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Mapping of Occupation on Operations Management Within The Indonesian Qualification Framework (IQF) to Close The Gap Between Industry Needs and Educational Outcomes

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ABSTRACT

The gap between educational outcomes and industry needs in operations management has become increasingly apparent, highlighting a pressing need for alignment to enhance workforce readiness and national competitiveness. This study aims to identify key competencies required in operations management, map them within the framework of the Indonesian Qualification Framework (IQF), and propose recommendations for aligning educational curricula with industry demands. A qualitative research method was employed, involving literature reviews and expert interviews from both academia and industry sectors to gather data on essential skills, knowledge areas, and role progression in operations management. The findings reveal a comprehensive mapping of occupations within operations management, aligned with the IQF, detailing specific competency standards across different qualification levels—from entry-level to executive roles. The research emphasizes the importance of standardized competency frameworks, industry-relevant curriculum development, stakeholder collaboration, and continuous feedback mechanisms to ensure educational programs remain responsive to evolving market needs. By closing the gap between what is taught and what is required, the study contributes to improving graduate employability and the overall effectiveness of the education-to-employment pipeline in Indonesia. The implications of this research are significant for policymakers, educators, and industry stakeholders in fostering a more integrated, agile, and future-ready workforce. Further studies are recommended to conduct sector-specific analysis and longitudinal assessments of the impact of IQF integration on graduate performance and career progression.

Keywords: Operations management, Indonesian Qualification Framework, competency mapping, educational alignment, workforce readiness.

INTRODUCTION

Operation management is vital for business efficiency as it ensures the seamless design, execution, and control of operations, leading to optimal performance and productivity. Enrica Ryan Geminarqi & Purnomo, (2023) identifies how improving operational management efficiency through process automation, intelligent data analysis, employee training, and efficient inventory management can help companies reduce operational costs, increase service speed and accuracy, and improve product quality, which are essential for staying competitive and sustainable. Similarly, Tsarouhas, (2023) emphasizes that operations management aims to maximize the efficiency of both manufacturing processes and broader corporate operations, which is crucial for profit maximization and business expansion. Additionally, IISE, (2021) outline that industrial and systems engineering involves the design, improvement, and installation of integrated systems of people, materials, information, equipment, and energy. Moreover, Calderon-Monge & Ribeiro-Soriano, (2024) highlights that digitalization drives economic growth and enhances business efficiency by enabling seamless design, execution, and control of

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operations, leading to optimal performance and productivity. Finally, Salah et al., (2023) underscores that effective production and operations management practices are critical for enhancing organizational performance.

The National Qualification Framework (NQF) serves as a crucial national standard, ensuring consistent educational outcomes and competency levels across various fields, which is essential for workforce development. Bilgiler et al., (2022) notes that NQFs, such as the Indonesian Qualification Framework (IQF), are vital for linking educational qualifications with competency requirements across disciplines, ensuring that graduates are equipped with skills relevant to the job market. Similarly, IISE, (2021) emphasize the importance of standardized frameworks in education, such as the NQF, which provide clear guidelines for the competencies and skills required across different fields. Furthermore, Tias et al., (2023) highlights that the NQF provides a set of prescribed standards and regulations to ensure excellence and uniformity in educational outcomes across various levels and types of education, thereby enhancing the quality of graduates and their competitiveness in the job market. Additionally, Winch, (2023) promotes the comparability and transparency of qualifications, aiding in workforce mobility and ensuring that educational outcomes meet industry requirements. Finally, Yusri et al., (2019) demonstrates that implementing the NQF-based curriculum and assessment rubric in Indonesia improves the learning process by providing clear and objective assessment indicators, ensuring that educational outcomes align with national standards and industry requirements.

Occupation mapping is essential for aligning job roles with required skills and competencies, thereby ensuring that educational programs meet industry demands and graduates are job-ready. Ashokkumar & Vanitha, (2303) emphasizes that occupation mapping plays a crucial role in aligning educational curricula with the required competencies for various job roles, ensuring that graduates are adequately prepared for the workforce. Similarly, Mursiti et al., (2024) highlights the importance of competency mapping in aligning job roles with the required skills and competencies. Additionally, Moreover, IISE, (2021) outline how competency mapping in industrial and systems engineering helps identify the necessary skills and competencies for various job roles. Finally, Midhat Ali et al., (2021) identifies the necessary skills and competencies for specific job roles, ensuring educational programs are aligned with industry requirements, thus making graduates job-ready.

Industry needs reflect the labor market's demand for specific skills and competencies, guiding educational institutions to tailor their programs to produce graduates who can fulfill these needs. Daka et al., (2023) identifies that by implementing these strategies, individuals can acquire the necessary skills, organizations can optimize their workforce, and societies can foster inclusive and sustainable economic growth. Similarly, Scandurra et al., (2023) found that a key challenge facing higher education institutions (HEIs) seeking to cultivate the employability of their prospective graduates is determining the most appropriate balance of skills for successful labor market engagement. Additionally, Li, (2022) identifies that a hybrid approach, including using a skilled contract workforce to fulfill short-term needs while developing the necessary skills internally, is also feasible.

Educational outcomes represent the skills and knowledge imparted through educational programs, which are critical for preparing students to meet industry standards and expectations. For example, Herodotou et al., (2019) identifies that educational systems should empower learners with skills and competencies to cope with a constantly

changing landscape, including critical thinking, problem-solving, collaborative skills, innovation, digital literacy, and adaptability. Similarly, IISE, (2021) emphasize that educational technology, when integrated effectively, can enhance learning outcomes by providing students with the skills and knowledge required to meet industry standards. Moreover, Fu & Zhang, (2024) reiterates that educational systems should equip learners with the necessary skills and competencies to navigate a constantly evolving environment. Furthermore, X. Li & Zhu, (2023) highlights that the learning experience is related to educational performance, learning behavior, learning engagement, and learning outcomes. Additionally, Dziuban et al., (2018) points out that blended learning, which combines online and face-to-face instruction, enhances student success and perception of learning environments, crucial for preparing students to meet industry standards and expectations.

