Employer Satisfaction with Industrial Training Students in The Naval Architecture Diploma Program: A Case Study at Politeknik Bagan Datuk for Session 2 Of 2022/2023

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Abstract

This study aimed to evaluate the satisfaction of employers regarding the performance of Politeknik Bagan Datuk students who completed their industrial training as part of the Diploma in Naval Architecture program. Feedback was gathered from 10 respondents working in Naval Architecture companies through an online survey using Google Form. A research instruments comprising three sections on knowledge quality, practical skills, and generic skills of the students during their industrial training was created and analyzed using statistical mean calculations. The results indicated that the mean scores for all three categories were consistently above 3.80, indicating a high level of quality in the students' knowledge and skills as required by the industry. Furthermore, the assessment of industry acceptance and demand for the Naval Architecture program offered received a high mean score of 4.86, demonstrating the program's relevance to the shipbuilding and repair industry at Politeknik Bagan Datuk.

Keywords: - Naval architecture, industrial training, employer satisfaction study

1. Introduction

Employers across various industries consistently seek out competent and highly skilled graduates, emphasizing that academic qualifications alone are not sufficient (Jamil et al., 2022). The inadequate level of students' knowledge mastery and technical skills poses a challenge for companies and industries, underscoring the importance of enhancing these competencies. Industrial Training serves as a platform to familiarize students with the practical aspects of work, enabling them to develop technical and generic skills during their training (Arsat, 2011).

A key strategic focus in the Polytechnic and Community College Strategic Plan (2018-2025) is the production of high-quality TVET graduates (KPT JPPKK, 2018). This strategic objective encompasses six core attributes—knowledge, thinking skills, ethics, spirituality, leadership, national identity, and language skills—with three specific strategic goals. To align with this plan, it is essential to conduct studies that gather employer feedback to tailor graduate preparation to meet market demands. Moreover, evaluating the effectiveness of student industrial training is crucial for enhancing the management of industrial training within the polytechnic system (Rahman et al., 2015 and Mohd et al., 2019).

Since there are not many employer satisfaction studies related to naval architecture and marine engineering students on industrial training outcome, hence there are many opportunities to publish the data and studies related to maritime field of education. While Antolihao et al. (2023) in her naval architecture and marine engineering graduate tracer study suggested that shipyard tour and site visit exposure to need to be included in the study program to prepare students for maritime related occupation readiness and internship preparedness. Thus, this study aims to evaluate the academic knowledge, technical skills, generic skills of industrial training students, and the management of industrial training unit at Bagan Datuk Polytechnic.

2. Methodology

This study employs a statistical mean approach by utilizing a questionnaire as the primary instrument. Drawing data from industrial training records at the Industrial Liaison and Training Unit of Politeknik Bagan Datuk for Session 2 of 2022/2023, 14 students completed their training across 10 different companies. Subsequently, a survey link was distributed to the official emails of 10 industries supervisors who participated as respondents, utilizing the online Google Form platform. For session 2 of 2022/2023 academic calendar, there are only 14 students went for industrial training at 10 different marine industries. Hence, all the 10 industries have been chosen as the sample size.

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2.1 Research Instruments

The research instrument featured answer choices based on a Likert scale ranging from 1 to 5 where 1 (strongly disagree), 2 (disagree), 3 (moderately agree), 4 (agree), and 5 (strongly agree). The Likert scale was selected for its enhanced reliability, validity, and organizational structure (Sugiyono, 2018). Following data collection, the study's findings were analysed using the descriptive statistical approach to determine the mean and average mean for each question. Furthermore, a reliability test was conducted using the Statistical Package for Social Science (SPSS) version 22.0 software, revealing a Cronbach's Alpha Reliability Coefficient value of .80 for all instrument items. The Cronbach's alpha coefficient value of more than 0.6 indicate the good correlation between all the questionnaire items and shows the consistency of the respondents' response.

The research questionnaire consists of 3 main categories namely:

1. Academic Knowledge and Student's Practical Skills.
2. Implementation of Industrial Training
3. Industrial Training Unit Management Performance and Program Feedback

For the analysis of the respondent's feedback, the mean score interpretation based on Landell (1997) is used to interpret the level of tendency of the respondent's decision as in Table 1.

