Assessment of Programme Educational Objectives Achievement and Employability Outcomes among Diploma in Quantity Surveying Graduates.

Sukmawati Binti Ismail[1*], Rosidah Binti Mohd Saad[2], Sr Dr. Haryati Binti Ismail[3]

[1] Department of Civil Engineering & Politeknik Kota Bharu, Kelantan
[2]Department of Civil Engineering & Politeknik Kota Bharu, Kelantan
[3] Department of Civil Engineering & Politeknik Kota Bharu, Kelantan

[1]sukmawati@pkb.edu.my; [2]rosidahsaad@pkb.edu.my; [3]haryati@pkb.edu.my

Abstract— **This study aimed to assess the achievement of *the Programme Educational Objectives* (PEO) and the employability outcomes of Diploma in Quantity Surveying graduates. This study used a quantitative approach with a descriptive design through a questionnaire of alumni who graduated in December 2017. The data were analyzed using descriptive statistics such as frequency, percentage and min score. The findings of the study showed that PEO achievement was at an all-time high, with a mean score ranging from 4.22 to 4.45. PEO 2 recorded the highest mean score, showing strong achievements in terms of communication, social skills, leadership, moral values and social responsibility. However, the employability findings show a mixed situation. Although the employment rate of graduates is high at 77.3%, only 32.8% work in the field of Quantity Surveying, while 67.2% work outside the field. In addition, only 6.9% of graduates are registered with BQSM, indicating a still low level of professional engagement. The study concludes that high PEO achievement supports the general employability of graduates, but job placement and professional development still need to be strengthened through career guidance, industry exposure, professional registration pathways and curriculum improvements.**

Keywords*— *Programme Educational Objectives, Graduate Employability, Quantity Surveying, TVET, Outcome-Based Education.

I. INTRODUCTION

Technical Education and Vocational Training (TVET) play a crucial role in providing graduates who are skilled, competent, and responsive to the needs of the current job market. In the context of results-based higher education, Outcome-Based Education (OBE) is the main approach to ensure that curriculum planning, delivery methods, assessment and achievement of graduates are in line with the needs of the industry as well as long-term career development. Previous studies have shown that OBEs can strengthen the relationship between learning outcomes, graduate competencies and employability through systematic alignment between curriculum, assessment and employment requirements [1]–[4]. In this regard, the evaluation of Programme Educational Objectives (PEO) is very important because PEO serves as a medium-term indicator to assess the extent to which academic programmes are successful in producing graduates who not only possess technical knowledge, but also communication skills, problem-solving skills, ethical values, entrepreneurial characteristics and awareness of lifelong learning.

In the Diploma in Quantity Surveying program, the PEO's achievements need to be evaluated empirically because the field of materials surveying has a direct relationship with the construction sector, cost management, contract documentation, procurement, project administration and professional practices. Although TVET is often associated with better job opportunities compared to general education pathways [5], the relationship between TVET education and actual employment still depends on the level of skills match, industry exposure, career support, and readiness of graduates to meet the needs of the job market [6]. Changes in the digital economy, the need for employability skills, and increased employer expectations have also made the evaluation of graduate outcomes even more important [7], [8]. In this context, PEO achievement should not be viewed only through alumni perception scores, but rather should be linked to employability outcomes such as employment status, suitability of the field of employment, income level, registration of professional bodies and career development

However, the main issue that underpins this study is that the percentage of Diploma in Quantity Surveying graduates working in the Quantity Surveying field is too low, thus indicating the possibility of a gap between the objectives of the programme and the actual employment outcomes of the graduates. Based on alumni data, a total of 58 people or 77.3% of respondents have worked, but only 20 people or 32.8% work in the field of Quantity Surveying, while 41 people or 67.2% do not work in the field. These findings suggest that the overall employment rate is relatively good, but the level of job matching to the field of study is still low. In addition, the level of professional registration was also low when only 4 people or 6.9% of respondents were registered with BQSM, while 54 people or 93.1% were not registered. These data indicate that professional engagement and career advancement paths in the field of materials surveying have not yet reached the expected levels.

At the same time, there is a lack of empirical evidence on the relationship between PEO achievement and the employability outcomes of Diploma in Quantity Surveying graduates. Although the data shows that the mean score of PEO achievement is at a high level, namely PEO 1 of 4.3784, PEO 2 of 4.4459, PEO 3 of 4.2973 and PEO 4 of 4.2162, the true relationship between these achievements and employment status, field match, income, professional registration and career development still needs to be analysed in more depth. Past studies have also pointed out that the employability of graduates is not only influenced by learning achievements, but also by work-based learning, digital literacy, entrepreneurship, self-efficacy, vocational identity, and career choice motivation

[7]–[11]. Therefore, this study is important to link PEO achievements with the reality of graduates' employment results after graduation.

