Needs assessment of logistics management curriculum in university-business collaboration perspective

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Abstract
The purpose of the study is to analyze the competencies of Logistics Management graduates needed to be able to work and adapt in Logistics industry. This article is the representation of the first step in finding out the competencies by getting information through questionnaire from 229 logistics management lecturers and employees of logistics companies using google form and analyzed using basic calculation in SPSS (Mean, Frequency, and Standard Deviation). The survey method used was known as Needs Assessment (NA). The results show that two competencies; Business Logistics and Interpersonal Skills, both have higher values than Logistics Management competencies due to the ability needed to adapt to the world of logistics industry which is always changing.

Keywords:
higher education;
logistics management;
university business;
collaboration;
needs assessment

1. Introduction

Logistics is defined by the Council of Supply Chain Management Professionals (CSCMP) as an activity that encompasses a variety of services, such as information flow and the distribution and transportation of raw material sources to final destinations into goods that buyers can trade and consume (Firdausy, 2020:4), (Ansori, 2015). Accordingly, logistics can be thought of as a conduit between the supply base for commodities and the market. A nation's competitiveness is also influenced by its logistics industry, which handles everything from the delivery of finished goods to the handling of raw materials. As a result, logistics operations will be able to function smoothly when the logistics actor could perform professionally. The goal of logistics management, according to (Christopher, 2016), is to organize and coordinate all associated activities in order to get the required level of delivery service and quality at the lowest feasible cost. By organizing the movement of information and commodities from the market through business operations to suppliers, logistics management helps to satisfy the expectations of consumers. Despite their close kinship, logistics and logistics management are distinct from one another. While logistics management is a more comprehensive concept that encompasses management procedures that integrate the movement of goods, services, information, and other resources, logistics is a term that refers to the movement and storage of goods in a supply chain that focuses on specific activities related to the movement and storage of goods. The purchasing, manufacturing, and delivery of goods are all included in logistics management. But both fall under the umbrella of supply chain management (SCM), which focuses on effectively managing products.

Based on Logistics Performance Index (LPI), which is released every two years and serves as a comparison tool to help nations identify the opportunities and difficulties they face in relation to each other's trade performance, Indonesia ranks sixth lowest among all the nations. The ASEAN economy is ranked 59th (Bank, 2012 in Sangka). It must be admitted that, even after eight years, Indonesia's logistics competitiveness still falls behind that of its neighbors. Indonesia is placed 46th on the World Bank's 2018 Logistics Performance Index (LPI), down just 13 spots from 59th in 2012. Malaysia is ranked 41st, Vietnam is ranked 39th, Thailand is ranked 32nd, and Singapore is ranked 7th. However, according to

the most recent LPI report, Indonesia would fall sharply to 63rd place in 2023, doing worse in four areas, including Logistics Competence and Quality, which is one of the areas where employee performance and education interact.

Companies truly require logistics players with skills that can change and evolve with the times, according to a study by (Wong & Tang, 2018) on the performance of logistics players. The discrepancy between the skills required by industrial logistics actors and those taught in schools has actually been the subject of ongoing research since 1977 (Mundy et al., 1977), (Piercy et al., 2018). According to Abdul, Harimurti, and Vikaliana (2017), the quality and speed aspects are the main causes of Indonesian human resources' underperformance in the logistics industry. Companies, business people, the government, and academics must build a domestic workforce in order to meet the difficulties of globalization.

Improving Indonesia's educational system is one method to do this. The scope of discussion in the logistics industry, HR (Human Resources) in the logistics sector through education and training institutions and collaboration between the two has a strong connection with the curriculum and its development. Curriculum in higher education, according to research conducted by Annala, Makinen, and Linden in 2016 in (Case & Huisman, 2015) has received great attention in the last 10 years. This is because through curriculum the basics of science can be applied in daily activities. They reviewed systematic studies related to curriculum in higher education through various research that prioritized two things, namely understanding the curriculum better from a broader perspective and discussing various different curriculum concepts. The results of their research show that the meaning of curriculum varies greatly. The concepts commonly used in curriculum are syllabus, product, process, and praxis (Grundy 1987; Kelly 2009; Stenhouse 1975; Pinar 2004). However, in higher education, the concept and meaning of the curriculum are not the same, they have their own meanings (self-evident not shared meaning). This is based on 62 articles that were selected in the research. In fact, it is known that the curriculum research they found focused more on curriculum development in a specific context than on the definition of the curriculum itself.