Table 1. Interpretation of mean score (Landell, 1997)

Group Code	Mean Range	Level
1	1.00 – 2.39	Low
2	2.40 – 3.79	Moderate
3	3.80 – 5.00	High

3. Result and Discussion

There are three (3) categories to be discussed using the analyzed mean score as stated below:

a) Category A: Analysis of Determining the Level of Employer Satisfaction with Students Through Academic Knowledge and Practical Skills of Students During Industrial Training

This section presents the findings from the data analysis conducted on 8 question items related to Academic Knowledge and Student Skills during industrial training. The results reveal important insights into the respondents' perceptions and satisfaction levels.

Item 1 demonstrates that 64.30% of respondents agree that students possess good academic knowledge and can address marine-related issues during their industrial training. On the other hand, 35.70% of respondents provided a neutral response to this item.

Moving on to Item 2, it is revealed that 64.30% of respondents agreed that students effectively applied their knowledge and skills in design software such as Maxsurf and Autocad during their industrial training. The remaining 35.70% of respondents gave a moderately agreeable response to this item.

Item 3 focuses on the application of engineering practices, including Basic Welding, Plate Cutting, Measurement, and Machining, during industrial training. The responses indicate that 42.9% of respondents strongly agree, 21.4% agree, and 14.3% moderately agree with this statement.

Regarding Item 4, 42.9% of respondents strongly agree and 21.4% agree that students possess the necessary knowledge and skills in work management and documentation during their industrial training. However, 21.43% of respondents provided a moderately agreeable response, while 14.3% disagreed.

For Item 5, a significant 42.9% of respondents strongly agree that students have knowledge and skills in using email and Microsoft Office software, specifically Microsoft Word, Excel, and PowerPoint. Additionally, 57.1% of respondents agree with this statement.

Moving on to Item 6, the responses indicate that 57.1% of respondents strongly agree, 28.6% agree, and 14.2% moderately agree that students have good workplace safety knowledge during their industrial training. Item 7 sheds light on the communication skills of students in the Malay language and their ability to provide feedback and contribute ideas during discussion sessions. The findings reveal that 78.5% of respondents agree with this statement, while 14.3% provided a neutral response and 7.1% disagreed. Finally, Item 8 explores the English communication skills of students, their ability to write reports, and their proficiency in utilizing English at work. The responses show that 28.6% of respondents strongly agree, 42.9% agree, 14.3% moderately agree, 7.1% disagree, and 7.1% strongly disagree with this statement.

In summary, Table 2 presents the conclusions drawn from all 8 items in the Academic Knowledge and Student Skills Category during industrial training. The overall average mean score is 4.05, with item 8 receiving the lowest mean score of 3.79 and items 5 - 6 obtained the highest mean score of 4.43. These findings indicate a high level of employer satisfaction with the academic knowledge and skills demonstrated by students during their industrial training. However, the English proficiency level of the students need more improvement as item 8 fall into moderate aptitude level. More attention also needs to investigate item 1 – 4 as the aptitude level of these items are just slightly above the high level of aptitude mean range on academic knowledge and practical skills.

Table 2. Mean score analysis and aptitude level for category A items

Item No.	Analysis of Determining the Level of Employer Satisfaction with Academic Knowledge and Practical Skills of Students During Industrial Training	Mean	Aptitude Level
1	Students have good academic knowledge and are able to answer issues in the marine field.	3.86	High
2	Students apply well the knowledge and skills of design software such as Maxsurf and AutoCAD.	3.86	High
3	Students apply well the knowledge and skills of engineering practices such as Basic Welding, Plate Cutting, Measurement procedure and Machining.	3.86	High
4	Students have knowledge and skills in work management and documentation.	3.93	High
5	Students have knowledge and skills in the use of email and Microsoft Office software such as Microsoft Words, Microsoft Excel and Microsoft PowerPoint.	4.43	High
6	Students have a good workplace safety knowledge.	4.43	High
7	Students have a good Malay language communication skills and are able to give feedback and contribute ideas during the discussion session.	4.29	High
8	Students have a good English communication skills and are able to write reports and maximize the use of English at work.	3.79	Moderate

b) Category B: Analysis of Determining the Level of Employer Satisfaction with Students Through the Implementation of Industrial Training

Based on the data analysis conducted, the findings from category B show that the implementation of industrial training has resulted in a high level of employer satisfaction. The average mean score of 4.31, as shown in Table 3, indicates this high level of satisfaction. When analysing the responses to the question items, it was found that the respondents showed a high level of interest and commitment during their industrial training at the company. Specifically, 57.1% strongly agreed and 28.6% agreed with this statement. Additionally, 28.6% moderately agreed, 7.1% disagreed, and 7.1% strongly disagreed.

