Bachelor of Automotive Engineering Education study program. The dominant factors that influenced the decision to seek the job were being ready with the provisions of the field of knowledge obtained, motivation, fierce job competition, and life goals. Other research results that support this finding are about motivation, experience of industrial practice, and expectations of entering the labor sector (Syarif et al., 2019).

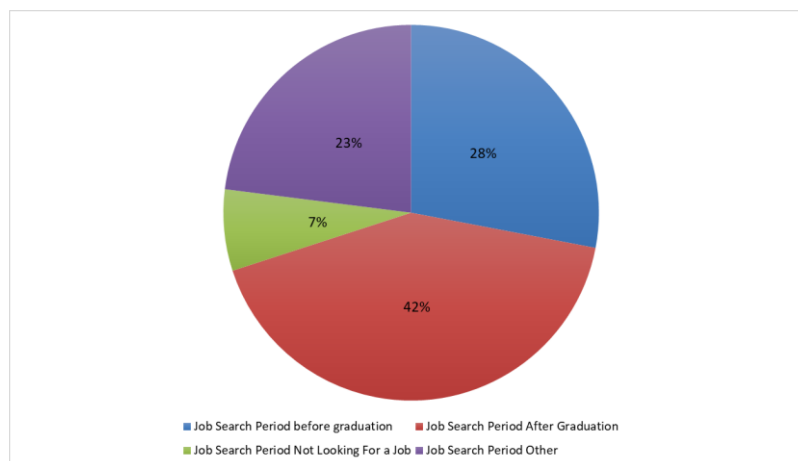


Figure 2. Graduates Who Seeking Job Opportunities

Figure 2 shows that graduates of the Faculty of Engineering, Universitas Negeri Yogyakarta are dominated by seeking the job Universities after graduation (42%), furthermore was followed by graduates who are seeking a job before graduation (28%), while other graduates (23%), and graduates who are seeking the job opportunities is (7%). The results of other studies show that there is a relationship between career self-efficacy with job readiness in the final-semester students at one of the universities in Yogyakarta (Diah Baiti et al., 2017). It is stated that the profile of graduates of the Faculty of Engineering UNY mostly becomes educators, education staff, professionals, and technopreneurs. Thus, they have been prepared to be ready to enter directly into the labor sector, both in the industrial world and the educational sector.

For the waiting period to get a job, they need at least less than 6 months. The waiting period is different from the level of education of each graduate (Anugerah et al., 2022). Internal factors that affect them to graduate quickly to get a job include GPA, experience during college, and length of study (Anugerah et al., 2022). In addition, there are external factors faced by them such as the availability of jobs (Anugerah et al., 2022; Hartinah, 2016). The results obtained from the tracer study are presented as follows.

