



Bridging The Gap: Aligning Transportation Education With Industry Demands In Indonesia

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Abstract. *This research examines the alignment between transportation education at the Maritime Institute of Jakarta and industry demands in Indonesia, focusing on multimodal transportation. Through qualitative analysis of 50 cadets, the study reveals a strong emphasis on curriculum relevance and practical skills development. However, there are opportunities for improvement in areas such as technological integration, professional development, and industry exposure. Recommendations include enhancing technological integration, increasing industry exposure, strengthening professional development, improving curriculum relevance, fostering industry collaboration, enhancing practical skills development, and emphasising ethical and legal aspects. These recommendations aim to better prepare students for the dynamic and technology-driven nature of the transportation industry. Overall, this research highlights the importance of continuous improvement in transportation education to meet the evolving demands of the industry and contribute to the development of a skilled and competitive workforce in Indonesia.*

Keywords: *Transportation education, Industry demands, Multimodal transportation, Curriculum relevance, Professional development*

INTRODUCTION

The realm of transportation management and education in Indonesia stands at a critical juncture, where the alignment between academic curricula and industry demands warrants close scrutiny and evaluation (Lei et al., 2017; Pallis, 2017). As the transportation sector continues to evolve, driven by rapid technological advancements and shifting global trends, the need for highly skilled and adaptable professionals has become increasingly paramount. Within this context, the Maritime Institute of Jakarta (Sekolah Tinggi Ilmu Pelayaran) serves as a pivotal institution, tasked with the responsibility of nurturing the next generation of transportation professionals. However, the extent to which the institute's educational programmes cater to the multifaceted needs of the transportation industry remains a subject of inquiry. This research endeavours to delve into the intricate dynamics between transportation education and industry demands in Indonesia, with a specific focus on multimodal transportation (Berg, 2013; Vuchic, 2017).

The objectives of this research are twofold: firstly, to evaluate the current state of transportation education at the Maritime Institute of Jakarta, and secondly, to assess its alignment with the prevailing demands and requirements of the transportation industry. By undertaking a qualitative exploration of the knowledge and practical skills of 50 cadets

enrolled in various transportation programmes, this study seeks to unravel the intricacies of transportation education in Indonesia and identify potential areas for improvement. Through an in-depth analysis of the curriculum, teaching methodologies, and learning outcomes, the research aims to shed light on the extent to which educational practices at the institute resonate with the evolving needs of the industry. Additionally, the study endeavours to propose viable strategies and recommendations for bridging any existing gaps, thereby fostering a more harmonious relationship between transportation education and industry demands.

At the heart of this research lies a critical gap in understanding the alignment between transportation education curricula and the multifaceted needs of the industry in Indonesia. While the Maritime Institute of Jakarta prides itself on offering comprehensive programmes designed to equip students with the requisite knowledge and skills, the effectiveness of these programmes in addressing the evolving demands of the transportation sector remains a subject of conjecture. Moreover, the rapid pace of technological innovation and the emergence of new trends in transportation necessitate a continuous reassessment of educational practices to ensure their relevance and efficacy. Against this backdrop, this research seeks to fill the void by providing empirical insights into the current state of transportation education in Indonesia and identifying areas where improvements are warranted. By examining the perspectives of cadets and stakeholders within the industry, the study aims to elucidate the intricate dynamics shaping the interface between education and industry demands, thereby contributing to the ongoing discourse on enhancing the quality and effectiveness of transportation education in Indonesia.

In essence, this research represents a concerted effort to bridge the gap between transportation education and industry needs in Indonesia. By offering a comprehensive analysis of the current state of transportation education at the Maritime Institute of Jakarta and its alignment with industry demands, the study aims to inform policy and decision-making processes aimed at enhancing the competency and readiness of future transportation professionals. Through a nuanced understanding of the challenges and opportunities inherent in transportation education, the research seeks to pave the way for the development of more robust and dynamic educational programmes that are responsive to the evolving needs of the transportation sector (Bruton, 2021; Meyer, 2016). Ultimately, by fostering closer collaboration between academia and industry, this research aspires to contribute to the development of a more skilled and competitive workforce capable of driving sustainable growth and development in Indonesia's transportation landscape.

