

# **Integrated Scheduling and Transportation System Incorporating Energy Consumption: Models Development In the Case of Perishable Goods**

**Luki Trihardani and Oki Anita Candra Dewi**

Logistics Engineering Department

Universitas Internasional Semen Indonesia

Gresik, East Java, Indonesia

[luki.trihardani@uisi.ac.id](mailto:luki.trihardani@uisi.ac.id), [oki.dewi@uisi.ac.id](mailto:oki.dewi@uisi.ac.id)

## **Abstract**

Due to the importance of perishable products is growing, in terms of sales, the management of these products is continuously shifting for improvement. It can be evidenced from system emergence to reduce potential loss and prolong shelf life. In fact, the most common method to preserve quality is maintaining the desired temperature between the origins and last mile destination. Decision planning in temperature management context, particularly at operational stage, should be simultaneously integrated, from production scheduling through the distribution into received consumer. Moreover, we put also more concern to energy issue since its consumption is applied to secure degree of acceptability attributes, either appearance or internal composition. This study seeks to develop multi objective framework model to reach integrate decision planning with prior shipment planning that consider energy consumption. The integration aims to not only maximize the expected revenue, but also guarantee the perishability that affect product durability. The outputs include optimization according to production sequence order delivery planning, total costs including energy, as well as any changes in shelf life. Furthermore, to solve the model, local heuristic approach, Nearest Neighbor algorithm is proposed.

## **Keywords**

Perishable, scheduling, transportation, integrated, heuristics