Competency standards provide a clear set of criteria defining the abilities required to perform tasks successfully, ensuring that both training programs and job performance are aligned with industry expectations. Wong, (2020) highlights that competencies support recruitment and selection by providing fair and unbiased standards to assess applicant competencies, thereby improving the transparency of the selection process and helping design effective recruitment procedures. Similarly, IISE, (2021) emphasize that competency standards offer clear criteria for employee performance, which guides the design of training programs. Furthermore, Yimam, (2022) points out that competency standards help in designing effective training programs by identifying the necessary knowledge, skills, and abilities (KSAs) for job performance, ensuring that training aligns with job requirements. Additionally, Bral & Cunningham, (2016) found that performance goals should be aligned with industry standards and needs to ensure competencies are relevant to students' future workplace performance. Finally, Midhat Ali et al., (2021) ensures that training programs are designed to meet these criteria, aligning educational outcomes with industry expectations.

However, The gap between the competencies required by industries and the outcomes of educational programs in operation management is significant. This misalignment results in a mismatch in job readiness among graduates, which negatively impacts both employability and productivity within the sector. David et al., (2021) explore the increasing disconnect between what academic institutions teach and the practical skills industries need, particularly in the field of strategic management. Similarly, (Daka et al., 2023) highlight a substantial job mismatch, emphasizing that the skills acquired by graduates during their education often fail to align with labor market requirements. Basson, (2020) supports this by noting that many educational programs inadequately equip graduates with the necessary skills to meet industry expectations, further widening the gap in job readiness. Furthermore, Brunello & Wruuck, (2021) review how skill shortages and mismatches result in decreased productivity and inefficient resource allocation across industries. Bansal & Agarwal, (2019) add that only a small percentage of graduates possess the employability skills that industries demand, underscoring the widespread issue of skill gaps.

This research aims to identify the key competencies required in operations management within the industrial sector, map these competencies into the framework of the Indonesian National Qualification Framework (IQF), and develop recommendations for aligning educational curricula with industry needs. This objective is driven by the evident gap between educational outcomes and labor market demands, particularly in the field of operations management, which requires technical, analytical, and adaptive skills

in the digital era. Theoretically, this study contributes to the literature on the integration of higher education, competency standards, and industry requirements in operations management. Practically, the findings of this research are expected to serve as a reference for educational policymakers, curriculum designers, and higher education institutions in updating industry-oriented curricula and enhancing graduates' job readiness. Additionally, this study is beneficial for industry stakeholders in providing input for the development of competency standards that better reflect the operational realities in the field.

RESEARCH METHOD

The methodology of this research aims to develop an effective and efficient competency framework in education by integrating the Mapping Study method (Petersen et al., 2008) for operations management occupations with the Rapid Assessment Process (RAP) (Beebe, 2005). This combined approach facilitates a comprehensive understanding of the complex dynamics in education and training while ensuring adherence to international standards through the Regional Model Competency Standards (RMCS) (ILO, 2016). The Mapping Study involves a systematic process beginning with planning to define research questions, scope, and objectives, followed by data collection through literature reviews, surveys, and interviews with industry experts and educators. The analysis phase synthesizes the collected data to identify gaps and aligns competencies with the Indonesian Qualification Framework (IQF) levels, culminating in validation workshops with stakeholders. Concurrently, the RMCS method focuses on identifying key competencies for operations management through industry consultations, mapping these competencies to the appropriate IQF levels, and validating the standards with both industry and educational stakeholders. The research design encompasses a comprehensive literature review, data collection from surveys and interviews, competency analysis utilizing RMCS, alignment of competencies with IQF, and the compilation of findings into a detailed report that includes actionable recommendations.

RESULT AND DISCUSSION

In this chapter, we delve into the results of our study on mapping occupations in operations management within the Indonesian Qualification Framework (IQF). This mapping aims to bridge the gap between the competencies demanded by the industry and the educational outcomes provided by academic institutions. By aligning these competencies with the nine levels of the IQF, we strive to enhance the employability of graduates and meet the evolving needs of the operations management sector.

The IQF, as defined by Presidential Regulation No. 8 of 2012, provides a structured framework that categorizes various qualifications across different fields. This regulation ensures a standardized approach to recognizing and validating competencies, facilitating the alignment of educational curricula with industry requirements. Our study leverages this framework, along with insights from the Industrial and System Engineering Body of Knowledge (IISE BOK), to create a detailed occupational map that reflects the complexity and diversity of roles in operations management.

The results of this study provide a detailed map of occupations within operations management, categorized according to the nine levels of the IQF. Each level includes specific occupational titles and job descriptions that outline the competencies required for each role. This structured approach helps in understanding the progression of skills and responsibilities from entry-level positions to executive leadership roles.