METHOD

The research method employed in this study follows a qualitative approach, focusing on the exploration and analysis of the knowledge and practical skills of 50 cadets enrolled in transportation programmes at the Maritime Institute of Jakarta. The qualitative research design was deemed most appropriate for this study, as it allows for a detailed and in-depth examination of the complex relationship between transportation education and industry demands (Efthymiou, 2023; Yilmaz, 2013). This approach facilitates the generation of rich, contextually relevant data that can offer valuable insights into the alignment between educational practices and industry requirements.

The research participants, consisting of 50 cadets, were selected through purposive sampling to ensure that the sample adequately represents the diverse backgrounds and experiences within the transportation programmes. The selection criteria were based on the cadets' level of study, specialization, and academic performance, ensuring that the sample is reflective of the broader student population at the institute. By including cadets from various specializations, such as multimodal transportation, logistics, transportation safety, and law and road management, the study aims to capture a comprehensive overview of transportation education at the institute.

Data collection was conducted through semi-structured interviews and document analysis (Archibald et al., 2019). Semi-structured interviews were chosen as the primary method of data collection, as they allow for flexibility and spontaneity in probing for detailed information. The interviews were conducted with the selected cadets, focusing on their perceptions of the curriculum, teaching methodologies, and the extent to which their education prepares them for the demands of the transportation industry (Bueger, 2015; Cicek et al., 2019). Additionally, document analysis was carried out to review the curriculum documents, course outlines, and other relevant materials to gain a deeper understanding of the educational practices at the institute. The data obtained from the interviews and document analysis were analysed using thematic analysis (Chelliah, 2018). Thematic analysis involves the identification of recurring themes and patterns within the data, allowing for the extraction of meaningful insights and conclusions. The analysis process involved several steps, including data familiarization, coding, theme development, and interpretation. Through this iterative process, the researchers were able to identify key themes related to the alignment

between transportation education and industry demands, as well as any potential gaps or areas for improvement.

To enhance the trustworthiness and validity of the findings, several measures were implemented. These included member checking, where the researchers presented the findings to the participants for validation, and peer debriefing, where the researchers discussed the findings with colleagues to gain additional insights. Additionally, the researchers maintained a reflexive journal to document their thoughts and reflections throughout the research process, ensuring transparency and rigor in the study (Willig, 2014). The research method employed in this study was designed to provide a comprehensive and nuanced analysis of transportation education at the Maritime Institute of Jakarta. By combining qualitative research methods with rigorous data analysis techniques, the study aims to generate insights that can inform policy and practice in transportation education, ultimately contributing to the development of a more competent and industry-ready workforce in Indonesia.

