ISSN: 3026-0442

Proceedings of the 2nd International Conference on Education, Science Technology and Health (2nd ICONESTH 2024 Universitas Bina Bangsa Getsempena, Sept 10-12, 2024, Banda Aceh, Indonesia

THE ALIGNMENT OF GRADUATE PROFILES OF THE BUILDING ENGINEERING EDUCATION PROGRAM WITH WORKFORCE REQUIREMENTS BASED ON ALUMNI AND EMPLOYER PERCEPTIONS

Gde Agus Yudha Prawira Adistana[1], Wahyu Dwi Mulyono[2]*, Agus Wiyono[3], Mochammad Rafli Aziz[4]

[1,2,3,4] Faculty of Engineering, State University of Surabaya, Surabaya, Indonesia

* Corresponding email: *wahyumulyono@unesa.ac.id*

ABSTRACT

In the context of performance evaluation to enhance competitiveness and the quality of higher education institutions, it is necessary to identify performance indicators, one of which is the quantity, quality, and relevance of graduates. This study aims to optimize tracer studies as an effort to improve the quality of education in the Bachelor of Building Engineering Education Program, Faculty of Engineering, Unesa. A tracer study is research on the situation of alumni, particularly regarding job searches, work situations, and the utilization of competencies acquired during their studies in the Bachelor of Building Engineering Education Program, Faculty of Engineering, Unesa. This research is planned for the year 2024, targeting alumni who graduated in 2022. The method used in this research is descriptive with a quantitative approach. The tracking is conducted by involving surveyors to encourage alumni to fill out questionnaires on the tracer study platform directly provided by the university. The results of this tracer study are then analyzed across several components to provide input for the study program to improve its future performance. The findings of this study are as follows: (1) most graduates of the Bachelor of Building Engineering Education Program are employed in private companies. The alignment between the graduates' jobs and the graduate profile of the Bachelor of Building Engineering Education Program shows a 60% match, (2) the work skills possessed and required by graduates of the Bachelor of Building Engineering Education Program show similar results, but work skills applied in the workplace show higher scores, (3) employer assessments regarding performance fall into the good category, and work skills are also categorized as good.

Keywords: *tracer study, alumni, employers, Bachelor's Degree Program in Building Engineering Education.*

INTRODUCTION

Digital transformation and its impact on higher education and workforce development changes occurring globally, including in Indonesia, are marked by digital transformation. The government, through the Ministry of Communication and Information, is implementing a telecommunications infrastructure development program to accelerate digital transformation, enabling its benefits to reach all levels of society (Andarningtyas, 2020). Businesses and industries that can adapt to these changes will survive and continue to advance. Industries that initially relied on conventional methods are now shifting to digital approaches. This shift has led to increased demand for new skills required by human resources (HR) in the industry.

This digital transformation aligns with the Fourth Industrial Revolution, which alters job concepts, job structures, and the competencies needed in the industrial world. Digital transformation has triggered a demand for HR professionals with competencies vastly different from those of the past. The changing characteristics of the industrial world in this era have resulted in shifts in the types of available jobs, with some roles becoming obsolete and new skills emerging as essential.

Tracer studies play a crucial role in education at Unesa in the current era of the Fourth Industrial Revolution. The rapid advancements in information technology impact all systems of life, including higher education. Unesa holds a vital role in preparing its graduates to become skilled professionals, necessitating feedback on the learning activities conducted, whether from alumni, the public, or stakeholders.

Tracer studies, or alumni tracking, are integral to the education system at Unesa. These studies aim to engage alumni in providing input for the improvement and development of Unesa. A tracer study examines alumni situations, particularly regarding job searches, work conditions, and the utilization of competencies acquired during their studies at Unesa. In developed countries, alumni tracer studies are a primary activity conducted systematically, institutionally, and continuously. Thus, it is no surprise that higher education institutions in developed countries are recognized for their relevance, as they consistently conduct self-evaluation, including through tracer studies.