Table 1. Map of operational management occupation within national qualification framework

IQF Level	Occupation Title
9	• Chief Operations Officer (COO)
	• Chief Productivity Officer (CPO)
	• Productivity Systems Design Specialist
8	• Senior Operations Consultant
	• Supply Chain Manager
7	• Operations Manager
	• Analyst of production processes and optimization of resources.
6	• Process Improvement Specialist
	• Operation Planner
	• Productivity Measurement Analyst
5	• Operation management Supervisor
	• Assistant Productivity Analyst
4	• Operation leader
	• Operation Quality Control leader
	• Productivity measurement technicians.
3	• Operation line operator
	• Operation Quality Inspector
2	• Basic Production Lines Operator
	• Logistics Support Operator
	• Junior Production Quality Controller
1	• Production Helper
	• Material Handler

Table 2. Occupation map and its competence in Operations Management within IQF level 9

IQF Level	Occupation Title	Main Tasks
Level 9	**Chief Operations Officer (COO):** is a profesional who lead the entire operations function of an organization, innovate new practices, and drive strategic initiatives. Conduct interdisciplinary research and achieve international recognition.	• Oversee daily operations of the company • Develop and implement operational strategies • Coordinate with department heads to achieve business goals • Monitor performance metrics and improve efficiency • Ensure compliance with industry regulations • Lead strategic research initiatives • Foster a culture of continuous improvement • Develop relationships with key stakeholders • Lead crisis management efforts • Report to the CEO and board of directors
	Chief Productivity Officer (CPO): An executive responsible for maximizing an organization's productivity by aligning strategies, operations, and resources to achieve optimal efficiency and performance.	• Develop and implement organization-wide productivity strategies. • Analyze and improve operational workflows. • Set and monitor productivity benchmarks and KPIs. • Lead innovation initiatives to enhance efficiency. • Align resource allocation with organizational goals. • Foster a culture of continuous improvement. • Collaborate with departments to address productivity challenges. • Report productivity metrics to stakeholders.

	Productivity Systems Design Specialist: A professional focused on designing and optimizing systems, tools, and processes to improve organizational productivity and efficiency.	• Design systems to enhance productivity and reduce waste. • Conduct workflow analysis to identify inefficiencies. • Develop automation and technology solutions for operational tasks. • Create documentation for system implementation and use. • Collaborate with teams to integrate productivity systems. • Evaluate system performance and suggest improvements. • Train employees on new systems and processes. • Ensure compliance with organizational and industry standards.

Table 3. Occupation map and its competence in Operations Management within IQF level 8

IQF Level	Occupation Title	Main Tasks
Level 8	**Senior Operations Consultant:** Profesional who provide expert advice on optimizing operations, conduct research, and develop innovative solutions. Lead complex projects and strategic decision-making.	• Analyze and optimize operational processes • Provide expert advice on operations improvement • Develop and implement performance metrics • Conduct operational risk assessments • Manage operational research projects • Train and mentor junior consultants • Conduct feasibility studies for operational changes • Develop training programs for operational staff • Prepare detailed reports and presentations • Stay updated on industry best practices
	Supply Chain Manager: Profesional who oversee and optimize the entire supply chain, from procurement to delivery, ensuring cost efficiency and high quality.	• Manage supply chain and logistics operations • Develop and implement supply chain strategies • Coordinate with suppliers and vendors • Monitor inventory levels and optimize stock • Ensure timely delivery of products • Oversee research on supply chain optimization • Oversee procurement processes • Develop contingency plans for supply chain disruptions • Analyze supply chain performance data • Work closely with IT for supply chain software integration

Table 4. Occupation map and its competence in Operations Management within IQF level 7

IQF Level	Occupation Title	Main Tasks
Level 7	**Operations Manager:** Profesional who oversee production operations, formulate and implement strategies, manage resources, and ensure compliance with standards. Make strategic decisions based on data analysis.	• Supervise daily operations of the department • Develop and implement operational policies • Manage budgets and financial performance • Coordinate with other departments for seamless operations • Ensure adherence to safety and quality standards • Conduct operational research studies • Conduct performance reviews of team members • Develop operational budgets

IQF Level	Occupation Title	Main Tasks
		• Implement new technologies to improve efficiency • Resolve escalated operational issues
	Analyst of production processes and optimization of resources: A professional who evaluates and improves production processes at an operational level to maximize efficiency, minimize waste, and ensure effective resource allocation.	• Conduct detailed observations and measurements of production workflows. • Identify areas for process improvement and recommend actionable changes. • Monitor daily resource usage and propose methods to reduce inefficiencies. • Collaborate with production teams to implement lean manufacturing techniques. • Support the integration of new tools or technologies to enhance efficiency. • Prepare regular reports on resource utilization and production performance. • Assist in the development of standardized operating procedures (SOPs). • Ensure production practices comply with operational and safety standards.

Table 5. Occupation map and its competence in Operations Management within IQF level 6

IQF Level	Occupation Title	Main Tasks
Level 6	**Process Improvement Specialist:** Profesional who develop and implement process improvements, analyze data to optimize production. Responsible for team outcomes and comprehensive reporting.	• Identify and analyze process inefficiencies • Develop and implement process improvement plans • Conduct root cause analysis and problem-solving • Monitor process performance and report findings • Train staff on new processes and improvements • Facilitate workshops for process improvement • Develop key performance indicators (KPIs) for processes • Benchmark processes against industry standards
	Operation/Production Planner: A professional responsible for scheduling and coordinating production activities to ensure efficient workflow and timely delivery of products.	• Develop detailed production schedules based on customer orders and resource availability. • Monitor inventory levels and coordinate with procurement teams for materials. • Ensure production plans align with capacity and workforce availability. • Communicate schedules and priorities to production teams. • Analyze production data to identify bottlenecks and suggest improvements. • Collaborate with sales and supply chain teams to manage demand fluctuations.

IQF Level	Occupation Title	Main Tasks
		• Update and adjust plans as necessary to accommodate changes in production or customer needs.
	Productivity Control Specialist: A professional focused on monitoring and improving operational efficiency by ensuring optimal resource utilization and adherence to productivity targets.	• Track and evaluate productivity metrics to assess performance. • Identify and address inefficiencies in processes and resource usage. • Develop tools and methods to monitor workflow and output. • Recommend process improvements to enhance efficiency and reduce waste. • Collaborate with teams to implement productivity improvement initiatives. • Prepare reports on productivity trends and performance for management review. • Ensure compliance with organizational policies and standards in operational practices.

