This paper presents an approach for tackling multiple metrics and various network parameters simultaneously to investigate the performance of wireless ad-hoc network routing protocols. The study uses Taguchi’s loss function to determine the best condition in yielding maximum throughput and minimum packet drop and routing overhead simultaneously for dynamic source routing (DSR) protocol. Studying the parameters one at a time or by trial and error until a first feasible design is found seems to be a common approach to design optimization. In this paper, the impact of ad-hoc network parameters such as terrain, network size, number of sources, packet transmitted rates, node speed and pause time on a multiple signal to noise ratio are investigated simultaneously. We present results based on simulation study according to Taguchi experimental design technique. Optimum levels of ad-hoc network parameters are suggested by using response table and response graph while contribution of significant parameter are estimated using analysis of variance (ANOVA). The results show that the terrain size, number of sources, transmission packet rates and nodes speed are the significant parameters affecting DSR performance in wireless ad-hoc networks. © 2011 IEEE.

DeLone & McLean IS success model; Roger’s DOI model; E-learning Adoption Model