A tracer study examines graduates of higher education institutions, providing information related to alumni that can be used as evaluation material and a reference for assessing the quality of education at a university (Sailah, 2011; ITB Career Center Research Division, 2020). Tracer studies serve as an effective medium to track the employment absorption of university alumni in the workforce. Additionally, tracer studies can track the

status and condition of alumni one or two years after graduation. Tracer studies also play an essential role in gathering various information for the evaluation and development of universities. Thus, the results of tracer studies can reflect the existence and relevance of a university. Tracer study data is used as the basis for curriculum improvements, enhancement of teaching quality, and adjustment and improvement of learning systems (Editorial team, 2021).

The benefits of tracer studies are not limited to universities; they also provide crucial information about the relationship between higher education and the workforce. Tracer studies offer detailed and in-depth information on the job match, both horizontally (across fields of study) and vertically (across educational levels). Thus, tracer studies can help address issues of employment disparities and efforts for improvement. For universities, information on relevant competencies for the workforce can support curriculum and learning system enhancements.

Tracer studies are beneficial in mapping the business and industrial worlds, narrowing the gap between competencies acquired by alumni during their studies and the demands of the workforce (Amadi & Fadly, 2019). Furthermore, Nugraheni et al. (2020) explained that tracer studies could highlight factors such as transitions in the workforce, alumni activity maps in the workforce, horizontal and vertical alignment maps of graduates, and competency gaps between graduates and workforce demands. Adistana et al. (2021) found that over 80% of alumni from the Civil Engineering Department who are employed have jobs that align with the graduate profiles of both the Bachelor of Building Engineering Education and the Bachelor of Civil Engineering programs. The research questions of this study are as follows. (1) What is the distribution of graduates based on job types and the level of alignment with the graduate profile of the Bachelor of Building Engineering Education Program?, (2) What work skills are mastered and needed by graduates of the Bachelor of Building Engineering Education Program?, (3) How do employers evaluate alumni of the Bachelor of Building Engineering Education Program?

METHODS

This research is a descriptive study with a quantitative approach. The study aims to obtain information about graduates of the Bachelor of Building Engineering Education Program. A questionnaire was used as a data collection tool to gather information. The data obtained were quantitative and were analyzed using descriptive quantitative analysis.

The population in this study consisted of all alumni of the Bachelor of Building Engineering Education Program who graduated in 2022, totaling 26 individuals. The sampling technique used in this study was non-probability sampling, specifically saturated sampling. Saturated sampling is a technique

where all members of the population are used as the sample, which in this case included all 26 graduates of the program from 2022.

The data collection technique for this tracer study was conducted through the tracer study website at http://tracerstudy.unesa.ac.id/ . To facilitate data collection, alumni WhatsApp groups were also utilized. The data required for this research were collected using the above techniques, and the instruments used included questionnaires for graduates and questionnaires for graduate users.

The research data collected were then quantitatively analyzed and presented in tables and graphs, providing a clear picture of the distribution of the aforementioned variables as indicators. This study aims to determine the relevance of graduates as a basis for decision-making by leadership to take steps to ensure that graduates can be accepted in fields aligned with their expertise.

RESULTS AND DISCUSSION

Employment Status Data of Graduates

The Bachelor of Building Engineering Education Program at State University of Surabaya is one of the programs that produces vocational school (SMK) teachers. Based on the tracer study results, the employment status data of alumni from the Bachelor of Building Engineering Education Program at Surabaya State University, graduating in 2022, can be seen in Figure 1.

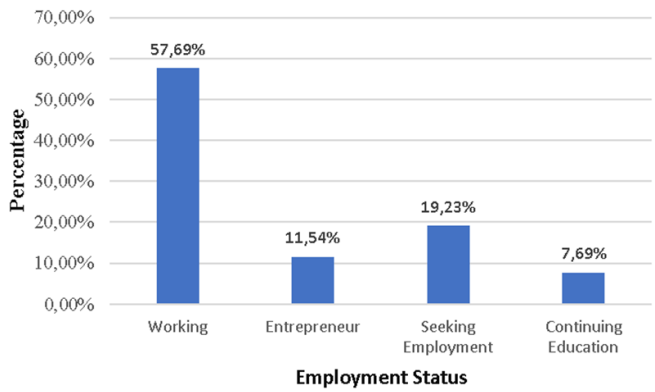

Figure 1. Employment Status Data of 2022 Graduates of the Bachelor of Building Engineering Education Program

Based on Figure 1, it was found that 57.69% of graduates are employed, while 19.23% are still seeking employment. Additionally, 11.54% have become entrepreneurs, and 7.69% of alumni are pursuing further studies.