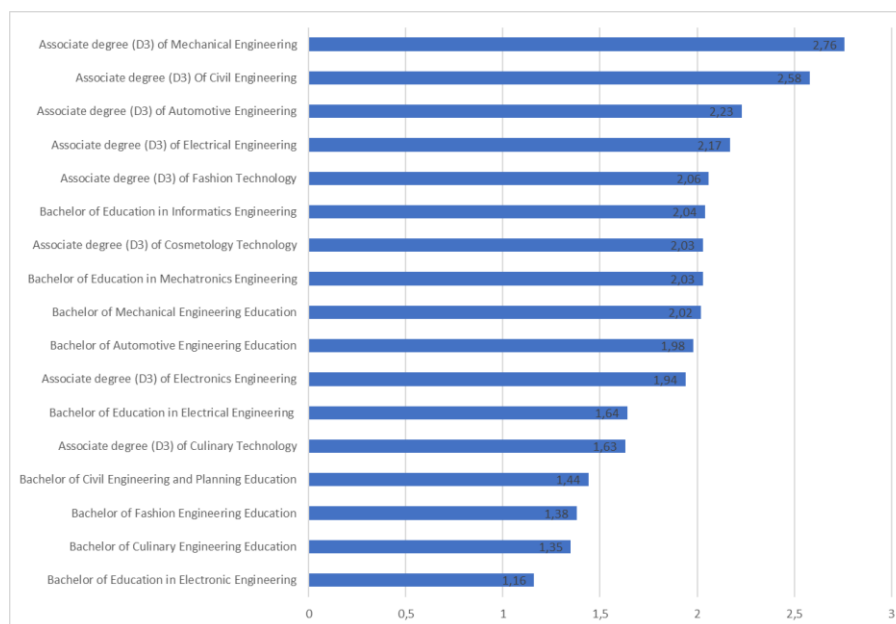


Figure 3. Classification of Waiting Period for Graduates to Find a Job

Figure 3 above shows that the average waiting period to get the fastest job is from a graduate bachelor of Education in Electronic Engineering (1.16 months), bachelor of Culinary Engineering Education (1.35 months), and bachelor of Fashion Engineering Education (1.38 months). Meanwhile, the average waiting time to get the longest job is an associate's degree (D3) in Mechanical Engineering (2.76 months). These findings are explained in the Key Performance Indicators (IKU) that the waiting period is less than 6 months after the date of issuance of the

diploma degree certificate (Direktorat Jenderal Pendidikan Tinggi, 2021). This result is supported by other findings that the average waiting period from before graduation to get a job is around 3 months, while the average waiting period after graduation to get a job is around 4 months (Sukanto et al., 2021). Other findings also support the waiting period for graduates to work is ranging from 1-3 months (53.3%), < 1 month (43.3%), and 4-6 months (3.4%) (Sagala et al., 2019). Another finding supports that the average waiting time for graduates Bachelor of Accounting study program at the University of Mataram to get their first job is 4 months (Suryantara et al., 2021). The average waiting period for graduates Bachelor of Accounting study program at the Faculty of Economics, Makassar State University is less than three months (69%) (Syamsurya, 2020). In addition, it was also found that graduates with Bachelor's degrees (S1) and Associate degrees (D3) from Medan State University got their first job less than 3 a.m. from the date of graduation (Hasibuan et al., 2022). Thus, graduates of the Faculty of Engineering, UNY have an ideal waiting period from graduation to getting a job.

Table 3. The Average Number of Companies That Applied by Graduates of the Faculty of Engineering UNY in 2020

Study Program	The total of Companies being Applied
Bachelor of Civil Engineering and Planning Education	213
Associate degree (D3) of Mechanical Engineering	131
Bachelor of Education in Mechatronics Engineering	126
Bachelor of Automotive Engineering Education	125
Bachelor of Mechanical Engineering Education	65
Bachelor of Education in Electrical Engineering	18
Bachelor of Culinary Engineering Education	13
Bachelor of Education in Electronic Engineering	9
Associate degree (D3) of Electronics Engineering	8
Associate degree (D3) of Automotive Engineering	8
Associate degree (D3) in Cosmetology Technology	6

Table 3 shows the number of companies applied for before obtaining the first job from graduates of the Faculty of Engineering UNY assuming one graduate, where an average of 10 companies with the most graduates from the Bachelor of Civil Engineering and Planning Education study program were obtained. This is because the Department of Civil Engineering and Planning Education UNY has many industrial collaborations, including PT Cakra Manggilingan Jaya, PT Pola Data Consultant, PT Elcentro Engineering Consultant, and PT Andaru Koncer Jagad. In addition, many graduates of Bachelor of Civil Engineering and Planning Education, UNY in 2011 – 2019 worked in state-owned companies (BUMN), such as PT Waskita Karya Precast, PT Adhi Karya, PT Nindya Karya, other contractor companies, teachers at Building Engineering Vocational Schools both in public and independent schools. On the other hand, currently, the construction of the project is full of dynamic challenges. Thus, there are more job opportunities for graduates of the Civil Engineering and Planning Education study program. Thus, the

graduate's Bachelor of Civil Engineering and Planning Education study program at UNY has many options for applying for job preference.

Meanwhile, the average number of companies that respond to applications from graduates of the Faculty of Engineering UNY is dominated by the Bachelor of Automotive Engineering Education (53.33%), Bachelor of Civil Engineering and Planning Education (49.40%), and Bachelor of Mechanical Engineering Education (33.75%). For the average number of companies that invited interviews, the dominant of graduates of the Bachelor of Mechanical Engineering Education Study program (27.33%), S1 Mechatronics Education (15.6%), and S2 Mechanical Engineering Education (15.4%).

