

## **Dynamic Resource Planning and Scheduling Modelling Approach: A Case from a Tyre Manufacturing Company**

Basnayake, C.<sup>1</sup> and Rupasinghe, T.<sup>2</sup>

Due to the uncertainty in modern economic trends force, organizations to operate with minimum inventory levels to minimize the cost and absorb minimum employees into permanent employment and fill the balance with contract employees. Hence, organizations prefer not to carry inventories, and most organizations select Make-to-Order Manufacturing strategy, and contract employees hire through Manpower suppliers. The Pneumatics tyre manufacturing organizations cannot be separated from the other industries. Not only manufacturers are moving towards a zero stock concept, but also both original equipment manufacturers and replacement market customers use the same concept. This creates an imbalance in the tyre supply chain where neither manufacturers nor customers focus to keep inventories as a buffer to meet the uncertainties. As a result of this phenomenon, on time delivery becomes crucial which forces the manufacturers to use production planning to its maximum potential.

An unconsidered factor takes place as a result of socioeconomic influences, contract employees which lead them to change their work place often which directly affects the operations where operator efficiencies are critical. That makes production planning to a new dimension in the pneumatic tyre manufacturing industry. The research focuses on order acceptance models and production planning models and proposes a model for order acceptance in pneumatic tyre manufacturing. The analysis shows that the model helps to achieve KPIs of the organization. The order acceptance model presented can be implemented to any industry where operator efficiencies become significant in terms of operation output, regardless of the manufacturing strategy with modification according to industry-related constraints.

**Keywords:** *Efficiencies of Operators, KPIs, Make-to-Order, Order Acceptance, Production Planning*

---

<sup>1</sup> Sheffield Hallam University, United Kingdom

<sup>2</sup> University of Kelaniya, Sri Lanka (thashika@kln.ac.lk)