This study is entitled "Assessment of Programme Educational Objectives, Achievement and Employability Outcomes among Diploma in Quantity Surveying Graduates". The first objective of this study was to study the level of achievement of the Programme Educational Objectives (PEO) among graduates of the Diploma in Material Survey based on the aspects of technical knowledge, communication skills, problem solving, ethics, entrepreneurship and lifelong learning. The second objective is to analyse the relationship between the achievement of the Programme Educational Objectives (PEO) and the employability outcomes of Diploma in Materials Survey graduates in terms of employment status, job suitability, income level, registration of professional bodies and career development.

The significance of this study can be seen from its contribution to government, community, industry and the development of knowledge. For the government, the findings of the study can support improvements in TVET policies, programme accreditation and evidence-based graduate employability strategies [12]. To the community, this study shows the role of TVET as a pathway to human capital development, social mobility and increased employment opportunities. To the industry, this study helps to identify the gap between the competence of graduates and the actual needs of the construction and materials surveying sector. From the point of view of new knowledge, this study contributes to the literature related to the relationship between PEO achievement, job matching, professional development and employability of graduates in the context of Diploma in Quantity Surveying.

The scope of this study focused on the evaluation of PEO achievements for the Diploma in Quantity Surveying programme and involved alumni who graduated in December 2017 as the main respondents. This study assesses four key aspects of PEOs, namely technical knowledge and competence in the field of Quantity Surveying, communication, social skills, leadership, moral values and social responsibility, ability to solve problems innovatively, creatively and ethically, as well as entrepreneurial skills and awareness of lifelong learning. The study also focuses on the employability outcomes of graduates after graduation, including employment status, whether they work in the field of Quantity Surveying or not, employment sector, type of firm or organisation, income level, registration with professional bodies such as BQSM, further studies and career development. However, this study did not involve direct evaluations from employers, did not make comparisons with other programs or institutions, and did not evaluate the entire curriculum in detail.

II. LITERATURE REVIEW

This literature review discusses the relationship between Outcome-Based Education (OBE), Programme Educational Objectives (PEO) and graduate employability outcomes in the context of TVET education, particularly for the Diploma in Quantity Surveying programme. In results-based higher education, OBEs emphasize clarity of learning outcomes, curriculum alignment, continuous assessment, and graduate achievement after graduation. Raihan and Azad pointed out that research related to outcome-based learning and the employability of graduates is increasingly important as higher education institutions need to prove that the curriculum developed truly contributes to the needs of the job market [1]. Syeed *et al.* explained that OBEs in engineering and technical education require a systematic process, starting from programme outcome planning, teaching implementation, achievement measurement and continuous improvement [2]. This is also supported by

Mahrishi *et al.* who found that OBEs help strengthen the alignment between learning outcomes, industry needs and graduate competency development [3].

In the context of PEOs, the assessment of graduates after graduation is important because PEOs reflect the graduates' medium-term achievements in terms of career, professionalism, lifelong learning, and contribution to society. Li and Rohayati show that learning outcomes have a relationship with graduate competence, particularly when supported by project-based learning and appropriate assessment strategies [4]. Therefore, for the Diploma in Quantity Surveying program, the PEO should not be evaluated in isolation from the job reality of the graduates. PEOs that include technical knowledge, communication skills, problem-solving, ethics, entrepreneurship and lifelong learning should be linked to employability indicators such as employment status, field match, income, professional registration and career development.

Studies in the field of TVET show that the relationship between technical education and employment is complex. Murshed found that TVET has the potential to increase employment opportunities compared to general education, but its effectiveness depends on the suitability of skills to the needs of the industry [5]. Paudel *et al.* also pointed out that the relationship between TVET and employment requires stronger cooperation between educational institutions, industry and employment systems [6]. Suyitno *et al.* On the other hand, it has been proven that work-based learning can improve employability skills, particularly through practical experience, self-efficacy and vocational identity formation [7]. In the same context, Liu points out that satisfaction with industrial learning and training influences students' tendency to stay in current jobs [8], while Arinaitwe emphasizes the importance of collaboration between vocational training institutions and workplaces to improve the quality of learning [9].

