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The Study of Logistics Model under Supply Chain

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Abstract. At the rapidly changing environment, the work process in global trade is needed to ensure efficient services and reliable operations. Furthermore, at supply chain, transportation is very important element as factor for overall flow. Users demand a high quality services, for instance, on the status and location of vehicles and goods. To meet these demands, some service providers have been implementing or upgrading system using new technologies. It must support global supply chain, for an efficient e-Business on maritime logistics. Most important thing is to support sustainability of transportation for seamless logistics. For sustainability in logistics, it should be done an efficient logistics process as checking transportation distance and speed, etc. To support these functionalities, it needs real-time and correct information. Therefore, it is possible to realize seamless logistics because proposed service model provides real-time and correct information.

Keywords: Ubiquitous Technology, Radio Frequency IDentification, Sensor Network, Maritime Logistics, Global Supply Chain

1 Introduction

The variety of participant and the complexity of work became increasing under rapidly changing environment of global trade and logistics. From a global supply chain point of view, logistics is very important element as factor to grasp overall flow. That is, work efficiency at supply chain was under the control of logistics efficiency.

For the respect of maritime logistics, most parties have achieved to work efficiency through the electronic means for port clearance and single window. Hereby port, in particular international port as an economic gateway, is center for movement of goods and passengers and one of major security facilities that can affect prosperity and existence of a nation. Therefore, it is important to progress to be ensuring the security, efficiency and resilience of the maritime elements of the global supply chain system for use by countries to enhance the preparedness and resilience of shipping within the global supply chain system in the event of large-scale system disruptions, possibly by means of global cooperation [1,2].

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Therefore, for an efficient e-Business on maritime logistics, it must support global supply chain. Most important thing is to support sustainability of transportation for seamless logistics. For sustainability in logistics, it should be done an efficient logistics process as checking transportation distance and speed, etc. Also, it has to grasp correct status or location of goods or transport means. To support these functionalities, it needs real-time and correct information. This paper describes sustainability in maritime logistics that use a ship on transporting goods. Hereby, ship is categorized as eco-friendly transport means with high-performance and low-cost. Therefore, it is possible to realize seamless logistics because proposed service model provides real-time and correct information.

2 Current Status

This section reviews the current status of maritime logistics from the viewpoint of supply chain. At the end of this section, it shows why needs sustainability in logistics and what is needed for sustainability under supply chain. Most logistics parties had changed their manual process with paper into system based operation using electronic message, EDI(Electronic Data Interchange), and WEB system. As changing logistics process, logistics parties ware eliminated unnecessary process and the duplicated data element. But, work automation itself is enough to check a process step and flow control at initial stage because some operation was occurred within one party. But, according to work scope was becoming glowing and extending, the number of the participating party and exchanging document was increasing geometrically. It is still remaining major problem, manual processing even though most parties were already handling operation with information system.

As worldwide globalization becomes quickly progressing and collaboration has been occurring, fast and efficient logistics process is needed more and more. Gradually unified into one of the market becomes accelerating. Furthermore, user want to know current and correct status or status per transportation stage for goods. To support this, it is possible to provide suitable information only with the integrated data or through information association. However, in real world, it is difficult to connect between information systems and to share information between logistics entities with various reasons. So, information is disconnected, and then work efficiency declined. Also, additional cost and process time is occurred due to incorrect information [3].

3 Service Model in Logistics for Sustainability

The section describes service model based on RFID suitable for sustainability in logistics. With service model, it is possible to track and manages logistic flow in real time with the adoption of ubiquitous technology for the purpose of managing information of cargoes and ships. This model is utilizing RFID technologies to manage movement and processing of cargoes in real time by attaching tags into vehicle or cargoes and by using antennas and communication networks. Also, it enables auto-

matic recognition of import/export cargoes, resulting in easier management of cargoes, and contributes to improvement of maritime logistics.

Figure 1 shows overall scope of supply chain in maritime logistics and role of each participant [4,5,6]. For sustainability in supply chain, it needs to grasp overall flow from original, manufacturing to final delivery. To do this, it must need fruitful information, this information could be capturing from RFID as well as electronic message data.

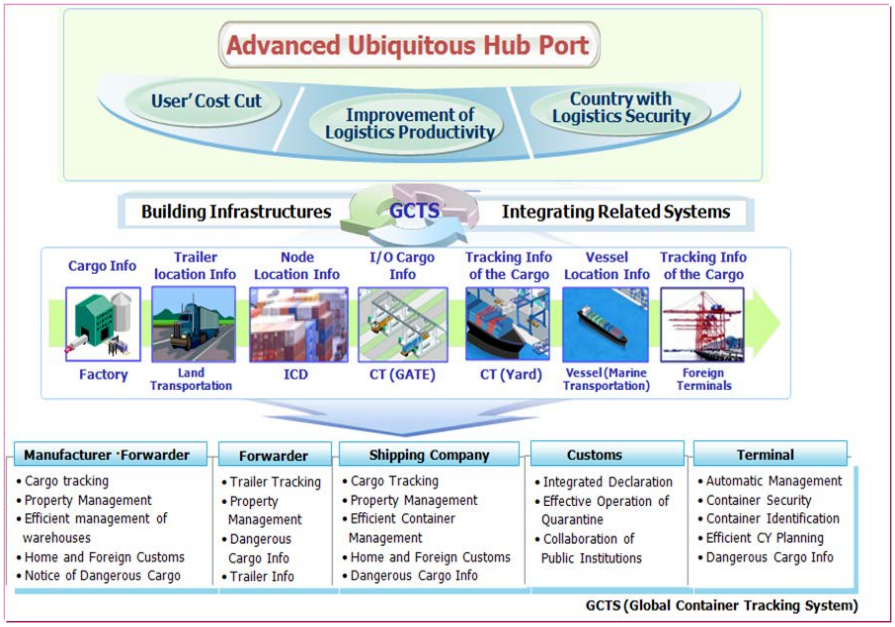

Fig. 1. Service model in Logistics for sustainability

Because all of port operations are handling by electronic message, such as EDI and XML, basic information, such as pre-arriving notification for container or vehicle and container loading list, etc. had been saved to repository. Therefore, as matching or combining with RFID data based on these information, it is possible to provide correct information.

As above description, it is possible to reduce processing time at transportation process because stop time in front of logistics base that check whether this goods is delivering to this location or not is reduced. Also, it is able to know correct status or location for goods with this service model. So, it should enhance work efficiency and to provide seamless logistics in maritime logistics. The cargo visibility demands formalizing and redefining existing logistics processes, and standardizing and commonly defining relevant information in each process.

Actually, RFID infra has been successfully installed to a lot of logistics base in the republic of Korea. So, it is well operating for transportation part. That means RFID data is captured to the integrated information system from inland depot to departure port in case of export cargos. This integrated information system provides correct information after the captured data combined with EDI information when user request goods location. In future, if it will expand this RFID service model to factory or warehouse, it is possible to realize global supply chain.

4 Conclusion

The variety of participant and the complexity of work became increasing under rapidly changing environment of global trade and logistics. From a global supply chain point of view, transportation is very important element as factor for overall flow. That is, work efficiency at supply chain was under the control of logistics efficiency. It must support supply chain for an efficient e-Business. This paper describes sustainability in transportation that use a ship on transporting goods. For sustainability in transportation, it should be done an efficient work process as checking transportation distance and speed, etc. with this model. In future, if it will expand this RFID service model to factory or warehouse level, then it is possible to realize global supply chain.

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