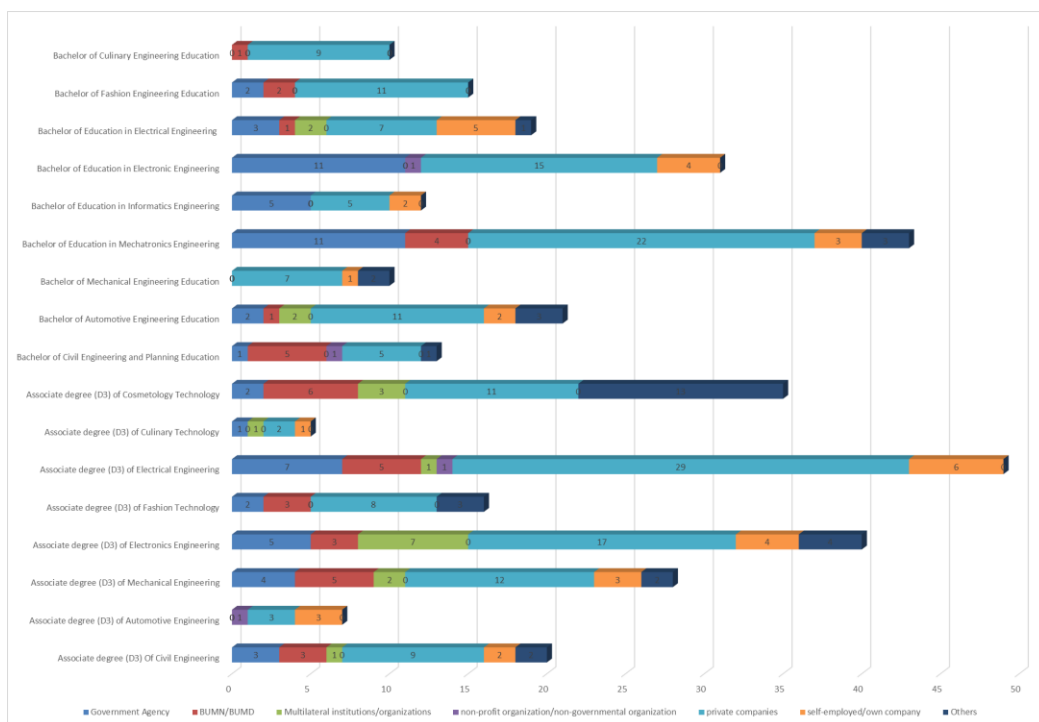


Figure 4. Distribution of Jobs for Graduates of the Faculty of Engineering YSU

Based on Figure 4 above, the 2022 tracer study data shows that graduates of the Faculty of Engineering UNY have continued their work spread to government agencies, non-profit organizations/non-governmental organizations, private companies, self-employed/own companies, BUMN/BUMD, multilateral institutions/organizations, and others. Figure 4 also shows that the Electrical Engineering study program is classified as having the most distribution of jobs. This is because the era of the Industrial Revolution 4.0 is developing rapidly. Industrial Revolution 4.0 supports all aspects of production in the industrial world using the internet as a control in industrial management (Wistiawati et al., 2020). In other words, graduates of Electrical

Engineering have great job opportunities in this era. The distribution of the highest job places engaged in by graduates of the Faculty of Engineering UNY is as follows:

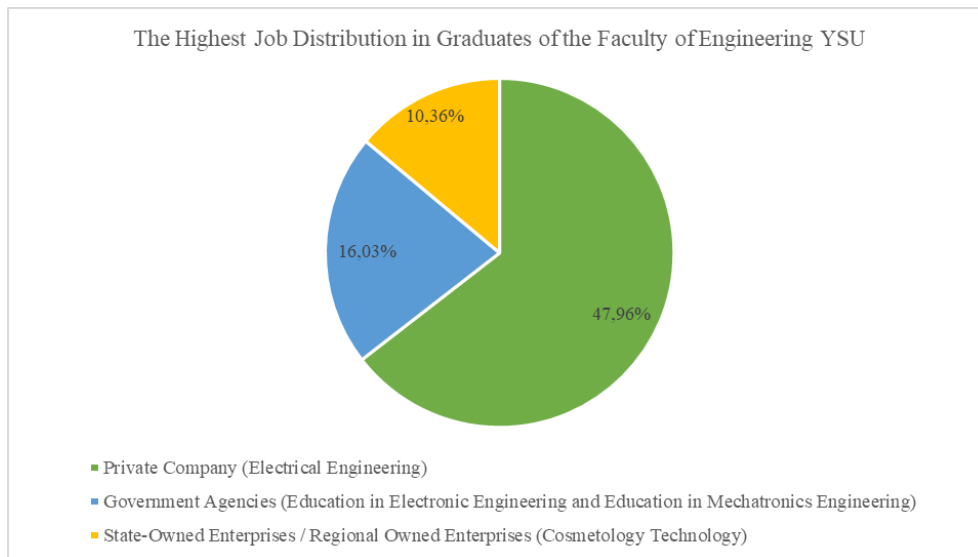


Figure 5. The Highest Distribution of Jobs of Graduates of the Faculty of Engineering, Universitas Negeri Yogyakarta

