Edulogistics Hub: Outstanding Logistics Study Center for the Future

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ABSTRACT
Vocational education as a workforce maker who is ready to work directly in Industry and the World of Work must be able to answer the challenges of the industrial 4.0 era and support Making Indonesia 4.0 proclaimed by the President of the Republic of Indonesia. The teaching and learning process in vocational education must take place effectively and efficiently, namely not only emphasizing theoretical understanding, but also emphasizing hands-on practical skills. This research uses a qualitative approach using the Focus Group Discussion method with industry experts and academics in Indonesia and Germany. The Logistics Engineering Study Program has an important role in producing a study center that is able to facilitate and bridge the needs of industry and education, especially in the field of logistics. The results of the FGD show the need for the deveGlopment of digital-based logistics technology. For this reason, an effective and efficient Edu-Logistics Hub model is proposed to meet this need as the beginning of a superior study center in the logistics sector.

Keywords: *Edu- Logistics Hub, Hands on*, Vocational Education.

1. INTRODUCTION

1.1. Background

Digital technology is the main key to entering the world of work or in the Industrial 4.0 era [1]. Some of the topics above, such as the use of cloud computing, robotics, automation and so on, have been massively used in the logistics, automation and robotics industries and other engineering fields [1] [2]. An example is the sharing concept, starting from the type of start up approach such as grab and gojek with the concept of last mile delivery to formal forms of collaboration that exist between company levels. Customer demand is increasing rapidly. Both individuals and business people hope to get goods faster, more flexible, and when it comes to consumers, the expectation is that shipping costs are low or no shipping costs, for example in the logistics industry. Various technological advances have brought about the transition from human to robot, this needs to be responded positively in the world of education [3].

The increase in demand is certainly in line with the needs of Industry and the World of Work regarding resources capable of carrying out or understanding these developments. This need requires higher education or in this case the output of graduates who are ready for this emerging trend, while the availability of professionals in logistics is still not balanced with industry needs. The level of employment in the transportation and warehousing sector is ranked the 8th largest, with a total of 5.592 million people in 2020 [4].

Higher education as an educational institution that produces graduates who are competent not only focus on logistics, but also have good mastery of information technology. Logistics graduates are expected to be able to advance the logistics sector in Indonesia to the next level with the help of technology needed for its existence in the Industrial 4.0 era [5] [6]. In an effort to prepare graduates who are ready and competent, the research team took a case study in the logistics engineering study program Faculty of Technical and Vocational Education Universitas Pendidikan Indonesia (UPI) by carrying out the idea of Edu-Logistics Hub to accommodate studies related to the field of logistics and logistics education at the higher education level. What the logistics trend will be like in the coming years is still uncertain, therefore the researcher tries to carry out an analysis related to the logistics trend by using the methods and tools needed to carry out the mapping as a preliminary study.

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2. METHODS

This research is a preliminary study in an effort to prepare edu logistics hubs as centers of excellence in logistics. At this stage, a qualitative approach was carried out through Focus Group Discussions (FGD) which presented practitioners as well as academics from the Construction University, Germany in the field of Logistics expertise as resource persons. The FGD was also attended by 8 lecturers and 2 representatives of Logistics Engineering students from the Faculty of Technical and Vocational Education at the UPI as participants. The FGD was guided by a logistics engineering lecturer to explore the information needed in gathering information on trends in implementation, implementation and hub relations in the logistics sector through higher education institutions in Germany. The data from the FGD results are then processed and then interpreted as the results of the FGD which can be used as a preliminary study for the Edu Logistics Hub.

3. RESULTS AND DISCUSSION

Edu-Logistics Hub is a place for collaborating exploration the needs of educational institutions in the field of logistics, in this case related to curriculum development and determining the skills needed for logistics graduates, and study of current issues in the field of logistics which includes knowledge and case studies to enrich insights in the field of logistics.

3.1 Result of FGD

Based on the Focus Group Discussion that has been obtained a number of results as follows:

First, Demand for human resources in the field of logistics. Increasing demand for workers in line with the needs of Industry. These needs demand trigger higher education to produce graduates who are ready to face this trend, while the availability of professionals in logistics is still not balanced with the needs of the industry. The level of employment in the transportation and warehousing sector is the 8th largest, with a total of 5.592 million people in 2020.

Second, Trends in logistics can be seen on Figure 1. Some of the current trends in logistics research include (1) logistics network optimization, which aims to develop models and algorithms that efficiently minimize costs and delivery times. This research includes optimizing delivery routes, managing material flows, and choosing the right mode of transportation. (2) Research on green logistics aims to develop environmentally friendly solutions in the logistics process. This research includes developing efficient and sustainable technology and business models and measuring the environmental impact of logistics processes. (3) Research on risk management and supply chain resilience aims to develop methods to identify, evaluate, and reduce risks in the supply chain. This research covers risks originating from external factors such as natural disasters or policy changes, as well as internal risks such as quality problems or stock availability. Furthermore, research on digital technology aims to develop and apply technologies such as IoT, big data analytics, blockchain, and AI (Artificial Intelligence) to increase the efficiency and transparency of logistics processes. This research includes the development of algorithms and systems that can utilize real-time data to improve service quality and efficiency.