Table 6. Occupation map and its competence in Operations Management within IQF level 5

IQF Level	Occupation Title	Main Tasks
Level 5	**Operation Management Supervisor:** A professional responsible for overseeing daily operations, ensuring processes run smoothly and meet organizational goals.	• Supervise operational staff and monitor daily activities. • Ensure adherence to established workflows and procedures. • Monitor performance metrics and provide feedback to improve efficiency. • Coordinate resources to meet production and operational goals. • Resolve operational issues and ensure timely communication with teams. • Maintain compliance with safety, quality, and organizational standards.
	Assistant Productivity Analyst: A professional who supports productivity analysis by collecting and analyzing data to identify areas for operational improvement.	• Gather and organize data on productivity and operational performance. • Conduct basic analysis to identify inefficiencies and improvement opportunities. • Assist in preparing reports and presentations on productivity trends. • Collaborate with teams to implement recommended improvements. • Monitor the effectiveness of implemented productivity strategies. • Maintain documentation related to productivity metrics and analyses.

Table 8. Occupation map and its competence in Operations Management within IQF level 4

IQF Level	Occupation Title	Main Tasks
Level 4	**Operation leader**: A professional responsible for managing day-to-day operations and ensuring team productivity and goal achievement.	• Coordinate team activities to ensure operational objectives are met. • Monitor workflow and address process issues. • Provide support and guidance to team members. • Ensure adherence to operational policies and procedures. • Report team performance and operational updates to higher management.
	Operation Quality Control Leader: A professional ensuring that quality standards are consistently applied during operations to meet organizational and customer expectations.	• Oversee quality assurance processes across operations. • Identify and address non-compliance with quality standards. • Train team members on quality control procedures. • Document and report quality-related findings. • Collaborate with teams to implement corrective actions and improvements.
	Productivity measurement technicians: A technical role focused on gathering and analyzing data to assess productivity and operational efficiency.	• Measure and record data on operational performance. • Utilize tools to evaluate resource utilization and efficiency. • Compile and maintain productivity reports for analysis. • Assist in identifying inefficiencies and recommend improvements. • Support process improvement initiatives through accurate data collection.

Table 9. Occupation map and its competence in Operations Management within IQF level 3

IQF Level	Occupation Title	Main Tasks/Competence
Level 3	**Operation line operator: A** worker responsible for operating and maintaining equipment on the production line, ensuring smooth workflow and adherence to quality and safety standards.	• Operate machinery and equipment as per standard operating procedures. • Monitor production processes to ensure efficiency and quality. • Perform basic maintenance and troubleshooting on production equipment. • Report any issues or malfunctions to supervisors. • Maintain a clean and organized workstation to ensure safety and operational continuity.
	Operation Quality Inspector: Personel who Conduct basic quality checks and report issues. Utilize knowledge of standard quality procedures and tools.	• Inspect materials and products for quality • Document inspection results • Report quality issues to supervisors • Conduct random quality checks

Table 10. Occupation map and its competence in Operations Management within IQF level 2

IQF Level	Occupation Title	Main Tasks
Level 2	**Basic Production Lines Operator:** A worker responsible for handling basic tasks on the production line, such as operating simple equipment and ensuring workflow continuity.	• Operate basic production machinery under supervision. • Assist in maintaining production flow by handling materials or products. • Perform routine checks to ensure equipment functions properly.
	Logistics Support Operator: A professional providing basic support for logistics operations, including inventory management and goods movement.	• Assist in loading, unloading, and organizing goods in storage areas. • Support inventory tracking and ensure accurate records. • Follow instructions to manage materials and equipment in logistics workflows.
	Junior Production Quality Controller: An entry-level role focused on checking and ensuring the quality of products at various stages of production under guidance.	• Conduct basic inspections of products for defects or inconsistencies. • Record and report quality control findings to supervisors. • Ensure production standards are met by performing routine quality checks.

Table 11. Occupation map and its competence in Operations Management within IQF level 1

IQF Level	Occupation Title	Main Tasks
Level 1	**Production Helper:** Personel who assist in basic tasks under direct supervision, using standard tools and following established processes. Responsible for own tasks only.	• Assist production workers with tasks • Transport materials and products • Maintain cleanliness in the production area • Support production line operations • Follow safety and operational guidelines
	Material Handler: Personel who move materials and products manually or using equipment. Perform routine tasks under supervision.	• Move materials to and from production areas • Track inventory levels • Assist in inventory audits • Operate material handling equipment • Ensure safe storage of materials

Several questions arose in the mapping process with industry players, education and training and professionals. The question rang: How Can Mapping of Occupations in Operations Management Within the Indonesian Qualification Framework (IQF) Close the Gap Between Industry Needs and Educational Outcomes? To address the question posed by the research title, it is essential to explore how mapping occupations in operations management within the Indonesian Qualification Framework (IQF) can effectively bridge the gap between industry needs and educational outcomes. Here are several key ways in which this mapping can achieve such alignment:

Clear Competency Standards: The mapping of occupations within the IQF provides clear and standardized competency requirements for each level of qualification. This ensures that educational institutions have precise guidelines on the skills and

knowledge that need to be imparted to students, aligning educational programs with industry expectations. Bushway et al., (2017) identifies that competency definitions explicitly include knowledge, skills, abilities, and intellectual behaviors required to demonstrate competency, aligning with credential levels and providing clear standards for educational programs. Similarly, Calvin-Naylor et al., (2017) found that competency frameworks provide a systematic approach to training, ensuring that the competencies are relevant and aligned with industry needs. Furthermore, IISE, (2021) identify that competency standards provide a clear set of criteria for what students need to learn, ensuring that educational programs are relevant and meet the needs of employers. Additionally, Bushway (2017) ensures that the competency standards are clearly specified, providing pathways for learners and ensuring competencies are explicitly stated and include the theory and application required for mastery.