Regarding the ability to work in groups and with minimal supervision, 64.3% of the respondents strongly agreed and 21.4% agreed that students are capable of this. However, 14.3% of the respondents had a less agreeable response. Most respondents (35.7% strongly agreed and 64.3% agreed) stated that students are given appropriate skills training in the field of ship architecture during their industrial training. In terms of adaptability to the workplace environment and colleagues, 64.3% strongly agreed, 21.4% agreed, 7.1% disagreed, and 7.1% strongly disagreed.

For understanding tasks and executing instructions well, 42.9% of the respondents strongly agreed, 42.9% agreed, and 7.1% disagreed. Regarding students' work attitude, such as being responsible, diligent, and honest, 50% strongly agreed, 35.7% agreed, 7.1% moderately agreed, and 7.1% disagreed. In terms of communication skills with colleagues and supervisors, 50% strongly agreed, 35.7% agreed, 7.1% moderately agreed, and 7.1% disagreed. Lastly, when it comes to students' initiative and creativity in carrying out tasks, 50% strongly agreed, 28.6% agreed, 14.3% moderately agreed, and 7.1% disagreed.

Overall, the results of the analysis indicate that employers have a highly positive perception of the students' performance during their industrial training. The findings reveal a significant level of satisfaction among employers, highlighting the effectiveness of the training program in equipping students with the necessary skills and attributes for the workplace. The aptitude level scored an average mean score of 4.31 as shown in Table 3. The good number of mean scores above 4.0 also indicates that the students can adapt well during the industrial training and show a good working attitude and can communicate well with colleagues and supervisor.

Table 3. Mean score analysis and aptitude level for category B items

Item No.	Analysis of Determining the Level of Employer Satisfaction with Academic Knowledge and Practical Skills of Students During Industrial Training	Mean	Aptitude Level
1	Students show high interest and commitment when undergoing industrial training at your organization.	4.36	High
2	Students are able to work in groups as a team and able to work with minimal supervision after receiving instruction from industry supervisor.	4.36	High
3	Students are given skills training that is appropriate to the field of ship architecture while undergoing industrial training.	4.36	High
4	Students are able to adapt well to the workplace environment and collegues.	4.43	High
5	Students are able to understand well the tasks given and execute the instructions.	4.21	High
6	Students have a positive work attitude such as being responsible, diligent and honest while carrying out tasks in your company.	4.29	High
7	Students are able to communicate well with collegues and supervisors while performing duties at your company.	4.29	High
8	Does the student have initiative and creativity in carrying out the tasks given in your company.	4.21	High

c) Category C: Analysis of Determining the Level of Employer Satisfaction with The Management Performance of Industrial Training Units and Program Feedback

This section comprises 6 question items. From the data analysis, it's evident that for item 1, 85.7% of respondents strongly agree with the idea of the company considering more students from the same polytechnic for industrial training in the future, while the remaining 14.3% responded agreeably. Regarding item 2, all respondents agreed that the company might hire the students as permanent employees in the future. Item 3 concerns the Industrial Training Management Unit at Politeknik Bagan Datuk, focusing on their supervision of industrial training students. Responses indicate that 64.3% strongly agree, 7.1% agree, and 28.8% moderately agree.

Item 4 deals with the cooperation between the Industrial Training Management Unit and industry/companies, with 57.1% strongly agreeing, 21.4% agreeing, and another 21.4% giving a moderate response. Item 5 addresses the relevance of the Diploma Program in Naval Architecture offered by Politeknik Bagan Datuk to industry demand, with 100% agreement among respondents, split evenly between strong agreement and agreement.

Lastly, item 6 discusses Politeknik Bagan Datuk's plan to offer two new programs to meet marine industry needs, with 50% strongly agreeing, 35.7% agreeing, and 14.3% moderately agreeing. This indicates alignment with industry growth and demand. The conclusion for Category C highlights high employer satisfaction with the management performance of the industrial training unit and program feedback, evidenced by an average mean score of 4.50, as presented in Table 4.