Figure 1. Trends in Logistic

Third, Logistics performance in Germany is ranked first because it manages to bring in 319 billion Euros to GDP in 2022. Logistics in Germany is also experiencing 8 megatrends, namely: digitization, 3D printing, automated vehicles, robotics, information community, diversification, service, and sustainability. The German government in recent years has focused on developing community information through Gaia X to share data with fellow logistics companies in Europe and practice environmentally friendly logistics sustainability.

On the other hand, Indonesia is ranked 40s in the world due to several drawbacks such as the utility mode of transportation being found to be very low and weak infrastructure making shipping prices more expensive than other neighboring countries. Things that must be considered for advancing education in logistics, as well as business in the logistics sector in Germany, are (1) awareness of stakeholders understanding the urgency hub, (2) research initiated by collaboration between academics and industry, (3) workshops and awards initiated by associations and industry, and (4) the government also conducts competitions with campuses and companies (collaboration) to find innovations for developing a particular area. Logistic Optimization Collaboration Scheme can be seen on Figure 2.

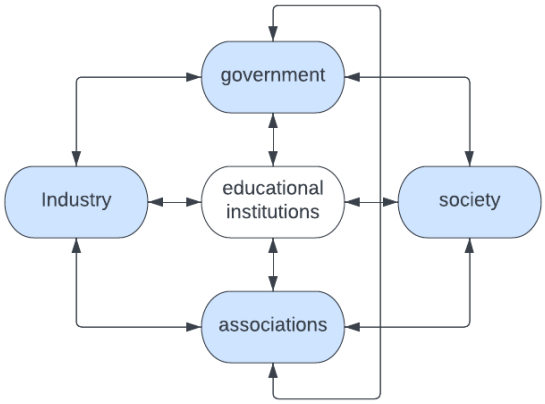

Figure 2. Logistic Optimization Collaboration Scheme

Fourth, logistics education in Germany is specified in its own department. Even so, the weight of credits for their education is much heavier than in Indonesia with a weight of up to 210 per detail. The logistics education theme there also postponed apprenticeship activities as one of the determining factors for graduation which could last for 3 years. Germany's dual vocational education ecosystem involves 4 actors: students, industry, government, and chambers. This is because the industry works with students to practice through internships with lectures that move simultaneously.

3.2 Trend in Logistics

Logistics is a broad field that encompasses various activities related to the management and movement of goods, information, and resources within the supply chain [12]. It involves the planning, implementation, and control of the efficient and effective flow of materials, products, and services from the point of origin to the point of consumption. The scope of logistics generally includes the following areas [2][5] [6] [12] [13] [14] [15]:

a) Procurement and sourcing: This involves the identification and selection of suppliers, contract negotiation, and management of the purchase of goods and services needed for organizational operations.

b) Transportation and distribution: This includes the planning and management of the transportation of goods from suppliers to the organization, as well as the distribution of finished products to customers or end users. It involves the selection of appropriate transportation modes, route optimization, inventory level management, and ensuring timely delivery.

c) Warehousing and inventory management: This involves the storage, handling, and control of inventory in warehouses or distribution centers. It includes activities such as receiving and inspecting goods, inventory level management, conducting cycle counts and inventory audits, and ensuring proper storage and organization of products.

d) Packaging and labelling: Logistics also includes the design, development, and implementation of appropriate packaging and labelling for products. This ensures product safety, facilitates efficient handling and transportation, and provides essential information to customers and end users.

e) Information technology and communication systems (ICT): Logistics heavily relies on ICT systems for efficient information management related to inventory, orders, shipments, and other logistics processes. It involves the use of software, hardware, and communication networks to track and monitor the flow of goods and information in real-time.

f) Reverse logistics: This refers to the management of product returns, repairs, recycling, or disposal. It involves processes such as handling customer returns, managing warranty claims, refurbishing or repairing products, and ensuring compliance with environmental regulations for proper disposal or recycling.

g) Risk management: Logistics also involves the assessment and mitigation of risks associated with the movement and storage of goods. This includes identifying potential disruptions in the supply chain, developing contingency plans, and implementing measures to minimize risks such as theft, damage, or delays.

4. CONCLUSION

The presence of the Edu-Logistics Hub is urgently needed in Indonesia effort fulfil four aspects, included curriculum, skills, recently issues, and case studies in logistic to support the progression of logistics educational and logistic industry. Edu-Logistics Hub will become receptacle exploration of the four aspects through collaboration between academia, industry, government, and other partners which compatible with the objective of Edu-Logistics Hub.

AUTHORS' CONTRIBUTIONS

All writers collaborated to compile this scientific article as one of the outcomes of the research that was conducted December 2022 to April 2023 as a preliminary study.

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