



Application of Discrete Event Simulation and System Dynamics Modeling in Optimizing the Performance of OutPatient Department

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Abstract: This research is aimed to optimize the length of queues and the waiting time of patients at the general OutPatient Department (OPD). A Discrete Event Simulation (DES) model was developed to model the queuing system of OPD and a system dynamics (SD) model was developed to conduct the cost calculations of the OPD. Both models were constructed by using the same data. Since the association of variables, waiting time, number of patients, number of servers at various service channels and opportunity cost, with one another is non-linear, this was the reason the authors used the SD approach for calculations. The present research is a reflection of how the performance of OPDs can be optimized by using the DES and SD modelling techniques. The present research contributes to giving a direction to hospitals to optimize their performance by using the DES and SD modelling and simulation techniques.

Keywords: *queuing system; nonlinear systems; outpatient department; waiting time; length of the queue; Nash equilibrium.*

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