Industry-Relevant Curriculum Development: By identifying the specific competencies required by the industry for various roles in operations management, educational institutions can tailor their curricula to meet these needs. This involves incorporating practical skills, theoretical knowledge, and soft skills that are directly relevant to operational roles in the industry. Strain et al., (2023) examines the disparities in perceptions between IT managers and IT professionals when considering the competencies of graduates. Similarly, Vilalta-Perdomo et al., (2022) highlights the development of an augmented framework that embeds the Industry 4.0 theme in the Operations Management curricula. Additionally, IISE, (2021) ensure that educational programs are designed to meet the specific needs of the industry. Furthermore, Mahalingam, (2024) suggests that collaboration between academia and industry is critical for developing relevant and effective curricula and that the IDC framework can be a useful tool for facilitating this collaboration. Moreover, L. Li, (2022) argues that to achieve competitiveness in higher education, institutions must continuously align their curricula with the evolving demands of the industry, ensuring that graduates possess the skills and competencies required by employers.

Enhanced Employability: Graduates who possess the competencies outlined in the IQF are better prepared to meet the demands of their respective roles. This alignment improves their employability as they are seen as job-ready candidates who can immediately contribute to the organization, reducing the need for extensive on-the-job training. Van der Baan et al., (2024) highlights the importance of essential competencies in enhancing employability and aligning with organizational needs. Similarly, Presti et al., (2022) emphasizes that integrating employability frameworks from higher education and workplace learning increases definitional clarity, aiding educational institutions in developing precise guidelines for student skills and knowledge. Furthermore, Akkermans et al., (2024) identifies that curriculum development must incorporate industry-relevant skills, theoretical knowledge, and soft skills to ensure that graduates can meet the demands of their respective roles in operations management. Additionally, Römgens et al., (2020) notes that collaboration between academia and industry is essential for developing curricula that reflect the competencies required by the industry, thus improving the employability of graduates.

Continuous Feedback Loop: The process of mapping occupations and aligning them with the IQF involves continuous engagement with industry stakeholders. This creates a feedback loop where educational institutions can receive regular updates on evolving industry needs and adjust their programs accordingly, ensuring that graduates remain relevant in a dynamic job market. Langrafe et al., (2020) highlights that regular

engagement with industry stakeholders ensures that the curriculum evolves to meet current market demands. Similarly, Schenke et al., (2017) notes that short-term feedback loops allow professionals to quickly adjust programs based on regular feedback, fostering ongoing alignment with industry needs. Additionally, Giamos et al., (2023) emphasizes that continuous feedback mechanisms are essential for aligning performance with organizational goals and adapting to evolving industry standards, thereby ensuring that training programs and job performance remain relevant and effective. Moreover, Kayyali, (2023) underscores that continuous feedback is a crucial aspect of performance management, ensuring that employees receive regular updates on their performance, which helps in maintaining and improving performance standards. Furthermore, IISE, (2021) provide a taxonomy of relevant concepts, offering a structured framework that outlines the knowledge and skills required to achieve mastery in the field, ensuring alignment with industry expectations and educational outcomes.

Standardized Qualifications: The IQF provides a standardized framework for qualifications, which helps employers better understand the level of expertise and competencies of potential employees. This standardization facilitates easier recognition of qualifications across different sectors and regions, promoting greater mobility and flexibility for the workforce. IISE, (2021) note that credential level competencies definitions include application standards and clearly state what is required for demonstrating competency. Similarly, Midhat Ali et al., (2021) emphasizes that competency frameworks help standardize qualifications across different sectors, ensuring that the competencies of employees are recognized and valued universally, which promotes workforce mobility and flexibility. Additionally, Singh et al., (2019) points out that standardized qualifications provide a clear set of criteria for assessing the competencies and expertise of professionals, aiding employers in better understanding the qualifications of potential employees and facilitating recognition across sectors. Furthermore, Sakamoto, (2019) highlights that the process of recognizing prior learning (RPL) enables the official certification of informally or nonformally acquired skills of workers, which is essential for increasing their employability and marketability.

Gap Analysis and Targeted Training: The mapping exercise highlights specific gaps between current educational outcomes and industry requirements. This enables targeted interventions, such as additional training programs, workshops, or certification courses, to address these gaps and ensure that graduates acquire all necessary competencies. Cabral-Gouveia et al., (2023) emphasizes that by systematically identifying gaps in competencies, targeted training interventions can be designed to address these deficiencies, ensuring that educational programs align with industry requirements. Similarly, IISE, (2021) highlight that identifying competency gaps allows for the development of training interventions that align educational programs with industry needs. Additionally, Markaki et al., (2021) points out that training needs assessments are critical in identifying gaps in skills and knowledge, which enables the development of targeted training programs to bridge these gaps and ensure that employees meet industry standards.