However, the findings of past studies have also shown that high achievement of competencies or learning outcomes does not necessarily guarantee job matching. Kholifah *et al.* found that digital employability skills play an important role in the job readiness of vocational graduates [10], while another study by Kholifah *et al.* showing that self-efficacy influences the career choice of vocational students [11]. Swaramarinda *et al.* stressed that digital literacy, entrepreneurial competence and digital entrepreneurship education are increasingly important in preparing graduates to face the digital economy [12]. Antunes *et al.* found that vocational students' decisions about education and employment are also influenced by financial pressures, social networks and perceptions of the feasibility of career paths [13]. These findings show that employability does not only depend on academic achievement or PEO, but is also influenced by psychological, economic, social and job market structures.

The issue of job mismatch has also become an important debate in the TVET literature. Wicht *et al.* shows that job changes in vocational pathways can occur when individuals change career paths to suit aspirations, job status, and job characteristics that are more suitable [14]. Herrmann and Kühn, on the other hand, emphasize that a lack of career information can influence students' decisions and the risk of vocational path mismatches [15]. In addition, Zambelli *et al.* shows that job satisfaction is influenced by an individual's suitability with supervisors, work groups, job efficacy, and meaningful work concepts [16]. This is relevant to this study because alumni data shows that although the employment rate is 77.3%, only 32.8% of graduates work in the field of Quantity Surveying, while 67.2% work outside the field. Furthermore, only 6.9% of respondents are registered with BQSM, indicating a still low level of professional engagement.

Overall, this literature review shows that OBEs and PEOs are important bases in assessing the effectiveness of academic programmes, but the PEO achievements need to be analysed together with the results of the actual employability of graduates. While previous studies have extensively discussed TVET, employability, self-efficacy, digital literacy and work-based learning, there is still a lack of empirical studies linking PEO achievement to the employability outcomes of Diploma in Quantity Surveying graduates specifically. Furthermore, the study data showed that the mean PEO score was at a high level, namely PEO 1 of 4.3784, PEO 2 of 4.4459, PEO 3 of 4.2973 and PEO 4 of 4.2162, but employment matching in the field of QS and professional registration was still low. Therefore, this study is important to fill the literature gap by assessing the relationship between PEO achievement and graduates' employability outcomes in terms of employment status, field matching, income, professional registration and career development.

III. METHODOLOGY

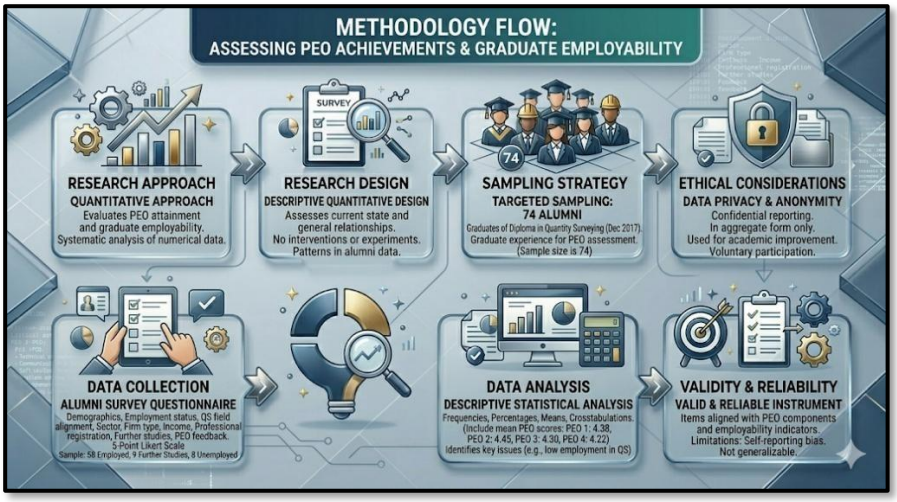


Fig 1 Research Methodology Flow

Figure 1 shows the flow of study methodologies used to assess the achievement of Programme Educational Objectives (PEO) and graduate employability outcomes. This study uses a quantitative approach because the data analysed is in the form of numbers such as frequency, percentage and mean score. The design of the study is descriptive, which aims to explain the current situation related to employment status, employability trends, income and achievements of alumni PEOs. The study sample consisted of alumni of the Diploma in Quantity Surveying who graduated in December 2017, with a total of 74 respondents. Data was collected using an alumni questionnaire that included demographic profiles, employment data, and responses to PEOs using a five-point Likert scale. Next, the data were analyzed using descriptive statistics such as frequency, percentage, mean score and cross-analysis. This diagram also shows that the study took into account aspects of research ethics, including data confidentiality and reporting in the aggregate, as well as ensuring the validity and reliability of the instrument through the alignment of the questionnaire items with the study objectives and PEO constructs.

