



Industry Managerial Competency Needs for Developing an Applied Bachelor Program in Air Transport and Logistics

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Abstract. Air transport and logistics require graduates who can combine operational knowledge with managerial, digital, and adaptive capabilities. This study develops an industry-oriented managerial competency framework as a basis for designing an Applied Bachelor program in Air Transport and Logistics in Indonesia. A qualitative descriptive-exploratory needs-analysis design is used. The source framework integrates curriculum documents, competency standards, industry literature, and a purposive stakeholder-validation plan involving study-program leaders and operational managers or supervisors in aviation and logistics. The document-informed analysis identifies six interrelated competency domains: strategic planning, decision-making and problem solving, leadership, communication and cross-functional coordination, operational and supply-chain management, and digital adaptability. These domains indicate that an applied curriculum should integrate work-based learning, industry projects, digital logistics applications, and recurrent curriculum review with industry partners. The study contributes a structured basis for narrowing the education-industry skills gap while retaining the applied character of vocational higher education. Empirical stakeholder validation remains necessary before the competency architecture is translated into final graduate learning outcomes and course structures.

Keywords: Air Transport; Applied Bachelor; Logistics; Managerial Competence; Vocational Education.

1. INTRODUCTION

Air transport and logistics are strategic components of national connectivity, especially in an archipelagic country where mobility of people and time-sensitive goods depends on reliable air networks. The sector is also being reshaped by e-commerce, digital platforms, data analytics, automation, and increasingly integrated supply chains. These changes expand the role of managers beyond routine operational control toward strategic decision-making, technology-enabled coordination, resilience, and service integration. Contemporary logistics research therefore emphasizes combinations of technical, digital, interpersonal, and decision-oriented capabilities rather than narrow occupational knowledge alone (Cantoni et al., 2024; Pacher et al., 2022; Tran et al., 2025).

The transformation creates a direct challenge for higher education. Industry demand can change faster than conventional curricula, producing a mismatch between graduate capabilities and workplace expectations. Studies of logistics and business graduates report persistent gaps in organizational ability, digital competence, problem solving, communication, decision making, and other employability attributes (Al Harrasi et al., 2023; Bhatti et al., 2023). In vocational education, this gap is particularly important because program relevance is judged by graduates' capacity to perform in authentic work settings. Work-integrated learning, collaboration with employers, and curriculum responsiveness have consequently become

central mechanisms for improving employability and occupational relevance (Hiim, 2023; Jackson & Dean, 2023; Yoto et al., 2024).

For an Applied Bachelor program in Air Transport and Logistics, managerial competence is essential because aviation and logistics operations are highly regulated, technology-dependent, time-sensitive, and cross-functional. Graduates may be expected to coordinate operations, people, information, safety-related procedures, service partners, and supply-chain activities while adapting to rapid technological and market change. Digitalization further increases the importance of data literacy and technology-supported problem solving, while sustainability and decarbonization add new managerial responsibilities to logistics education (Chen, 2025; Royo et al., 2023). Accordingly, an applied program cannot be developed only from academic subject traditions; it requires systematic needs analysis anchored in current industrial practice.

The source manuscript identifies a specific gap in Indonesia: limited focused analysis of the managerial competencies that should underpin an Applied Bachelor curriculum for air transport and logistics. Existing discussion often emphasizes technical or operational preparation, whereas the managerial layer needed for planning, coordination, leadership, supply-chain control, and adaptation remains less explicitly structured. This study therefore aims to identify the managerial competency domains required by industry, interpret the education-industry skill gap, and formulate a curriculum-development direction that strengthens link-and-match between vocational higher education and the aviation-logistics ecosystem.