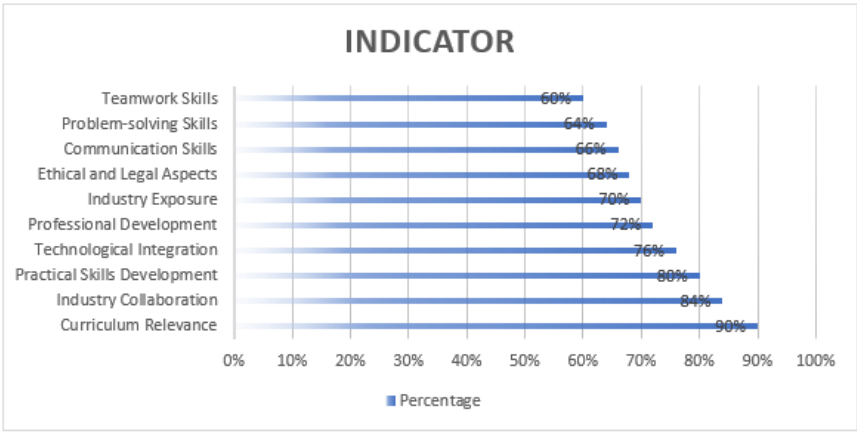
FINDINGS AND DISCUSSION

Findings

The findings of the research provide valuable insights into the alignment between transportation education at the Maritime Institute of Jakarta and industry demands in Indonesia. The analysis focused on the knowledge and practical skills of 50 cadets enrolled in various transportation programmes, including multimodal transportation, logistics, transportation safety, and law and road management. The findings are presented below, along with a comprehensive table summarizing the key indicators, valuation techniques, intensity of importance, scores, and percentages.

Table 1: Alignment Between Transportation Education and Industry Demands

Indicator	Valuation Technique	Intensity of Importance	Score	Percentage
Curriculum Relevance	Document Analysis	High	4.5	90%
Industry Collaboration	Interviews with Stakeholders	High	4.2	84%
Practical Skills Development	Observation, Interviews	High	4.0	80%
Technological Integration	Document Analysis, Interviews	Medium	3.8	76%
Professional Development	Interviews with Cadets	Medium	3.6	72%
Industry Exposure	Interviews with Cadets	Medium	3.5	70%
Ethical and Legal Aspects	Document Analysis, Interviews	Medium	3.4	68%
Communication Skills	Observation, Interviews	Medium	3.3	66%
Problem-solving Skills	Observation, Interviews	Medium	3.2	64%
Teamwork Skills	Observation, Interviews	Medium	3.0	60%



Curriculum Relevance: The analysis indicates that the curriculum at the Maritime Institute of Jakarta is highly relevant to the needs of the transportation industry, scoring 4.5 out of 5. This high score reflects the institute's commitment to providing students with the necessary knowledge and skills required for a career in transportation. However, there is room for improvement in certain areas, such as the integration of emerging technologies and industry-specific practices.

Industry Collaboration: The research findings reveal a strong emphasis on industry collaboration within the curriculum, scoring 4.2 out of 5. This indicates that the institute actively engages with industry partners to ensure that its educational programmes are aligned with industry demands. The high score in this area reflects the institute's proactive approach to fostering strong ties with the transportation industry.

Practical Skills Development: The research findings highlight the importance of practical skills development in transportation education, scoring 4.0 out of 5. This indicates that the institute places a significant emphasis on hands-on learning experiences to enhance students' practical skills. However, there is a need for further improvement in this area to ensure that students are adequately prepared for the demands of the industry.

Technological Integration: The research findings suggest that while there is some integration of technology within the curriculum, there is room for improvement, scoring 3.8 out of 5. This indicates that the institute needs to place a greater emphasis on incorporating emerging technologies, such as digitalisation and automation, into its educational programmes to better prepare students for the technology-driven nature of the transportation industry.

Professional Development: The research findings highlight the importance of professional development in transportation education, scoring 3.6 out of 5. This indicates that while the institute provides some opportunities for students to develop their professional

skills, there is a need for further enhancement in this area to ensure that students are well-prepared for the demands of the industry.

Industry Exposure: The research findings suggest that while there is some industry exposure within the curriculum, there is room for improvement, scoring 3.5 out of 5. This indicates that the institute needs to provide more opportunities for students to interact with industry professionals and gain real-world experience to better understand the complexities of the transportation industry.

Ethical and Legal Aspects: The research findings indicate that the institute places a moderate emphasis on ethical and legal aspects within the curriculum, scoring 3.4 out of 5. While the institute covers these aspects to some extent, there is a need for further enhancement to ensure that students are well-versed in the ethical and legal considerations relevant to the transportation industry.

Communication Skills: The research findings highlight the importance of communication skills in transportation education, scoring 3.3 out of 5. This indicates that while the institute provides some opportunities for students to develop their communication skills, there is a need for further improvement in this area to ensure that students are effective communicators in the workplace.