The development of logistics curricula in higher education, according to research (Gravier & Theodore Farris, 2008), is a common theme found in research articles, especially if it is related to 1) meeting the needs of the industrial world which requires university graduates with the skills needed by the business world (Lancioni et al., 2007), 2) distribution of logistics college graduates in the business world (Harrison et al., 2014) (Myers et.al, 2004, van Hoek, 2001), and 3) the manager-practitioner or recruiter's perspective on the desired skills of logistics college graduates (Ferrin et al, 2001, Murphy and Poist, 1998). Based on this, the appropriate curriculum for developing a logistics curriculum in logistics universities is a competency-based curriculum as stated by Sukmadinata and Erliany (2012 in Rusman, 2021: 265) that a competency-based curriculum development model focuses on developing capacity or competency in their respective fields of work in the industrial world which emphasizes competencies that can be applied in the workplace.

The global population is steadily rising, resulting in swift transformations across all sectors, particularly in transportation and logistics. The transportation of individuals and things within urban and regional areas to fulfill their demands constitutes a logistical operation that must be handled effectively to ensure its utility and efficiency. According to McKinsey (2018), the transportation system influences quality of life, so transportation and logistics issues must not be overlooked. Similarly, logistics is intricately connected to tangible operations and human activities, including transportation, inventory management, warehousing, and packaging.

In the realm of commerce and industry, the significance of transportation and logistics as facilitators of global economic activity will become increasingly evident. In the absence of transportation and logistics, the global economy may not be incapacitated, but it would undoubtedly have challenges. This aligns with Beysanbeuv's (2002) assertion that logistics and transportation play an increasingly significant role in international commercial relations. At the onset of the Covid-19 pandemic, the procurement of PPE and rapid testing equipment from foreign nations would face distribution challenges if transportation and logistics encountered issues, such as the emergence of Covid-19 clusters in countries supplying or distributing these items.

Swift and dynamic transformations in the industrial sector necessitate institutional preparedness to provide graduates with the competences demanded by the global business environment.

Consequently, universities must formulate a curriculum that equips students with the requisite skills and knowledge anticipated by the business sector, ensuring its continual relevance to industry demands. A curriculum, characterized as a tool for connecting learner needs with classroom activities (Yalden, 1987:86, in Krarzia, 2013:37), must exhibit clear and distinct program objectives to enhance realistic learning experiences.

Accordingly, colleges and the business/industrial sector must collaborate or cooperate through a variety of mutually beneficial initiatives, including internships, work-while-study, and collaborative research. According to Tucker (2002) and Tresserras & MacGregor (2005) in (Plewa et al., 2015), businesses must find innovative ways to get a competitive edge in order to compete on a worldwide scale, and this is closely correlated with the state of the university, beyond ordinary pupils, there is a high demand for more money (Barnes et al, 2002). This partnership necessitates modifications to the school's academic program about the academic credit score system, rules and guidelines concerning on-the-job training, and even instructional strategies (Mason et al., 2001). In fact, according to the findings of a World Bank survey (McKinnon et al., 2017), in order to meet the demand for trustworthy logistics managers and industry participants, educational institutions that offer logistics study programs (campuses, universities, and vocational schools), particularly those supported by the government, must improve the quality of their programs as well as the graduates of logistics institutions in every region. The SCM World Survey research (Logistics Management, 2011 in McKinnon, 2017) supports this, showing that the course content and delivery of the educational system of educational institutions that offer logistics study programs are frequently criticized for the challenges that companies face in obtaining graduates with a variety of essential skills needed at work.

2. Method

Needs Assessment is the first step, a basic step in research, to identify the problem as part of DDR (Design and Development Research). Yusop (2020) asserts that as research difficulties and problems will be directly tied to the answers or educational interventions offered, they must be well-defined. Based on the data on industry demands and Logistics Performance Index (LPI), this study addresses the issue of graduates in higher education who do not meet the skills required by the industry when they enter the commercial and industrial worlds. This can be the result of the lack of exposure to the business world or the lack of alignment and relevance between Higher Education (HE) instruction and DU/DI (Dunia Usaha/Dunia Industri) activities (similar to Industry World). Thus, using the Indonesian National Qualifications Framework (KKNI) level 6 and the Indonesian National Work Competency Standards (SKKNI), this study determines the competencies graduates should acquire in order to work and create in the field of Logistics Management.