Policy and Funding Support: The standardized framework provided by the IQF can help policymakers in designing supportive policies and allocating funding for educational programs that are aligned with industry needs. This ensures that resources are effectively utilized to enhance the quality of education and training in operations management. IISE_BOK (2021) note that the standardized framework provided by the IQF can assist policymakers in designing supportive policies and allocating funding for

educational programs that meet industry needs. Similarly, Mendoza & Heymann, (2024) suggests that funding allocation needs to be strategically planned to ensure that it meets the specific needs of inclusive education programs. Additionally, Taneja-Johansson & Singal, (2021) emphasizes the importance of considering different funding modes at the policymaking level and how resources are distributed within schools, highlighting the role of policy in effectively supporting inclusive education. Furthermore, Goldan et al., (2022) points out that utilizing the IQF standardized framework allows policymakers to design supportive policies and allocate appropriate funding for educational programs that cater to industry needs, thereby improving resource provision for inclusive education. Moreover, Cassata & Allensworth, (2021) adds that the standardized framework of IQF assists policymakers in developing policies and allocating funds to ensure that educational programs are aligned with industry needs, thus enhancing support for inclusive education.

Stakeholder Collaboration: The mapping process fosters collaboration between educational institutions, industry players, and policymakers. This collaborative approach ensures that all stakeholders are invested in the outcome, leading to a more integrated and effective education-to-employment pipeline. Langrafe et al., (2020) highlights that collaborative networks between educational institutions and industry ensure that the education provided aligns with current industry requirements, fostering an environment of continuous improvement and mutual benefit. Similarly, IISE, (2021) emphasize the need for stakeholder collaboration in inclusive education, where partnerships between community members, teachers, and parents are crucial for the development and implementation of inclusive education practices. Additionally, Nonet et al., (2022) points out that while effective cross-sector partnerships are challenging to operationalize and sustain, they are essential for successful external engagement. Furthermore, Kettunen et al., (2022) highlights the importance of collaboration in setting strategic research agendas. Finally, Littleton et al., (2023) underscores that stakeholder collaboration is essential for developing effective educational programs, which is crucial for success.

Mapping occupations in operations management within the IQF is a strategic approach to align educational outcomes with industry needs. By clearly defining the competencies required at each level, educational institutions can design targeted curricula that equip students with the skills needed for success in the workforce. This alignment enhances employability, ensures the relevance of educational programs, and fosters a collaborative ecosystem where continuous feedback and improvement are integral to bridging the gap between education and industry.

CONCLUSION

Based on the findings of this study, it can be concluded that mapping occupations in operations management within the Indonesian Qualification Framework (IQF) is a strategic and necessary initiative to bridge the gap between educational outcomes and industry needs. The research has demonstrated that standardized competency frameworks, when aligned with IQF, provide clarity for curriculum development, enhance graduate employability, and improve the quality of workforce preparation in the field of operations management. Furthermore, the study highlights the importance of stakeholder collaboration, continuous feedback loops, and policy support in ensuring that educational programs remain dynamic and responsive to market demands. As a result, this alignment benefits not only students and educational institutions but also industries

that require competent and job-ready professionals. For future research, it is recommended to conduct a more detailed sectoral analysis to identify specific competency needs across different subfields of operations management. Moreover, longitudinal studies could be conducted to evaluate the long-term impact of IQF-based curriculum integration on graduate performance in the workplace. This will strengthen the evidence base for policy formulation and continuous educational improvement.

REFERENCES

Akkermans, Jos, Le Blanc, Pascale, Van der Heijden, Beatrice, & De Vos, Ans. (2024). Toward a contextualized perspective of employability development. *European Journal of Work and Organizational Psychology*, *33*(1), 1–10. https://doi.org/10.1080/1359432X.2023.2291763

Ashokkumar P., &. Vanitha M. P. (2303). A Study on the Role of Competency Mapping Among Employees with Special Reference To Atlas Export Enterprises, Karur. *IJFMR*, *5*(3). Diambil dari www.ijfmr.com

Bansal, Swati, & Agarwal, Monica. (2019). To Study the Gap between the Education and Industrial Expectations of Management Graduates. *Shanlax International Journal of Management*, *7*(2), 14–19. https://doi.org/10.34293/management.v7i2.591

Basson, M. (2020). *Visual representation of the mismatch between industry skills demand and higher education skills supply*.

Beebe, James. (2005). Rapid Assessment Process. In *Encyclopedia of Social Measurement* (hal. 285–291). https://doi.org/10.1016/B0-12-369398-5/00562-4

Bilgiler S., Dergisi E. A. &. Solikhah I. (2022). Journal of Social Studies Education Research Revisiting the EFL curriculum in the outcome-based education framework and freedom to learn program. *Journal of Social Studies Education Research*. Diambil dari www.jsser.org

Bral, Conna, & Cunningham, Jennifer. (2016). Foundations of quality in competency-based programs: Competencies and assessments. *The Journal of Competency-Based Education*, *1*(3), 118–121. https://doi.org/10.1002/cbe2.1027

Brunello, Giorgio, & Wruuck, Patricia. (2021). Skill shortages and skill mismatch: A review of the literature. *Journal of Economic Surveys*, *35*(4), 1145–1167. https://doi.org/10.1111/joes.12424

Bushway D., Corcoran K. Strategy Director M. Dodge L. Essien F. Garn M. Klein J. Long C. Baker Stein M. Kadlec A. &. Edison T. (2017). *Quality Framework for CBE Programs*, *Lumina Foundation*.