IV. RESULTS AND FINDINGS

Objective 1: Assess the level of achievement of PEO graduates of the Diploma in Quantity Surveying.

TABLE 1

PEO ACHIEVEMENT STAGE FOR DIPLOMA GRADUATES IN QUANTITY SURVEYING

PEO Code	PEO Aspect Evaluated	N	Mean Score	ievement Level	Rank	Main Observation
PEO 1	Technical knowledge, technical competency and ability to adapt to technology and construction industry challenges	74	4.38	High	2	Strong achievement in technical knowledge and industry adaptability
PEO 2	Effective communication, social skills, leadership, good moral behaviour and responsibility towards society	74	4.45	High	1	Highest mean score; strongest achievement in soft skills, morals and social responsibility
PEO 3	Problem solving in Quantity Surveying matters innovatively, creatively and ethically	74	4.30	High	3	Good achievement in ethical and creative problem solving

PEO 4	Entrepreneurship skills and lifelong74 learning for career advancement	4.22	High	4	High achievement, but lowest among the four PEOs; needs continuous strengthening

Based on the table 1, the level of achievement of the Programme Educational Objectives (PEO) for Diploma in Quantity Surveying graduates as a whole is at a high level, with a mean score ranging from 4.22 to 4.45. PEO 2 recorded the highest mean score of 4.45, indicating the strongest achievements in terms of effective communication, social skills, leadership, moral values and responsibility towards society. This was followed by PEO 1 with a mean score of 4.38, which showed graduates had technical knowledge, field competence and the ability to adapt to technology as well as the challenges of the construction industry. PEO 3 recorded a mean score of 4.30, reflecting the ability of graduates to solve problems related to Quantity Surveying in an innovative, creative and ethical manner. Although PEO 4 recorded the lowest mean score of 4.22, its achievements are still at a high level, but the aspects of entrepreneurship and lifelong learning need to be strengthened to support the career development of graduates.

Objective 2: To analyze the relationship between PEO achievement and graduate employability outcomes.

TABLE 2

ALIGNMENT BETWEEN PEO ACHIEVEMENT AND GRADUATE EMPLOYABILITY OUTCOMES AMONG DIPLOMA IN QUANTITY SURVEYING GRADUATES

Dimension	Indicator	Finding	Interpretation
PEO Achievement	PEO 1: Technical knowledge, competency and industry adaptability	Mean = 4.38	High achievement in technical competency and adaptability
PEO Achievement	PEO 2: Communication, leadership, moral values and social responsibility	Mean = 4.45	Highest PEO achievement; strongest graduate attribute
PEO Achievement	PEO 3: Innovative, creative and ethical problem-solving	Mean = 4.30	High achievement in ethical and problem-solving ability
PEO Achievement	PEO 4: Entrepreneurship and lifelong learning	Mean = 4.22	High achievement but lowest among the four PEOs
Employability Outcome	Employed graduates	77.30%	Indicates good general employability
Employability Outcome	Further study	12.00%	Indicates academic and career progression pathway
Employability Outcome	Unemployed graduates	10.70%	Indicates remaining employability challenge
Job-field Relevance	Working in Quantity Surveying field	32.80%	Low alignment between field of study and employment
Job-field Relevance	Not working in Quantity Surveying field	67.20%	Indicates high job-field mismatch
Income Level	RM1001–RM2000	44.80%	Majority are in the lower-middle income range
Income Level	RM2001–RM3000	41.40%	Many graduates are in the moderate income range

Professional Registration	Registered with BQSM	6.90%	Very low professional registration
Professional Registration	Not registered with BQSM	93.10%	Indicates weak professional engagement

Table 2 shows the alignment between PEO achievement and graduate employability outcomes. The findings showed that all four PEOs were at a high level with a mean score ranging from 4.22 to 4.45. PEO 2 recorded the highest mean score, indicating strong achievements in the aspects of communication, leadership, moral values and social responsibility. However, marketability indicators show mixed results. While 77.3% of graduates have worked, only 32.8% work in the field of Quantity Surveying, while 67.2% work outside the field. Additionally, professional enrollment is still low, with only 6.9% of graduates enrolled with BQSM. These findings suggest that PEO's high achievement is reflected through general employability, yet its alignment with job field fit and professional development is still limited.

