ABSTRACT

NORA AZMI. Design of Model for Order Inquiry Process at Carton Packaging Industry. Supervised by IRAWADI JAMARAN, DJUMALI MANGUNWIDJAJA and YANDRA ARKEMAN.

Most of carton packaging products, especially corrugated box and folding carton are designed for particular consumers in large quantity, therefore carton packaging industries (CPI) are classified as make to order (MTO) and mass customization (MC). MTO and MC industries have a high level of uncertainty and complexity in production planning process. The uncertainty and complexity is caused by the great variation of type and design of carton box, the amount of order, time of order, production process, and delivery time required by the customers. This big uncertainty will cause the difficulty for the carton packaging industries in giving accurate information in relating to time delivery and cost of order. If this information can be given, frequently this information is not accurate, that may lead to the next problems such as delay of delivery, as well as inaccurate of design and cost of order as previously predicted. This research was intended to produce a model for order inquiry process at carton packaging industries. It is hoped that this model may quicken the process of order, and giving the consumers the persistence of status of order, time delivery and cost of order. The proposed model consists of three main model, those are design model for sheet calculation, order evaluation model, and cost calculation model. Design model for sheet calculation utilized FEFCO/ESBO standard and mathematical formulation. Sub model of feasible process evaluation in order evaluation model used rule base from the knowledge of experts and the result of observation. Sub model of order delivery calculation in the second model used job scheduling model, called Genetics Algorithm for hybrid and flexible flowshop with machine eligibility and subcontract. Sub model of order cost calculation was developed by using Activity Based Costing (ABC) approach, while the unit cost of order was based on the total cost of order after calculating profit and taxes. The result of model verification and validation indicated that the proposed model was successful in achieving the objective of proposing model, those were to improve the efficiency of order process and giving accurate information about the status of order to the consumers. Model prototype for Order Inquiry Process was presented in internet software prototype, called SIPEMESAN KEMASTON. In the presence of media websites as liaison, this model will give access to speedy, interactive and effective communication between customers and carton packaging industries.

Keywords: Order inquiry process, carton packaging industry, Genetics Algorithm for hybrid and flexible flowshop