Type of Employment

The type of employment of graduates from the Bachelor of Building Engineering Education Program is categorized based on the type of company. There are six possible answers: government institutions, NGOs, private companies, self-owned businesses, state-owned enterprises (SOEs) or regional-owned enterprises (ROEs), and multilateral institutions / organizations. The distribution of company types for the graduates can be seen in Figure 2.

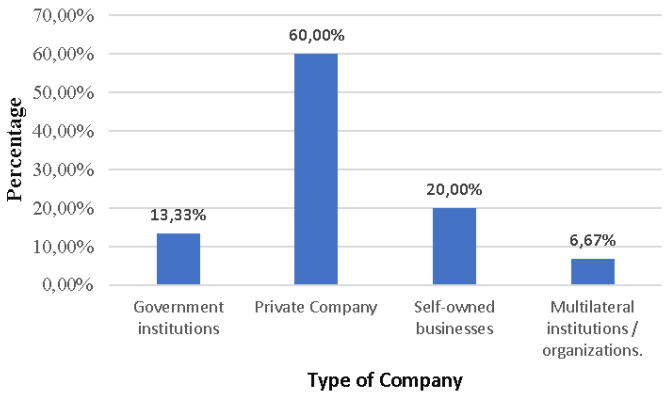

Figure 2. Types of Companies Where Graduates Are Employed

Based on Figure 2, it was found that 60.00% of graduates are employed in private companies. Graduates working in government institutions and multilateral institutions/organizations make up 13.33%. The remaining graduates are employed in their own businesses. The job titles of graduates from the Bachelor of Building Engineering Education Program can be seen in Figure 3.

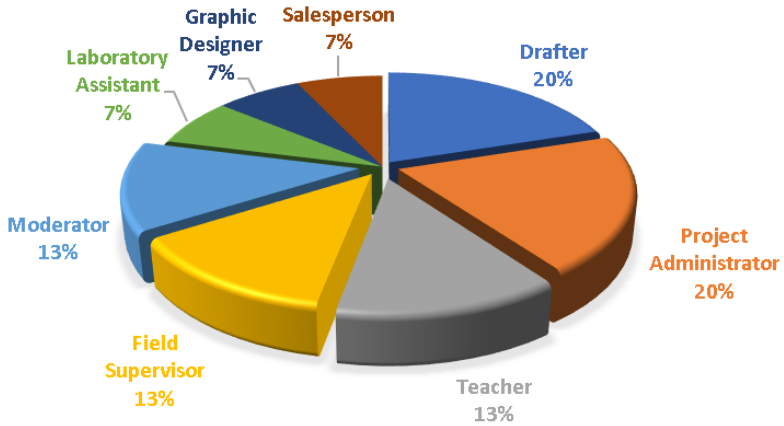

Figure 3. Job titles of graduates

Based on Figure 3, it was found that 20% of graduates work as drafters, 20% as project administrators, 13% as teachers, 13% as field implementers, 13% as moderators, and 7% are employed in other roles such as laboratory assistants, graphic designers, and sales.

Level of Alignment

The level of alignment between graduates' jobs and their study program is assessed on a five-point scale: very relevant, relevant, somewhat relevant, less relevant, and not relevant at all. The results of graduates' responses regarding the alignment of their jobs with their study program can be seen in Figure 4.