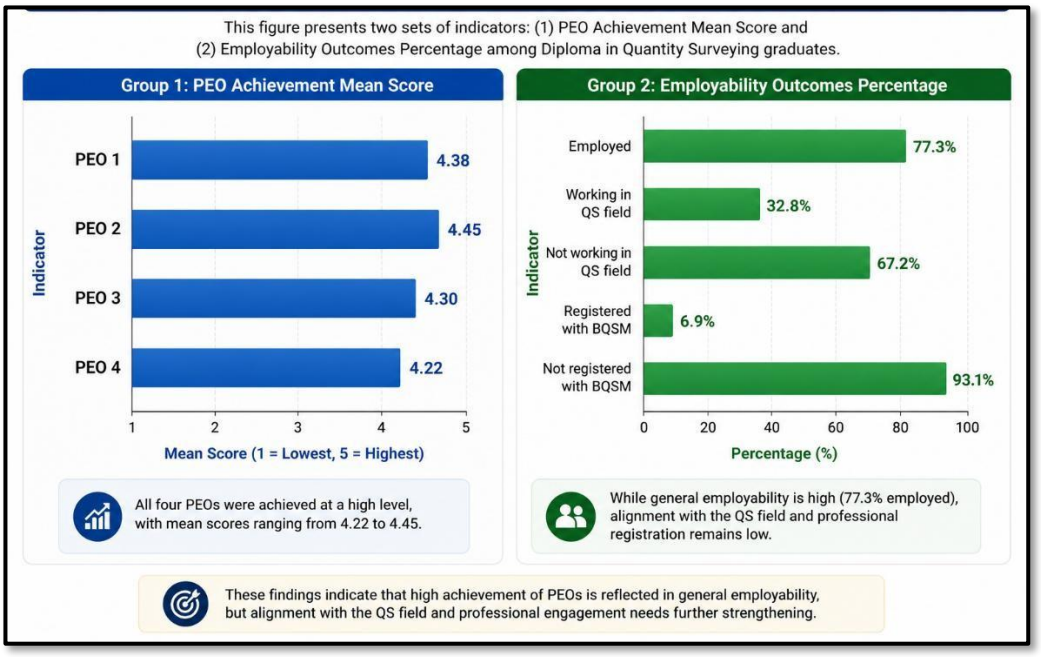


Fig 2 PEO Achiement and Employabiliy Outcome Indicators

The figure 2 shows a comparison between the achievement of the Programme Educational Objectives (PEO) and the indicators of employability of Diploma in Quantity Surveying graduates. Overall, all PEOs recorded high performance with a mean score ranging from 4.22 to 4.45, with PEO 2 recording the highest score of 4.45, followed by PEO 1 of 4.38, PEO 3 of 4.30 and PEO 4 of 4.22. In terms of employability, the employment rate of graduates is high at 77.3%, but only 32.8% work in the field of Quantity Surveying, while 67.2% work outside the field. In addition, the level of professional enrolment is also still low as only 6.9% of graduates are registered with BQSM, compared to 93.1% who are not registered. These findings show that high PEO achievement has supported the general employability of graduates, yet employment matching in the field of QS and professional engagement still needs to be strengthened.

V. CONCLUSIONS

In conclusion, this study found that the achievement of Programme Educational Objectives (PEO) for Diploma in Quantity Surveying graduates was at a high level with a mean score ranging from 4.22 to 4.45, indicating that the programme successfully develops graduates with technical knowledge, communication skills, ethical values, problem-solving skills, entrepreneurship and lifelong learning awareness. However, the high PEO achievement has not yet fully translated into specific employability results in the field of Quantity Surveying, when only 32.8% of graduates work in the field and only 6.9% are registered with BQSM, despite the overall employment rate being

high at 77.3%. These findings show that PEOs support the general employability of graduates, yet the issues of job matching and professional development still need to be strengthened. In line with previous studies, the employability of graduates is not only dependent on academic achievement or OBE, but is also influenced by industry connections, work-based learning, self-efficacy, digital literacy and career motivation [1]–[16]. Therefore, the programme needs to strengthen career guidance, industry exposure, professional registration pathways and curriculum improvements to ensure that graduates are better prepared to build careers in line with the field of Quantity Surveying.

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DECLARATION OF GENERATIVE AI USAGE

In the process of preparing this manuscript, the author has used *ChatGPT (OpenAI)* as a support tool to assist in the generation of initial ideas, the preparation of writing structures, literature review in general, as well as the improvement of language aspects and writing clarity. However, the author has conducted a thorough review, critical evaluation, and editing of all the content produced. The author hereby confirms that all final content is the full responsibility of the author and adheres to the ethical standards of academic writing.

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