Table 4. Mean score analysis and aptitude level for category C items

Item No.	Analysis of Determining the Level of Employer Satisfaction with Academic Knowledge and Practical Skills of Students During Industrial Training	Mean	Aptitude Level
1	Company will consider to take more internship students in the future.	4.86	High
2	Company might hire internship students as permanent employee in the future.	4.57	High
3	The Industrial Training Management Unit of Bagan Datuk Polytechnic manages the supervision of LI students well.	4.36	High
4	Industrial Training Management Unit, Bagan Datuk Polytechnic provide good cooperation with industry and companies.	4.36	High
5	The Diploma in Naval Architecture program conducted by Bagan Datuk Polytechnic is correctly relevant to industry demand.	4.50	High
6	Bagan Datuk Polytechnic developed TWO new programs namely Diploma in Marine Construction Engineering Technology and Diploma in Marine Electrical Engineering Technology to meet the current needs of the marine industry and they are relevant to meet the current needs and requirements of the marine industry.	4.36	High

All the category of study scored the average mean score above 4.0 that show a strong aptitude level toward the study attainment. However, academic knowledge on marine field of study and practical skills of students needs more room to improve as the average mean score level is the lowest amongst all the three (3) categories as shown in Table 5.

Table 5. Categories average mean score comparison

Category	Statement	Average mean score
A	Academic Knowledge and Student's Practical Skills.	4.05
B	Implementation of Industrial Training	4.31
C	Industrial Training Unit Management Performance and Program Feedback	4.50

4. Conclusion

The study findings indicate a high level of employer satisfaction regarding academic knowledge, students' practical skills, the execution of industrial training, and Bagan Datuk Polytechnic's success rate in industrial training endeavors. This is evident as the average mean scores for all three categories of questions exceeded the threshold for high levels, surpassing 3.80 as per the interpretation table. Notably, Item 8 in Category A requires particular attention from Politeknik Bagan Datuk, as it garnered the lowest mean score among all items.

Most respondents emphasized the importance of exposure to industry and maritime knowledge. This underscores the necessity for Bagan Datuk Polytechnic to adequately equip students with requisite knowledge before they embark on industrial training. Additionally, there was significant feedback regarding the enhancement of soft skills, given the demanding nature of the maritime industry, which necessitates the need of robust mental and physical endurance, along with effective communication with peers.

To fulfill the primary strategic objective of producing quality graduates and align with the fourth shift objective of the Malaysian Education Development Plan 2015-2025 (Higher Education), Politeknik Bagan Datuk must undertake proactive measures to implement the first strategic core and the

fourth shift of PPPM (PT) (KPM, 2015), guided by industry feedback to improve the student's quality.

References

Antolihao, M. J. R., Tangente, M. C., Madriaga, B. J., & Nodalo, C. N. L. Naval Architecture and Marine Engineering Graduates of the New Curriculum: A Tracer Study for SY 2017-2021.

Arsat, M., & Rahimi, S. D. (2011). Kemahiran generik dalam latihan industri terhadap pembentukan kerjaya jurutera di Dyson Manufacturing Sdn Bhd. *Journal of Science & Mathematics Education*, 1-8.

Jamil, M. Z. A. M., Othman, N. K., Rahman, I. A., Mohamed, F., & Zainuddin, Z. (2016). Keberkesanan Pelaksanaan Sistem Latihan Amali/Industri Dalam Pengurusan Penempatan Latihan Industri bagi Pelajar Pusat Pengajian Fizik Gunaan. *Jurnal Personalia Pelajar*, *19*(1).

KPM. (2015). Ringkasan Eksekutif Pelan Pembangunan Pendidikan Malaysia 2015 – 2025 (Pendidikan Tinggi).

KPT JPPKK, (2018). Plan Strategik Politeknik dan Kolej Komuniti 2018-2025.

Landell, K. (1977). *Management by Menu*. Wiley and Sons Inc, London.

Rahman, S. H. A., Mat Jusoh, Z. Y., Serji, R. A. M., & Salleh, M. (2015). Faktor-Faktor Kepuasan Majikan Terhadap Pelajar Latihan Industri Di Institut Pengajian Tinggi (Ipt): Satu Sorotan. In *E-Proceeding of the 2nd International Conference on Arabic Studies and Islamic Civilization* (pp. 619-627).

Sugiyono. (2018). *Metode Penelitian Kuantitatif*. Alfabeta.