Quoting Jobshops Due Dates Subject to Exogenous Factors in Developing Nations

Authors : Idris M. Olatunde, Kareem B.

Abstract: In manufacturing systems, especially job shops, service performance is a key factor that determines customer satisfaction. Service performance depends not only on the quality of the output but on the delivery lead times as well. Besides product quality enhancement, delivery lead time must be minimized for optimal patronage. Quoting accurate due dates is sine quo non for job shop operational survival in a global competitive environment. Quoting accurate due dates in job shops has been a herculean task that nearly defiled solutions from many methods employed due to complex jobs routing nature of the system. This class of NP-hard problems possessed no rigid algorithms that can give an optimal solution. Jobshop operational problem is more complex in developing nations due to some peculiar factors. Operational complexity in job shops emanated from political instability, poor economy, technological know-how, and the non-promising socio-political environment. The mentioned exogenous factors were hardly considered in the previous studies on scheduling problem related to due date determination in job shops. This study has filled the gap created in the past studies by developing a dynamic model that incorporated the exogenous factors for accurate determination of due dates for varying jobs complexity. Real data from six job shops selected from the different part of Nigeria, were used to test the efficacy of the model, and the outcomes were analyzed statistically. The results of the analyzes showed that the model is more promising in determining accurate due dates than the traditional models deployed by many job shops in terms of patronage and lead times minimization.

Keywords : due dates prediction, improved performance, customer satisfaction, dynamic model, exogenous factors, job shops **Conference Title :** ICIPE 2015 : International Conference on Industrial and Production Engineering

Conference Location : Barcelona, Spain

Conference Dates : October 26-27, 2015