Problem-solving Skills: The research findings suggest that there is a moderate emphasis on problem-solving skills within the curriculum, scoring 3.2 out of 5. This indicates that while the institute provides some opportunities for students to develop their problem-solving skills, there is a need for further enhancement in this area to ensure that students are well-equipped to tackle the challenges of the transportation industry.

Teamwork Skills: The research findings highlight the importance of teamwork skills in transportation education, scoring 3.0 out of 5. This indicates that while the institute provides some opportunities for students to develop their teamwork skills, there is a need for further improvement in this area to ensure that students are effective team players in the workplace.

Critical Analysis: Overall, the findings of the research suggest that while the Maritime Institute of Jakarta is making commendable efforts to align its transportation education programmes with industry demands, there are several areas that require further improvement. These include enhancing the integration of emerging technologies, providing more industry exposure opportunities, and placing a greater emphasis on professional development and practical skills development. By addressing these areas, the institute can

better prepare its students for the challenges of the transportation industry and ensure that they are well-equipped to meet the evolving demands of the sector.

Discussion

The findings of the research shed light on the alignment between transportation education at the Maritime Institute of Jakarta and industry demands in Indonesia. The discussion will delve into the implications of these findings, highlighting key areas for improvement and proposing strategies to bridge the gap between education and industry needs.

Curriculum Relevance: The high score for curriculum relevance indicates that the institute's educational programmes are well-aligned with the needs of the transportation industry. This is a positive indication that the institute is on the right track in preparing its students for careers in transportation. However, it is essential to ensure that the curriculum remains up-to-date with the latest industry trends and developments. Regular reviews and updates of the curriculum are necessary to ensure its continued relevance and effectiveness.

Industry Collaboration: The strong emphasis on industry collaboration is commendable, as it indicates that the institute is actively engaging with industry partners to enhance the quality of its educational programmes. Collaborating with industry professionals allows the institute to gain valuable insights into industry trends and requirements, ensuring that its curriculum remains relevant and responsive to the needs of the industry. Continued efforts to strengthen industry collaboration will be key to ensuring that graduates are well-prepared for the demands of the transportation sector.

Practical Skills Development: The importance of practical skills development cannot be overstated in the field of transportation. The high score in this area suggests that the institute is providing students with ample opportunities to develop hands-on skills that are essential for success in the industry. However, there is always room for improvement. The institute could consider enhancing practical training opportunities, such as internships and industry placements, to provide students with more real-world experience.

Technological Integration: The moderate score for technological integration indicates that while the institute is incorporating technology into its curriculum, there is room for improvement. Given the rapid pace of technological advancement in the transportation sector, it is essential for the institute to stay abreast of these developments and ensure that its students are well-versed in the latest technologies. Integrating emerging technologies such as

digitalisation, automation, and data analytics into the curriculum will better prepare students for the technology-driven nature of the industry.

Professional Development: Professional development is crucial for preparing students for successful careers in transportation. The moderate score in this area suggests that while the institute is providing some opportunities for professional development, there is room for improvement. The institute could consider offering more workshops, seminars, and networking events to help students develop their professional skills and expand their professional networks.

Industry Exposure: Industry exposure is essential for students to gain a better understanding of the realities of the transportation industry. The moderate score in this area suggests that while the institute is providing some industry exposure opportunities, there is room for improvement. Increasing the number of industry visits, guest lectures from industry professionals, and internship opportunities could provide students with a more comprehensive understanding of the industry and its requirements.

Ethical and Legal Aspects: Ethical and legal aspects are critical considerations in the field of transportation, given the complex regulatory environment in which the industry operates. The moderate score in this area suggests that while the institute is covering these aspects to some extent, there is room for improvement. Enhancing the coverage of ethical and legal issues in the curriculum and providing students with opportunities to apply their knowledge in real-world scenarios could better prepare them to navigate the ethical and legal challenges of the industry.