Cabral-Gouveia, Carmo, Menezes, Isabel, & Neves, Tiago. (2023). Educational strategies to reduce the achievement gap: a systematic review. *Frontiers in Education*, *8*. https://doi.org/10.3389/feduc.2023.1155741

Calderon-Monge, Esther, & Ribeiro-Soriano, Domingo. (2024). The role of digitalization in business and management: a systematic literature review. *Review of Managerial Science*, *18*(2), 449–491. https://doi.org/10.1007/s11846-023-00647-8

Calvin-Naylor, Nancy A., Jones, Carolynn Thomas, Wartak, Michelle M., Blackwell, Karen, Davis, Jonathan M., Divecha, Ruthvick, Ellerbeck, Edward F., Kieburtz, Karl, Koziel, Margaret J., Luzuriaga, Katherine, Maddox, Jennifer, Needler, Nancy A., Murphy, Susan, Pemberton, Kieran, Radovich, Catherine, Rubinstein, Eric P., Selker, Harry P., Tenaerts, Pamela, Unsworth, Kelly, Wilson, Kay, Wright, Jonelle E., Barohn, Richard, & Shanley, Thomas P. (2017). Education and training of clinical and translational study investigators and research coordinators: A competency-based approach. *Journal of Clinical and Translational Science*, *1*(1), 16–25. https://doi.org/10.1017/cts.2016.2

Cassata, Amy, & Allensworth, Elaine. (2021). Scaling standards-aligned instruction through teacher leadership: methods, supports, and challenges. *International Journal of STEM Education*, *8*(1), 39. https://doi.org/10.1186/s40594-021-00297-w

Daka, Harrison, Minjale, Linda, Kakupa, Paul, Kaani, Bestern, Tembo, Pilira, Mulenga, Lydia Mukuka, & Musonda, Astridah. (2023). Bridging the Gap: Addressing the Disparity between Higher Education Knowledge and Industry Needs. *INTERNATIONAL JOURNAL OF SOCIAL SCIENCE AND EDUCATION RESEARCH STUDIES*, *03*(08). https://doi.org/10.55677/ijssers/V03I8Y2023-12

David, Meredith E., David, Fred R., & David, Forest R. (2021). Closing the Gap between Graduates' Skills and Employers' Requirements: A Focus on the Strategic Management Capstone Business Course. *Administrative Sciences*, *11*(1), 10. https://doi.org/10.3390/admsci11010010

Dziuban C., Graham C. R. Moskal P. D. Norberg A. &. Sicilia N. (2018). Blended learning: the new normal and emerging technologies. *International Journal of Educational Technology in Higher Education*, *15*(1). https://doi.org/10.1186/s41239-017-0087-5

Enrica Ryan Geminarqi & Purnomo, H. (2023). Improving Operational Management Efficiency in the Food and Beverage Industry: A Systematic Literature Review. *Open Access Indonesia Journal of Social Sciences*, *6*(5), 1143–1149. https://doi.org/10.37275/oaijss.v6i5.184

Fu, Q., & X, Zhang. (2024). Promoting community resilience through disaster education: Review of community-based interventions with a focus on teacher resilience and well-being. *PLoS ONE*, *19*(1 January). https://doi.org/10.1371/journal.pone.0296393

Giamos D., Doucet O. &. Léger P. M. (2023). Continuous Performance Feedback: Investigating the Effects of Feedback Content and Feedback Sources on Performance, Motivation to Improve Performance and Task Engagement. *Journal of Organizational Behavior Management*. https://doi.org/10.1080/01608061.2023.2238029

Goldan J., Loreman T. &. Lambrecht J. (2022). Resources for inclusive education – impacts of funding and provision. *International Journal of Inclusive Education*, 1–3. https://doi.org/10.1080/13603116.2020.1821452

Herodotou C., Sharples M. Gaved M. Kukulska Hulme A. Rienties B. Scanlon E. &. Whitelock D. (2019). Innovative Pedagogies of the Future: An Evidence-Based Selection. *Frontiers in Education*, *4*. https://doi.org/10.3389/feduc.2019.00113

IISE. (2021). *Industrial and System Engineering: Body of Knowledge*.

ILO. (2016). *Regional model competency standard. International Labour Organization equivalence*.

Kayyali, M. (2023). An Overview of Quality Assurance in Higher Education: Concepts and Frameworks Manager of Higher Education Quality and Assessment Council HEQAC. *Sciences, Innovation, and Technology IJMSIT Review Paper*, *4*(2), 1–04. Diambil dari https://ijmsit.com/volume-4-issue-2/

Kettunen P., Järvinen J. Mikkonen T. &. Männistö T. (2022). Energizing collaborative industry-academia learning: a present case and future visions. *European Journal of Futures Research*, *10*(1). https://doi.org/10.1186/s40309-022-00196-5

Langrafe T. de F., Barakat S. R. Stocker F. &. Boaventura J. M. G. (2020). A stakeholder theory approach to creating value in higher education institutions. *Bottom Line*, *33*(4), 297–313. https://doi.org/10.1108/BL-03-2020-0021

Li, L. (2022). Reskilling and Upskilling the Future-ready Workforce for Industry 4.0 and Beyond. *Information Systems Frontiers*. https://doi.org/10.1007/s10796-022-10308-y

Li, X., & Zhu, W. (2023). The influence factors of students' transferable skills development in Blended-Project-Based Learning environment: a new 3P model. Education and Information Technologies, 28(12), 16561–16591. https://doi.org/10.1007/s10639-023-11892-5

Littleton, C., Townsin, L., & Beilby, J. (2023). The motivations of stakeholders when developing university industry collaborations in an Australian university: three case studies. Journal of Higher Education Policy and Management, 45(5), 481–494. https://doi.org/10.1080/1360080X.2023.2191608

Mahalingam, T. (2024). Bridging the gap between academia and industry: a case study of collaborative curriculum development. International Journal of Business Performance Management, 25(4). https://doi.org/10.1504/ijbpm.2024.10063237

Markaki, A., Malhotra, S., Billings, R., & Theus, L. (2021). Training needs assessment: tool utilization and global impact. BMC Medical Education, 21(1). https://doi.org/10.1186/s12909-021-02748-y