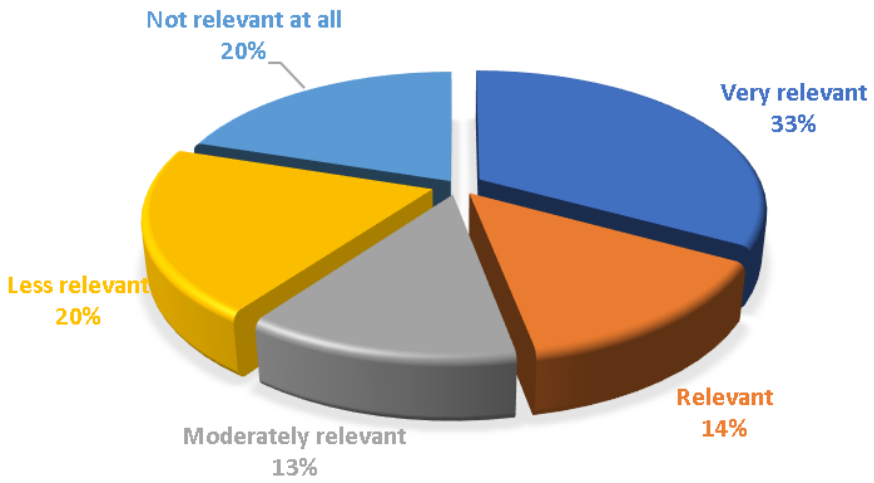

Figure 4. Level of Job Alignment for Graduates

Based on Figure 4, it was found that 33% of graduates answered "very relevant" and 14% answered "relevant." These results indicate a high level of alignment between graduates' jobs and their study program. However, 20% of graduates still responded that their job type was "not relevant at all" to their study program.

Work Skills Acquired Upon Graduation

The work skills possessed by graduates are the skills acquired by alumni upon completing the Bachelor of Building Engineering Education Program. These skills are developed during academic and non-academic activities throughout their studies. The average work skills possessed by graduates, based on the survey results, can be seen in Figure 5.

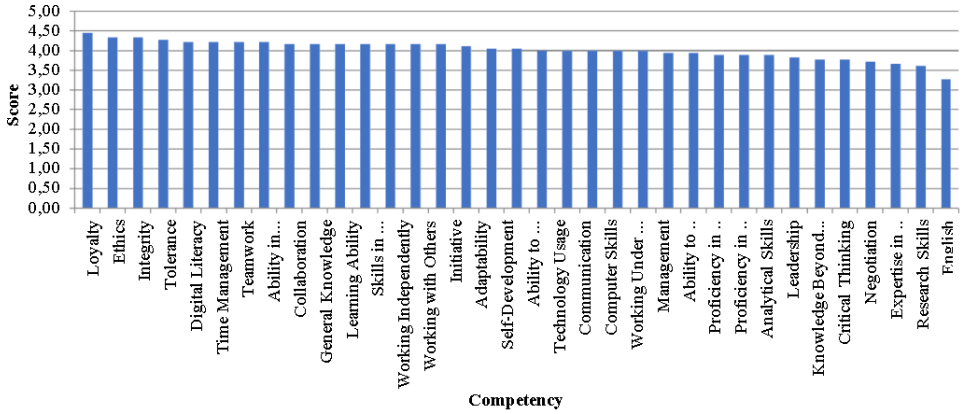

Figure 5. Work Skills Acquired by Graduates

Based on Figure 5, it was found that among the 35 work skills, the ranking of skills from highest to lowest is as follows. The five highest-rated skills possessed by alumni upon graduation from the Bachelor of Building Engineering Education Program in 2022 are loyalty, ethics, integrity, tolerance, and internet skills. On the other hand, the skills with the lowest average ratings are negotiation, knowledge in the field or discipline, expertise based on the field of study, research skills, and English language proficiency.

Work Skills Needed in the Workplace

The work skills needed in the workplace are the skills required when working in the industry. These skills are necessary for alumni after they enter the workforce. The average work skills required by graduates in the industry can be seen in Figure 6.