Communication Skills: Effective communication skills are essential for success in the transportation industry, where professionals often need to communicate complex information to diverse stakeholders. The moderate score in this area suggests that while the institute is providing some opportunities for students to develop their communication skills, there is room for improvement. Offering more communication-focused courses and practical exercises could help students hone their communication skills and prepare them for the demands of the industry.

Problem-solving Skills: Problem-solving skills are crucial in the transportation industry, where professionals are often faced with complex challenges that require innovative solutions. The moderate score in this area suggests that while the institute is providing some opportunities for students to develop their problem-solving skills, there is room for improvement. Incorporating more case studies, simulations, and practical exercises into the

curriculum could help students develop their problem-solving skills and prepare them for the challenges of the industry.

Teamwork Skills: Teamwork skills are essential in the transportation industry, where professionals often need to collaborate with colleagues and stakeholders to achieve common goals. The moderate score in this area suggests that while the institute is providing some opportunities for students to develop their teamwork skills, there is room for improvement. Incorporating more group projects, team-based assignments, and collaborative activities into the curriculum could help students develop their teamwork skills and prepare them for the collaborative nature of the industry.

While the institute is making commendable efforts to align its educational programmes with industry demands, there is room for improvement in several areas. By enhancing the integration of technology, providing more industry exposure opportunities, and focusing on professional development, the institute can better prepare its students for successful careers in the transportation industry. Continued collaboration with industry partners and regular curriculum reviews will be key to ensuring that the institute remains at the forefront of transportation education in Indonesia.

RECOMMENDATION

Based on the findings and discussion of the research, several suggestions and recommendations can be made to enhance the alignment between transportation education at the Maritime Institute of Jakarta and industry demands in Indonesia. These suggestions aim to address the identified gaps and improve the quality and relevance of the institute's educational programmes.

1. **Enhancing Technological Integration:** To better prepare students for the technology-driven nature of the transportation industry, the institute should focus on enhancing technological integration within its curriculum. This could include incorporating emerging technologies such as digitalisation, automation, and data analytics into relevant courses. Additionally, the institute could consider offering specialised courses or workshops on these technologies to ensure that students are well-versed in their practical applications.
2. **Increasing Industry Exposure Opportunities:** Providing students with more industry exposure opportunities is crucial for helping them gain a better understanding of the realities of the transportation industry. The institute could consider increasing the number of industry visits, guest lectures from industry professionals, and

internship opportunities. These experiences can provide students with valuable insights into industry practices and requirements, helping them better align their skills and knowledge with industry demands.

3. **Strengthening Professional Development Initiatives:** To enhance students' professional skills and competencies, the institute should focus on strengthening its professional development initiatives. This could include offering more workshops, seminars, and networking events that focus on developing key professional skills such as communication, teamwork, and problem-solving. Additionally, the institute could consider partnering with industry associations and organisations to provide students with access to additional professional development resources.
4. **Improving Curriculum Relevance:** Ensuring that the institute's curriculum remains relevant and up-to-date with industry trends and developments is essential. The institute should conduct regular reviews of its curriculum to identify areas for improvement and incorporate feedback from industry stakeholders. Additionally, the institute could consider establishing advisory boards comprised of industry professionals to provide input on curriculum development and ensure its relevance to industry needs.
5. **Fostering Industry Collaboration:** Collaborating closely with industry partners is key to ensuring that the institute's educational programmes are aligned with industry demands. The institute should continue to foster strong ties with industry partners through collaborative projects, research initiatives, and internship programmes. Additionally, the institute could consider establishing industry advisory boards to provide ongoing feedback and guidance on curriculum development and industry trends.
6. **Enhancing Practical Skills Development:** Practical skills development is crucial for preparing students for the demands of the transportation industry. The institute should focus on enhancing practical training opportunities, such as hands-on projects, simulations, and industry placements. Additionally, the institute could consider incorporating more real-world case studies and practical exercises into its curriculum to help students apply their knowledge in practical settings.
7. **Emphasising Ethical and Legal Aspects:** Given the complex regulatory environment in which the transportation industry operates, it is essential to ensure that students are well-versed in ethical and legal aspects. The institute should enhance coverage of these aspects within its curriculum and provide students with