Figure 5 shows that most work in private companies occurred (47.96%) is graduates from Electrical Engineering. Other supporting research results are as many as 31% of associate's degree (D3) Electrical Engineering graduates of UNY Class of 1999-2010 as workers in the private sector or manufacturing (Asnawi et al., 2015). Another supporting result is the average employment of graduates in the Bachelor of Accounting study program, Faculty of Economics, Makassar State University 68% in private companies (Syamsurya, 2020). The second place works in government agencies (16.03%) from the Electronic Engineering Education and Mechatronics Engineering Education study programs, this is supported by previous findings that Jakarta State University in Civil Engineering Education graduates work in private agencies as many as 47 graduates (85.45%) and the rest work in state agencies as many as 8 people (14.55%) (Sari et al., 2015). The next order is to become an employee of a government company or BUMD (10.36%) from the Cosmetology and Beauty study program. This could happen because one of which is the technical skill aspect (73.68%) which is the largest aspect of higher education to the relevance of the requirements in the industrial world with the competence of graduates (Arfandi, 2013).

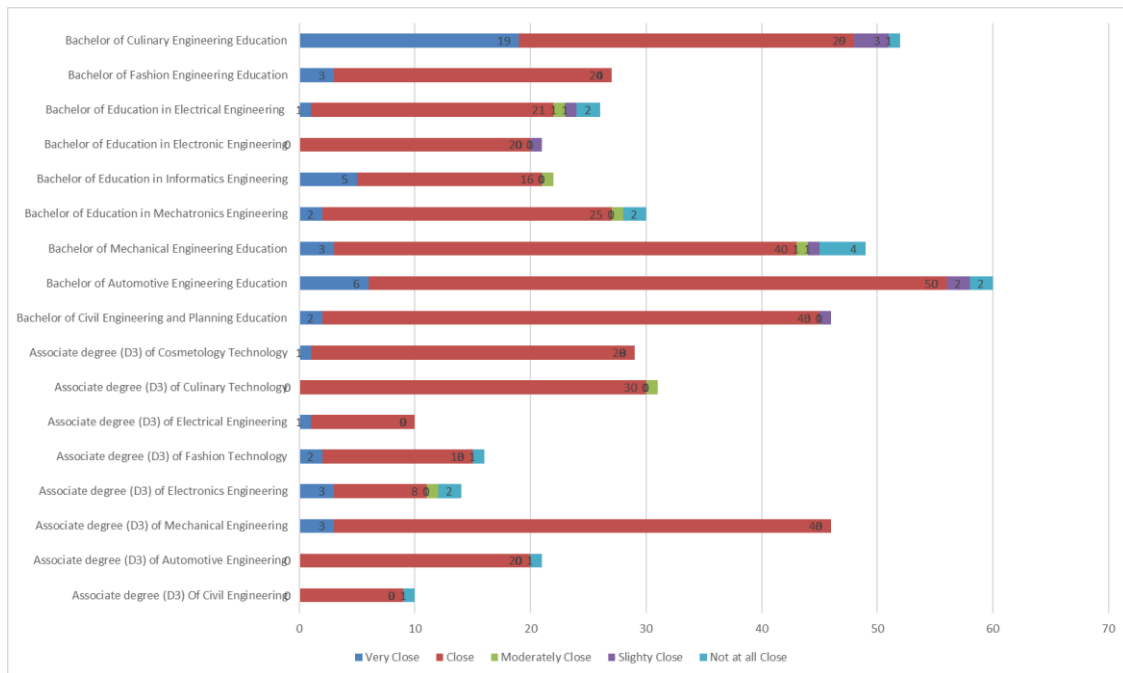


Figure 6. Suitability of Job Fields of Graduates of the Faculty of Engineering UNY