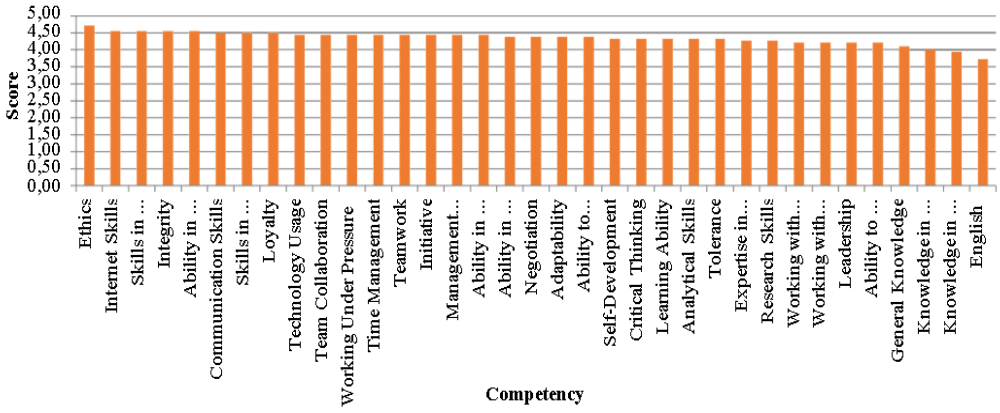

Figure 6. Work Skills Required by the Industry

Based on Figure 6, it was found that among the 35 work skills, the ranking of skills required by the industry for graduates of the Bachelor of Building Engineering Education Program, from highest to lowest, is as follows. The five most highly required skills in the workforce are ethics, internet skills, computer skills, integrity, and responsibility. On the other hand, the skills with the lowest average ratings are lifelong learning ability, general knowledge, knowledge in the field or discipline, knowledge outside the field or discipline, and English language proficiency.

Comparison of Work Skills Possessed by Graduates and Those Required by the Industry

Ideally, the work skills possessed by graduates and those required by the industry should be the same or closely aligned, so that graduates do not face difficulties in finding employment and adapting to the workforce. The results of the comparison between the skills possessed by graduates and the skills required by the industry can be seen in Figure 7.

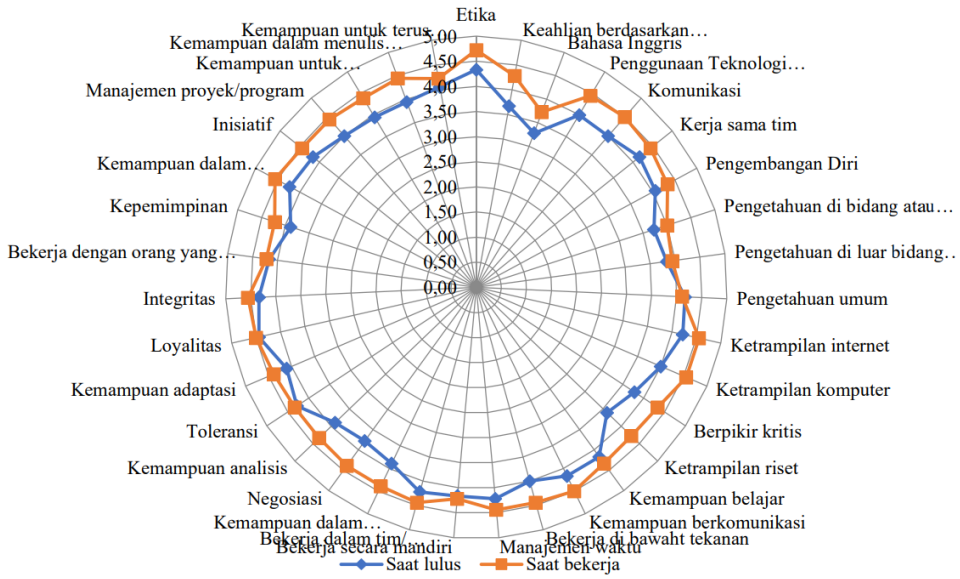

Figure 7. Comparison of Work Skills Possessed by Bachelor of Building Engineering Education Program Graduates and Those Required by the Industry

Based on Figure 7, it was found that the work skills possessed by graduates have an average score lower than the average score of the work skills required by the industry. This indicates a gap between the graduates' abilities and the industry's needs, suggesting the need to enhance skills to

align with these requirements. One way to address this gap is by integrating the work skills required by the industry into the university curriculum.

Evaluation of Alumni by Employers

The employers of the alumni who participated as respondents are four institutions: Javaland Architect, PDAM Surya Sembada Kota Surabaya, PT. Graha Muriatama Indonesia, and SMK Negeri 2 Surabaya. The performance of alumni based on the evaluation from the head of schools can be seen in Table 1.

Table 1. Alumni Performance

No.	*Employer*	*Number of Alumni*	*Alumni Performance*
1.	Javaland Architect	1	Good
2.	PDAM Surya Sembada Kota Surabaya	1	Very Good
3.	PT. Graha Muriatama Indonesia	2	Good
4.	SMK Negeri 2 Surabaya	8	Good

Based on Table 1, it was found that the average performance of alumni, according to employers, is considered good. The evaluation of work skills by employers can be seen in Figure 8.