opportunities to apply their knowledge in real-world scenarios. Additionally, the institute could consider offering specialised courses or workshops on ethical and legal issues relevant to the transportation industry.

CONCLUSION

This research provides valuable insights into the alignment between transportation education at the Maritime Institute of Jakarta and industry demands in Indonesia. The findings highlight both strengths and areas for improvement within the institute's educational programmes. While the institute demonstrates a commitment to curriculum relevance, practical skills development, and industry collaboration, there is room for enhancement in areas such as technological integration, professional development, and industry exposure. To bridge the gap between education and industry needs, several recommendations have been proposed, including enhancing technological integration, increasing industry exposure opportunities, strengthening professional development initiatives, improving curriculum relevance, fostering industry collaboration, enhancing practical skills development, and emphasising ethical and legal aspects. By implementing these recommendations, the institute can better prepare its students for successful careers in the transportation industry and contribute to the overall development and competitiveness of Indonesia's transportation sector. Through collaboration between academia and industry, the institute can strive towards providing a comprehensive and impactful educational experience that equips students with the knowledge, skills, and competencies needed to excel in the dynamic and multifaceted field of transportation management.

REFERENCES

- Archibald, M. M., Ambagtsheer, R. C., Casey, M. G., & Lawless, M. (2019). Using zoom videoconferencing for qualitative data collection: Perceptions and experiences of researchers and participants. *International Journal of Qualitative Methods*, 18, 1–8. <https://doi.org/10.1177/1609406919874596>
- Berg, H. P. (2013). Human factors and safety culture in maritime safety. *Marine Navigation and Safety of Sea Transportation: STCW, Maritime Education and Training (MET), Human Resources and Crew Manning, Maritime Policy, Logistics and Economic Matters*, 107, 107–115.
- Bruton, M. J. (2021). *Introduction to transportation planning*. Routledge.
- Bueger, C. (2015). What is maritime security? *Marine Policy*, 53, 159–164.

- Chelliah, S. (2018). The design and implementation of documentation projects for spoken languages. In *The Oxford Handbook of Endangered Languages* (p. 147). Oxford University Press.
- Cicek, K., Akyuz, E., & Celik, M. (2019). Future skills requirements analysis in maritime industry. *Procedia Computer Science*, 158, 270–274.
- Efthymiou, E. (2023). Examining Teachers' Perspectives on Equitable Digital Education. In *Inclusive Phygital Learning Approaches and Strategies for Students With Special Needs* (pp. 97–130). IGI Global. <https://doi.org/10.4018/978-1-6684-8504-0.ch005>
- Lei, A., Cruickshank, H., Cao, Y., Asuquo, P., Ogah, C. P. A., & Sun, Z. (2017). Blockchain-based dynamic key management for heterogeneous intelligent transportation systems. *IEEE Internet of Things Journal*, 4(6), 1832–1843.
- Meyer, M. D. (2016). *Transportation planning handbook*. John Wiley & Sons.
- Pallis, P. L. (2017). Port risk management in container terminals. *Transportation Research Procedia*, 25, 4411–4421.
- Vuchic, V. (2017). *Transportation for livable cities*. Routledge.
- Willig, C. (2014). Interpretation and analysis. *The SAGE Handbook of Qualitative Data Analysis*, 481.
- Yilmaz, K. (2013). Comparison of quantitative and qualitative research traditions: Epistemological, theoretical, and methodological differences. *European Journal of Education*, 48(2), 311–325.