2. THEORETICAL REVIEW

Vocational Higher Education and Industry Relevance

Applied vocational higher education is designed to combine conceptual understanding with occupational performance. Its curriculum must therefore connect learning outcomes to real work processes, workplace standards, and changing industry expectations. Collaboration between schools and workplaces supports relevant vocational learning when industry problems and authentic tasks become part of the educational process (Hiim, 2023). Evidence from university-industry collaboration and work-integrated learning similarly shows that authentic projects, placements, and other forms of experiential learning strengthen preparedness, adaptive skills, and employability (Jackson & Dean, 2023; Sun & Turner, 2023). In Indonesia, industry participation is also important for realizing the flexibility intended by competency-oriented vocational curricula (Yoto et al., 2024). The same logic is reinforced by research on

interpersonal competencies and public-private skills partnerships, which highlights the value of aligning educational development with workplace capability requirements (Jaedun et al., 2024; Melesse et al., 2023).

Needs Analysis, Skill Gaps, and Managerial Competence

Needs analysis identifies the distance between existing graduate capabilities and the competencies expected in target occupations. For logistics education, studies have found mismatches in course coverage, graduate skills, and employer expectations, reinforcing the need for regular curriculum review (Birou et al., 2022; Lutz et al., 2022; Al Harrasi et al., 2023). The conceptual framework defines managerial competence through strategic planning, decision making, leadership, communication and coordination, problem solving, and adaptation to change. Current evidence supports this multidimensional view: soft skills are integral to logistics performance (Cantoni et al., 2024), while digital employability and workforce readiness are increasingly interconnected in vocational graduates (Kholifah et al., 2025). At the same time, supply-chain professionals develop capability through continuous workplace learning, implying that curricula should teach students how to learn from dynamic operational contexts (Derwik & Hellstrom, 2021). Learning environments must also cultivate domain-general competence and connect learning modes with success in professional logistics settings (Lofgren et al., 2023; Malka & Austin, 2024).

Competency-Based Curriculum for Air Transport and Logistics

A competency-based curriculum translates industry requirements into observable graduate outcomes, learning experiences, and assessment. The literature on logistics engineering education recommends systematic competence profiling, while recent studies call for digitally enriched and active learning approaches that mirror supply-chain complexity (Pacher et al., 2022; Deif, 2023; Salinas-Navarro et al., 2024). Civil-aviation vocational education also benefits from stronger industry-education integration, because operational competence cannot be developed effectively through classroom abstraction alone (Li, 2024). Operationally oriented professions such as aviation require experiential learning that develops knowledge, skills, attitudes, and professional judgment (Bakke & Berg, 2023). Consequently, curriculum design should combine managerial theory, simulations, authentic projects, internships, digital tools, and recurring industry feedback rather than treating managerial competence as a standalone theoretical subject.

3. RESEARCH METHOD

This study uses a qualitative descriptive-exploratory needs-analysis design, consistent with the purpose of understanding industry expectations and translating them into a curriculum-development framework. The analysis uses primary and secondary evidence streams specified in the source manuscript. Secondary evidence includes curricula, occupational or competency standards, industry reports, and recent scientific literature. The stakeholder-validation frame uses purposive sampling because the required information is held by individuals with direct responsibility for aviation-logistics operations or vocational program management.

The planned expert frame comprises 13 key stakeholders: eight heads of study programs from PPI Curug and the Indonesian Aviation Academy Banyuwangi, one Citilink operational manager, and four operational supervisors from Lion Group airlines (Wings Air, Super Air Jet, Lion Air, and Batik Air). The broader informant logic also accommodates regulators, industry associations, lecturers, graduates, and workers where additional perspectives are needed until information saturation is achieved. Data collection is structured through semi-structured in-depth interviews, direct observation, and document analysis. Interview topics cover managerial competency requirements, industry transformation, graduate skill gaps, and expectations for the Applied Bachelor program.

Analysis follows an iterative qualitative sequence of data condensation, organized display, pattern interpretation, and conclusion verification. Credibility is supported through source and method triangulation, member checking, an audit trail, and peer debriefing. At this exploratory stage, the document-informed synthesis provides the initial competency architecture, while the stakeholder phase functions as empirical validation. Interview quotations, frequency counts, and statistical results are reported only after the corresponding field evidence has been collected and verified.

