

The Implementation Model of Smart Logistic Transport : Engineering Economic Analysis of Internet of Things (IoT)

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Abstract

Asean Economic Community 2016 has been creating more challenges in logistics industries in Indonesia. The implementation of *IoT (Internet of Things)* in logistic services is needed for increasing competitiveness leading to the establishment of so-called smart logistic transport. We propose the implementation model of the Indonesian Smart Logistic Transport, by focusing on cold supply chain system. We have conducted an engineering economic analysis of the smart logistics transport, in relation with the mobile network platform of 2G, 3G, 4G. Development of the implementation model is completed by conducting in-depth interviews with the application customers, technological vendors, regulator and network provider. Based on implementation trial in September-October 2015 and engineering economic analysis, we have found that Smart Logistic Transport is not feasible only on scenario 3 for CD6 at 4G network. Such condition is caused by the expensive price of 4Gs M2M gateway module and MDVR. Therefore, it requires the minimum amount of implemented truck to make implementation feasible. Our proposed model has signified 11 features, i.e. 2 basic feature and 9 advanced features, formulating the Indonesian smart logistics transport system. Due to the dynamic business process, customers may need specific advanced features in the future. By taking such opportunity, Indonesian local content developer can work to develop any relevant application features, which is needed by the logistic companies in the near future.

Keywords

Logistic Services, Engineering Economic, Supply Chain, Internet of Things (IoT), 4G Network

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Biography

Muhammad, B. Eng. is an Undergraduate Student in Industrial Engineering in Department of Industrial Engineering (IE), Faculty of Engineering at University of Indonesia, Depok, Indonesia. He earned Diploma of Engineering in Physics and Instrumentation Engineering, Faculty of Industrial Technology from Institut Teknologi Bandung (ITB), Bandung, Indonesia. He is a leader in AUAV (Autonomous Unmanned Aerial Vehicle), University of Indonesia Robotics Research Team. Member of TREC Engineering Center Research Group, Faculty of Engineering University of Indonesia about Sustainable and Renewable Energy with Mr. Farizal Ph.D. He has an oral Presentation about Cryogenic Technology in Denmark Technical University (DTU), Copenhagen, Denmark. Muhammad has completed research projects with PT. Astra Internaional Tbk. in Astra 1st Program, Nutrifood, Aeroterascan, UI Robotic. His research projects interests include manufacturing, simulation, optimization, design, reliability, scheduling, manufacturing, and lean. He is member of IEOM University of Indonesia Chapter, YLI (Young Leader Indonesia), Astra 1st, PERHIMAK UI, Shafa Community.

Irwan Dharmawan, is an Undergraduate Student in Dutch Study Program, Faculty of Humanities at University of Indonesia, Depok, Indonesia. He is currently as a Mechanic Senior Consultant in AUAV (Autonomous Unmanned Aerial Vehicle), University Of Indonesia. He won 2 times in the national drone competitions of Indonesia (KRTI) in 2015 and 2016 as the Mechanic along with his team Athena. His interest in Artificial Inteligent, drone manufacture, and linguistics made him always thinking out of the box. When he was in high senior school, he make his own operating system based on linux platform called OLOS (Open license Operating System) and make it as the OS for his School. Irwan is member of Ikseda UI, Robotics Team UI, and Senior Resident of Universitas Indonesia's Dormitory.