Figure 6 shows that for the suitability of the field of work, 83.982% have a match between graduates of the Faculty of Engineering UNY and the field of work. In addition, their level of knowledge is by the current field of work (95.46%) which is dominated by graduates of the Bachelor of Cullinery Engineering Education study program and graduates of the Bachelor of Automotive Engineering Education. This is also evidenced by the results of other studies that show that associate's degree Mining Engineering graduates are mostly industrial sectors closely related to the field they study (66.7%) and 9.2% are not related to the employment sector and their education fields (Heriyadi et al., 2021). The relationship between the field of study and work is included in the "close" category for Tulungagung University graduates (E. Santoso & Muharsono, 2018). The suitability relationship between the field of study and work can also be found in graduates of XYZ University by 47%, with 456 graduates completing tracer studies (Arifin & Muzid, 2018).

Other findings show that 79% of bachelor of Elementary School Teacher Education graduates of PGRI Semarang University get jobs that are by the field of science during college and as many as 20% of alumni get jobs that do not follow their fields of knowledge (Azizah et al., 2019). The suitability of study program competencies for graduates of S1 Elementary School Teacher Education, PGRI Semarang University works as a Civil Servant teacher (67.16%), where this suitability is the effect of various parameters, such as practicum internships, fieldwork lectures, and others (Sukamto et al., 2021). The suitability of graduates in the field of work was found to be very high for graduates of Surabaya State University students in 2019 and 2020 (Andari et al.,

2021). Other findings also proved that graduates of the Fine Arts Education Study Program gave their responses very well (56.3%) regarding expertise based on the field of science, which is shown by the relationship between professionalism and the commitment of graduates to improve their ability to do work by their profession (Kherid et al., 2021).

In addition, in the labor sector, there are skills needed that will be accessed. The graduates describe the soft skills that are often needed in the labor sector, namely being able to work together in a team have a high sense of tolerance for others, and the ability to continue learning. Other findings also show that the dominant abilities that are needed in the labor sector include communication skills, critical thinking skills, and high teamwork skills (Mustikawati et al., 2016). The ability to work together in a team can result in a stable working relationship, achieving common goals, resolving conflicts effectively, sufficient time, the use of technology, and a clear division of roles and responsibilities (Labzina et al., 2019). If the conditions of cooperation can be met properly, it can produce creative developments for the labor sector. Similarly, in terms of tolerance, it is indispensable to appreciate differences in the workplace (Syahputra, 2021).

For income, one of the criteria in the tracer study is that the improvement of the quality of higher education lies in the salary that is at least 1.2 times the UMP where the graduates work. The higher their income can be determined by the quality of the study program and the job satisfaction of the graduates, because the higher the nominal and position obtained the better the quality of the graduates (Anugerah et al., 2022). As for the income of graduates of the Faculty of Engineering UNY is presented in the following chart.

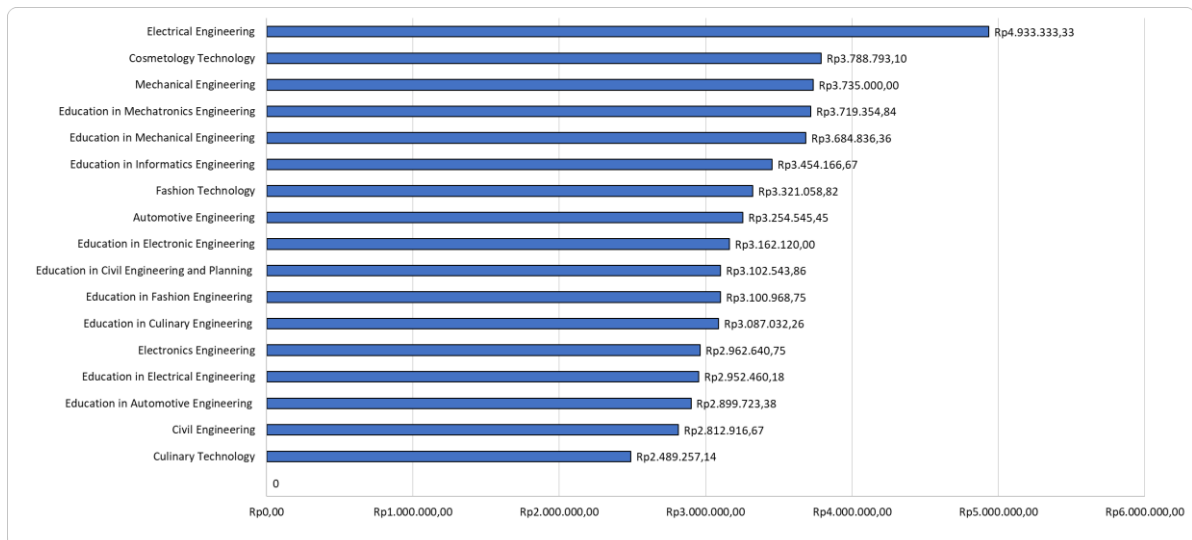


Figure 7. Distribution of Income Levels of Graduates of the Faculty of Engineering UNY