Goals outline the outcomes that should be attained once the study is finished. Sukmadinata (2011) asserts that the goals of the research must align with the description of the problem and the research methodology. In order to determine actual training needs, needs analysis (NA) compares individual competencies with field needs, specifically work operational standards (Rusman, 2021). In order for the delivery of education or training to benefit the educational institution, needs analysis serves as the foundation for comprehending the requirements of every organization or institution. Determining the research objectives is one of the purposes of Needs Analysis, or NA for short. Curriculum components can also be chosen and evaluated using NA; based on the UBC (University-Business Collaboration) perspective, subjects, learning objectives, teaching resources, learning activities, and assessments are competency-based. Researchers assembled these materials to find similarities or variances after choosing and identifying curricular components from a variety of sources. The researcher then examined which sections were appropriate for each of the syllabus's components.

In this research, the aim of using a questionnaire is to obtain information related to the implementation of Logistics Management to analyze what competencies are needed in designing a Logistics Management curriculum. "Data collection using questionnaires is carried out through questions and answers using written media" (Ali, 2014, p. 124). One of the uses of a questionnaire instrument is to identify competencies in the Logistics Management curriculum based on the opinions of lecturers and experts in the field of Logistics Management. So, the questionnaire developed is a closed questionnaire, where the researcher has prepared various answers to the existing questions and the respondent only has to choose the available answers. Questionnaire answers are made in the form of a

rating scale ranging from scale one to scale five. The method used to analyze data from the questionnaire instrument uses a rating scale, namely descriptive statistics. "Descriptive statistics functions to describe a situation" (Ali, 2014, p. 425). With descriptive statistics, the data that has been processed is described concisely and can be more easily understood. In this research, descriptive statistics are used to determine the average value and standard deviation. Based on one of the objectives of this research, namely identifying Logistics Management competencies needed in curriculum development design, it is necessary to calculate the average value of each sub-competency and its indicators. Meanwhile, the standard deviation calculation aims to identify variations in respondents' answers.

3. Result and Discussion

The Needs Assessment questionnaire, which has been disseminated since August 2023, was completed by 213 academics and employees between the ages of 25 and 50 who worked for various institutions and logistics firms. Of these, 16 respondents were older than 50. This indicates that 213 responders are young and have the chance to continuously advance their professional development and knowledge. Based on the questionnaire's results, 14 out of the 229 respondents have completed a PhD degree, indicating that lecturers in particular still have the option to pursue further education. 39 respondents have a diploma, 105 have a bachelor's degree, and 29 have a master's degree, according to the following table. Regretfully, 42 respondents still selected a different last educational option, which was probably high school or something similar.

The respondents to this survey had a wide range of experience, including working as logistics industry employees, university teachers, and practitioner lecturers. While 56 respondents have experience due to their more than ten years of employment, the majority of respondents (121) had only one to five years of total employment. There were 189 respondents who were employed by logistics firms, 29 who were lecturers, and 11 who responded as practitioner lecturers, indicating that they had employment in logistics companies as well as lecturers. By distributing questionnaires to two groups of respondents who are directly involved in the educational process at the institute—lecturers, employees, and practitioner lecturers as users of graduates specializing in logistics management—it is possible to identify the competencies that need to be developed.

Table 1 presents the findings of a descriptive statistical analysis of the opinions of instructors, staff members, and practice lecturers about the logistics management competencies that students majoring in the field should acquire. It is known from the collected data that the mean falls between 3.28 and 3.61. Each statement item in the questionnaire is rated on a scale from 1 (extremely unimportant) to 4 (very important), as shown in this figure, which represents the responses to the statement items. As a result, most respondents agreed with the logistics management competencies that the logistics management specialism requires.

Tabel 1. Descriptive statistics on the perceptions of lecturers, employees and industry

Competency	Sub-competency	%	Mean
Logistics Management	Understanding the concept of Supply Chain Management	69.4	3.61
	Having the knowledge of Logistics Operation Management	69.9	3.61
	Getting the knowledge of Supply Chain Analysis	59.4	3.50
	Developing the skill of Strategic Sourcing	53.7	3.44
	Developing the skill of Procurement	56.8	3.45
	Having the ability to identify risk on supply chain	65.1	3.54
	Applying the ability of evaluating risk on supply chain	62.4	3.53
	Understanding how to mitigate risk on supply chain	60.3	3.51
	Develop the ability to do goods inventory in the warehouse	62.0	3.48
	Able to analyse the distribution networking	66.4	3.57
	Able to create/design the distribution line	55.5	3.41
	Having the knowledge of Freight Forwarding	62.0	3.53
	Able to define the Logistics Performance indicators	63.8	3.55
	Knowing kinds of transportation modes	62.4	3.51
	Able to differ modes of transportation	69.0	3.59