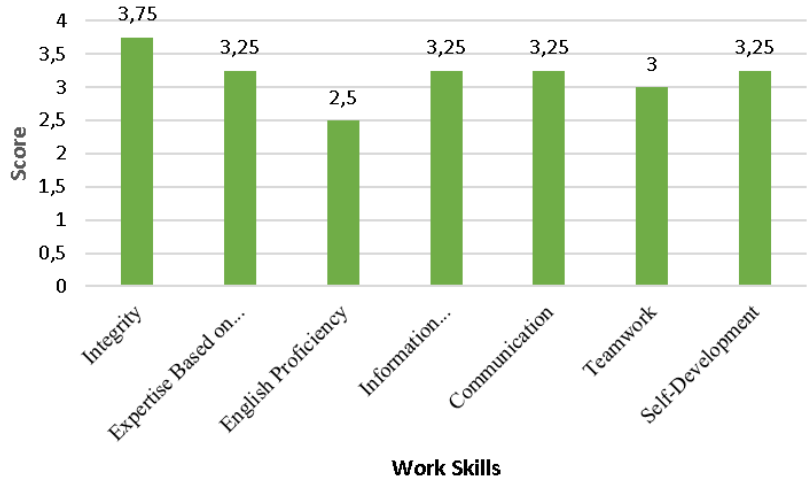

Figure 8. Employers' Evaluation of Alumni Work Skills

Based on Figure 8, it was found that among the seven work skills assessed, the highest scores were given to integrity (ethics and morals), followed by the use of information and technology. The lowest score was for English language skills. In addition to work skills, employers also highlighted

areas where alumni were lacking and skills that should be added. According to the four employers, the areas where alumni lacked proficiency were communication and presentation, particularly the use of English, and leadership and work pattern development. The skills that need to be added to the study program include Building Information Modeling (BIM).

CONCLUSION

Based on the data analysis and discussion, the following conclusions can be drawn. (1) The majority of graduates of the Bachelor Civil Engineering Education Program work in private companies. The alignment between graduates' jobs and the program's profile shows that 60% of the jobs are suitable. (2) The work skills possessed and required by the graduates of the Bachelor of Building Engineering Education Program are almost the same, but the work skills in the workplace show higher scores. (3) The evaluation from employers regarding alumni performance is categorized as good, and the work skills are also considered good.

Based on the conclusions above, the recommendations from this study are as follows. (1) The study program should use the results of the tracer study as a reference in formulating the curriculum to ensure that the work competencies align. (2) Alumni should actively communicate with the program to provide information related to jobs and the emerging skills needed in the workforce.

REFERENCE

Andarningtyas, N. (2020). Menyambut era transformasi digital 2021. *Antaranews*. Cited from antaranews.com/berita/1921172/menyambut-era-transformasi-digital-2021

Sailah, I. (2011). *Perlunya tracer study untuk pendidikan tinggi*. Jakarta: Direktur Pembelajaran & Kemahasiswaan Ditjen Dikti.

Divisi Riset ITB Career Center. (2020). *Report tracer study ITB 2020*. Bandung: Penerbit ITB.

Tim Penyusun. (2021). *Buku pedoman tracer study Universitas Negeri Surabaya*. Surabaya: Unesa.

Amadi, J., Fadly, B., & Lusiah, L. (2019). Studi pelacakan alumni program studi manajemen dan program studi akuntansi Sekolah Tinggi Ilmu Ekonomi IBBI. *Jurnal Ilman: Jurnal Ilmu Manajemen, 6*(1).

Nugraheni, Y., Susilawati, S., Sudrajat, S., & Apriliandi, A. (2020). Tracer study analysis of vocational education in Politeknik Negeri Bandung with exit cohort as an approach. In *First International Conference on Applied Science and Technology (iCAST 2018)* (pp. 110–115). Atlantis Press.

Adistana, G. A. Y. P., Nusantara, D. A. D., Wulandari, M., Mulyono, W. D., & Rahmadyanti, E. (2021). Tracer study of alumni on the outcome's study programs in the Civil Engineering Department Universitas Negeri Surabaya. In *International Joint Conference on Science and Engineering 2021 (IJCSE 2021)* (pp. 705–709). Atlantis Press.