4. RESULTS AND DISCUSSION

Managerial Competency Architecture

The needs-analysis synthesis produces six mutually reinforcing competency domains. First, strategic planning is needed to connect operational decisions with route, service, capacity, logistics, and organizational objectives. Second, decision-making and problem solving are required because aviation-logistics managers work under time pressure, operational uncertainty, and interdependent constraints. Third, leadership is necessary for directing teams, maintaining accountability, and coordinating responses across operational units. These domains are consistent with employer-oriented employability research, which repeatedly

identifies decision making, organizational ability, problem solving, and goal-directed behavior as essential graduate capabilities (Bhatti et al., 2023; Tran et al., 2025).

Fourth, communication and cross-functional coordination form a distinct managerial requirement. Air transport and logistics depend on interaction among operational, commercial, ground-handling, cargo, safety, customer-service, technology, and external partner functions. Logistics research confirms that soft skills are not peripheral; they are part of the competence required to manage complex networks and collaborative relationships (Cantoni et al., 2024). Fifth, operational and supply-chain management competence links managerial judgment to the movement of passengers, cargo, information, and resources. Undergraduate and graduate supply-chain education studies show that course portfolios can contain significant coverage gaps, which justifies explicit mapping between industry tasks and curriculum content (Birou et al., 2022; Lutz et al., 2022).

Sixth, digital adaptability integrates technology awareness with the capacity to learn, redesign work, and respond to changing systems. This domain is increasingly important because digital readiness affects employability and because supply-chain work is being reshaped by analytics, automation, and digital coordination tools (Kholifah et al., 2025; Mazlan et al., 2026). The domain should not be reduced to software operation. It should include technology-supported decision making, data interpretation, process improvement, and readiness to learn new systems. Such an approach is aligned with workplace-learning evidence showing that logistics professionals continuously build competence through interaction, reflection, and practical problem solving (Derwik & Hellström, 2021).

Implications for Applied Bachelor Program Development

The six domains imply that curriculum development should begin with a competency map rather than a conventional list of subjects. Each competency should be translated into measurable graduate learning outcomes, authentic learning activities, and performance-based assessment. Industry-linked projects and work-integrated learning can connect classroom concepts to operational decisions and improve perceived employment preparedness (Jackson & Dean, 2023). Active learning for supply-chain management further demonstrates the value of realistic, problem-centered learning environments (Deif, 2023; Salinas-Navarro et al., 2024). In aviation, where practical competence and professional judgment are central, the curriculum should combine simulation, field observation, internships, case analysis, and supervised industry projects (Bakke & Berg, 2023; Li, 2024).

Curriculum governance is equally important. Industry representatives should participate in periodic needs review, outcome validation, project design, internship evaluation,

and curriculum renewal. This arrangement supports sustained rather than symbolic link-and-match and helps the program respond to changing technologies, job roles, and sustainability requirements (Hiim, 2023; Sun & Turner, 2023). Green and decarbonization competencies should also be progressively integrated into logistics learning because sustainability is becoming part of managerial decision making, not a separate environmental topic (Chen, 2025; Royo et al., 2023). The resulting model positions the Applied Bachelor program as an adaptive industry-learning ecosystem: competency needs inform outcomes, outcomes guide learning and assessment, workplace evidence validates graduate capability, and industry feedback triggers curriculum improvement.

5. CONCLUSION AND RECOMMENDATIONS

The study establishes an industry-oriented basis for developing an Applied Bachelor program in Air Transport and Logistics. The needs-analysis synthesis identifies six core managerial competency domains: strategic planning; decision making and problem solving; leadership; communication and cross-functional coordination; operational and supply-chain management; and digital adaptability. Together, these competencies respond to the managerial demands created by complex operations, technology-driven logistics, cross-organizational coordination, and rapid industry change. The curriculum should therefore be competency-based and strongly connected to work-based learning, industry projects, simulations, digital logistics applications, and recurrent review with industry partners. The main limitation is the exploratory nature of the analysis and the need for stakeholder validation before the competency architecture is finalized. Accordingly, the proposed framework should be validated through the specified interviews, observations, and document triangulation before final graduate learning outcomes, course structures, and assessment standards are formally established. Future research should also test the competency model across different aviation, airport, cargo, logistics, and regulatory settings to strengthen its transferability.

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