Mendoza, M., & Heymann, J. (2024). Implementation of Inclusive Education: A Systematic Review of Studies of Inclusive Education Interventions in Low- and Lower-Middle-Income Countries. International Journal of Disability, Development and Education, 71(3), 299–316. https://doi.org/10.1080/1034912X.2022.2095359

Midhat Ali, M., Qureshi, S. M., Memon, M. S., Mari, S. I., & Ramzan, M. B. (2021). Competency Framework Development for Effective Human Resource Management. SAGE Open, 11(2). https://doi.org/10.1177/21582440211006124

Mursiti, M., Sailah, I., Marimin, M., Romli, M., & Denni, A. (2024). Competency mapping to develop human resources for Indonesia's sugarcane agroindustry in the Industry 4.0 era. Cogent Business and Management, 11(1). https://doi.org/10.1080/23311975.2024.2329776

Nonet, G. A. H., Gössling, T., Van Tulder, R., & Bryson, J. M. (2022). Multi-stakeholder Engagement for the Sustainable Development Goals: Introduction to the Special Issue. Journal of Business Ethics, 180(4), 945–957. https://doi.org/10.1007/s10551-022-05192-0

Petersen, K., Flensburg, H., Feldt, R., Mattsson, M., & Mujtaba, S. (2008). Systematic Mapping Studies in Software Engineering. https://www.researchgate.net/publication/228350426

Presti, A. Lo, Capone, V., Aversano, A., & Akkermans, J. (2022). Career Competencies and Career Success: On the Roles of Employability Activities and Academic Satisfaction During the School-to-Work Transition. Journal of Career Development, 49(1), 107–125. https://doi.org/10.1177/0894845321992536

Römgens, I., Scoupe, R., & Beausaert, S. (2020). Unraveling the concept of employability, bringing together research on employability in higher education and the workplace. Studies in Higher Education, 45(12), 2588–2603. https://doi.org/10.1080/03075079.2019.1623770

Sakamoto, A. (2019). Reconceptualizing skills development for achieving inclusive growth: the horizon of a new generation of skills policy. International Journal of Training Research, 17(sup1), 69–82. https://doi.org/10.1080/14480220.2019.1632566

Salah, A., Çağlar, D., & Zoubi, K. (2023). The Impact of Production and Operations Management Practices in Improving Organizational Performance: The Mediating Role of Supply Chain Integration. Sustainability, 15(20), 15140. https://doi.org/10.3390/su152015140

Scandurra, R., Kelly, D., Fusaro, S., Cefalo, R., & Hermannson, K. (2023). Do employability programmes in higher education improve skills and labour market outcomes? A systematic review of academic literature. Studies in Higher Education. https://doi.org/10.1080/03075079.2023.2265425

Schenke, W., van Driel, J. H., Geijsel, F. P., & Volman, M. L. L. (2017). Closing the feedback loop: a productive interplay between practice-based research and school development through cross-professional collaboration in secondary education. Professional Development in Education, 43(5), 860–880. https://doi.org/10.1080/19415257.2016.1258654

Singh, P., Allen, J., & Rowan, L. (2019). Quality teaching: standards, professionalism, practices. In Asia-Pacific Journal of Teacher Education (Vol. 47, Issue 1, pp. 1–4). Routledge. https://doi.org/10.1080/1359866X.2019.1557925

Strain, J., Marshall, J., & Library, J. F. S. (2023). Mismatch in Academia and Industry: An Exploration of Perceived Graduate Competencies and Industry Expectations in Information Technology. https://iscap.us/proceedings/

Taneja-Johansson, S., & Singal, N. (2021). Pathways to inclusive and equitable quality education for people with disabilities: cross-context conversations and mutual learning. In International Journal of Inclusive Education. Routledge. https://doi.org/10.1080/13603116.2021.1965799

Tias, S. A., Tongjean, W., & Win, S. S. (2023). National Qualification Framework (NQF) to Promote Quality in Higher Education: Perspectives of English Educators in ASEAN Countries (pp. 661–671). https://doi.org/10.2991/978-2-38476-008-4_71

Tsarouhas, P. (2023). New Trends in Production and Operations Management. In Applied Sciences (Switzerland) (Vol. 13, Issue 16). Multidisciplinary Digital Publishing Institute (MDPI). https://doi.org/10.3390/app13169071

van der Baan, N., Nuis, W., Beausaert, S., Gijselaers, W., & Gast, I. (2024). Developing employability competences through career coaching in higher education: supporting students' learning process. Studies in Higher Education. https://doi.org/10.1080/03075079.2024.2307976

Vilalta-Perdomo, E., Michel-Villarreal, R., & Thierry-Aguilera, R. (2022). Integrating Industry 4.0 in Higher Education Using Challenge-Based Learning: An Intervention in Operations Management. Education Sciences, 12(10). https://doi.org/10.3390/educsci12100663

Winch, C. (2023). Learning outcomes: The long goodbye: Vocational qualifications in the 21st century. European Educational Research Journal, 22(1), 20–38. https://doi.org/10.1177/14749041211043669

Wong, S.-C. (2020). Competency Definitions, Development and Assessment: A Brief Review. International Journal of Academic Research in Progressive Education and Development, 9(3). https://doi.org/10.6007/ijarped/v9-i3/8223

Yimam, M. H. (2022). Impact of training on employees performance: A case study of Bahir Dar university, Ethiopia. Cogent Education, 9(1). https://doi.org/10.1080/2331186X.2022.2107301

Yusri, R., Muspardi, M., Kemal, E., & Rahmat, W. (2019). Effectiveness of national qualification framework Indonesia based curriculum and higher education national standard behaviour assesment rubric. Journal of Physics: Conference Series, 1157(4). https://doi.org/10.1088/1742-6596/1157/4/042129