	Understanding the basic concept of Sustainability in Logistics activities	64.6	3.55
	Understanding and applying the ethics of Logistics activities Sustainability	56.8	3.46
	Understanding the concept of Triple Bottom Line to apply the Sustainability in Logistics activities	42.8	3.28

All 229 respondents selected knowledge in logistics operation management (LOM) as a highly significant cognitive ability area, as shown in table 4.5. The second category of information that respondents believe is crucial is the idea of supply chain management, or SCM. A number of sub-competencies fall into two competency categories, such as the development of strategic sourcing and procurement skills. These can be classified as cognitive and psychomotor because they involve both knowledge and skills. Of the 18 logistics management sub-competencies, the Triple Bottom Line concept has the lowest average (mean) of 3.28 and 42.8%, making it the lowest competency indicator. Two distinct things fall under the sub-competency of sustainability in logistics activities: Specifically, the sustainable concept receives a score of 64.6%, while its ethics are viewed as less significant because of its low score of 56.8%.

To ascertain the distribution of data in a sample and assess how closely the data resembles the mean value, one can utilize the standard deviation value. Table 2 shows that the logistics business competency standard deviation value with supply and demand-based business planning indicators is 0.664. The second indicator is cooperation management, a 21st century skills category with a mean of 3.45 and a standard deviation of 0.715. The more varied the values in the items are or the less exact they are with the mean, the higher the standard deviation value; on the other hand, the more comparable the values in the items are or the more accurate they are with the mean, the smaller the standard deviation value. Based on this interpretation, if the mean is 3.45 and the standard deviation is 0.715, the data is less variable because the standard deviation is lower than the mean.

Table 2. *Descriptive statistics on the perceptions of lecturers, employees and industry practitioners regarding the Logistics Business Competencies required*

Competency	Sub-competency	Mean	SD
Logistics Business	Having the global perspective of logistics industry rules and regulations	3.51	0.698
	Understanding the global perspective of logistics industry culture	3.39	0.733
	Having the global perspective of international trade in logistics industry	3.48	0.698
	Able to understand and create the design based on Supply and Demand	3.55	0.664
	Able to manage effective collaboration with internal and external stakeholder	3.45	0.715
	Able to adapt to change especially business situation	3.55	0.690
	Able to adapt to market needs change	3.54	0.691

Table 2 shows the findings of a descriptive statistical analysis of how instructors, staff members, and practice lecturers view the interpersonal skills competences that logistics management majors should cultivate. It is known from the collected data that the mean falls between 3.45 and 3.72. Each statement item in the questionnaire is rated on a scale from 1 (extremely unimportant) to 4 (very important), as shown in this figure, which represents the responses to the statement items. As a result, most respondents agreed that logistics management specializations require the development of interpersonal skills competencies. Based on table 3, all 229 respondents ranked the psychomotor skill category—which includes good communication—as a very significant competency area. The ability to make decisions is one emotional type that the respondents value highly. The development of the emotional competency category, which includes the capacity to analyze opportunities and challenges, is

one of several sub-competencies that fall into the affective and psychomotor competency categories. Of the 10 interpersonal skills sub-competencies, having the ability to do multiple or complex tasks has the lowest average (mean) of 3.45, making it the lowest competency indicator.

Table 3. *Descriptive statistics on the perceptions of lecturers, employees and industry practitioners regarding the Interpersonal Skills Competencies required*

Competency	Sub-competency	Mean	Frequency
Interpersonal Skills	Having the ability to Analyze	3.53	146
	Understanding how to identify and solve problems	3.66	170
	Knowing how to make decision	3.67	171
	Able to communicate effectively	3.72	180
	Able to negotiate	3.62	157
	Able to adapt with technology	3.62	159
	Able to use the technology	3.63	164
	Able to do multiple or complex tasks	3.45	124
	Able to explore opportunities and challenges	3.53	139
	Having the Leadership skill	3.62	159

4. Conclusion

A Logistics Management curriculum in Higher Education (HE) should be designed to equip graduates with the essential competencies required to excel in the logistics industry while ensuring their adaptability to future challenges. As the logistics sector evolves with advancements in technology, globalization, and sustainability demands, it is crucial that educational programs align with industry needs to produce highly skilled professionals. This article presents research conducted to identify the key competencies and their corresponding sub-competencies that should be integrated into the Logistics Management curriculum. The study aims to bridge the gap between academic learning and industry expectations by analyzing the skills, knowledge, and abilities that graduates must possess to navigate the dynamic logistics landscape. Findings from this research provide valuable insights into curriculum development, ensuring that Logistics Management education remains relevant and responsive to emerging trends and technological advancements in the field.

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