Figure 7 shows the highest average income received, which is about IDR 4,933,333.00 from Electrical Engineering graduates. This is proven by the results of previous research that associate's degree in Electrical Engineering UNY graduates from 1999-2010 have an average income around

of > Rp 3,000,000 – Rp 5,000,000 (Asnawi et al., 2015). The second place for associate's degree (D3) Cosmetology and Beauty graduates is about Rp. 3,788,793.00 and the third place for associate's degree (D3) Mechanical Engineering graduates is Rp. 3,725,000.00. The last order of Culinary Technology graduates with an average salary of Rp. 2,489,257.14. Thus, it can be said that the average of their income is high. This is evidenced by other research that the average income earned by associate's degree (D3) Mining Engineering graduates is more than Rp. 2,000,000.00 (Heriyadi et al., 2021). For graduates of Economic Education FKIP University of Lampung, the average income ranges from Rp. 2,500,000.00 (Maydiantoro, 2018). Other findings show that the income of graduates who have worked is at least Rp. 100,000.00 and a maximum of Rp. 5,900,000.00 (Azizah et al., 2019). Another finding that shows that the income of graduates of the Faculty of Engineering UNY is high, namely the average income of graduates of the Bachelor of Accounting study program at the Faculty of Economics, Makassar State University ranges from Rp. 1,000,000 – Rp. 2,999,999 (38%) (Syamsurya, 2020). Based on tuition fees at the Faculty of Engineering UNY from group I – group VI get an average of Rp. 3,538,571.00 as Table 4 below:

Table 4. Average Tuition Fee with Salary Earned by Graduates of the Faculty of Engineering UNY

Courses	Average Tuition Fee of UNY	Average Salary Earned
Electrical Engineering		Rp 4.933.333
Cosmetology Technology		Rp 3.788.793
Mechanical Engineering		Rp 3.735.000
Education in Mechatronics Engineering		Rp 3.719.354
Education in Mechanical Engineering		Rp 3.684.836
Education in Informatics Engineering		Rp 3.454.166
Fashion Technology		Rp 3.321.058
Automotive Engineering		Rp 3.254.545
Education in Electronic Engineering	Rp 3.538.571	Rp 3.162.100
Education in Civil Engineering and Planning		Rp 3.102.543
Education in Fashion Engineering		Rp 3.100.968
Education in Culinary Engineering		Rp 3.087.032
Electronics Engineering		Rp 2.962.640
Education in Electrical Engineering		Rp 2.962.460
Education in Automotive Engineering		Rp 2.899.723
Civil Engineering		Rp 2.812.916
Culinary Technology		Rp 2.489.257

Based on the criteria of the Key Performance Indicators (IKU), it is explained that graduates who continue to work get a salary of 1.2 times the minimum wage, where the standard minimum wage used is based on province regulations (UMP) where the graduates work (Direktorat Jenderal Pendidikan Tinggi, 2021). Table 4 shows that the salary earned by them has exceeded the average tuition fee at the Faculty of Engineering in Universitas Negeri Yogyakarta

CONCLUSION

Based on the explanation above, the transition of graduates from the Faculty of Engineering UNY is based on tracer studies characterized by the phenomenon that many

graduates prefer to continue to work with the period to look for a job is less than six months. The waiting period for grads to get a job is under six months; the most extensive distribution of graduate jobs is working in the private sector. Graduates of the Faculty of Engineering UNY also have relevance and suitability of the field of study appropriate in the labor sector, and the average graduate income level is above IDR 2,000,000.00. Thus, the transition of graduates from the Faculty of Engineering UNY to the labor sector has been well illustrated by the distribution of graduates continuing to work, the time spent by graduates looking for a job, the waiting period for graduates to get a job, the distribution of graduates work's mapping, the specialization of graduates' work fields, and the income level.

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