

## **EFFECTS OF MULTIPLE VARIABLE FACTORS ON CRUDE PALM OIL PROCESSING TIME: A SIMULATION-BASED APPROACH**

MAGDALENE ANDREW-MUNOT\*, JOHN INYANG, SHIRLEY J.  
TANJONG, SYED TARMIZI SYED SHAZALI, ERVINA JUNAIDI

Faculty of Engineering, Universiti Malaysia Sarawak,  
94300, Kota Samarahan, Sarawak, Malaysia  
\*Corresponding Author: ammagdal@unimas.my

### **Abstract**

An investigation was conducted to examine the main and interaction effects of multiple variable factors on the crude palm oil processing time under two industrial scenarios using a simulation technique combined with design of experiment and analysis of variance. Simulation results show that there are three factors, fresh fruit bunch quantity, fresh fruit bunch interarrival time, and tipping machine repair time, that have significant effect on processing time regardless of industrial scenarios. In addition, there are three interactions effects, interaction between the fresh fruit bunch quantity and fresh fruit bunch interarrival time, fresh fruit bunch interarrival time and tipping machine repair time, and fresh fruit bunch quantity and tipping machine repair time, that have significant effect on the processing time.

Keywords: Analysis of variance, Crude palm oil, Design of experiment, Processing time, Simulation.