

**THE POWER OF LIKELIHOOD RATIO TEST FOR A CHANGE -POINT IN BINOMIAL DISTRIBUTION****Mundia S.M.<sup>1</sup>, Gichuhi A.W.<sup>2</sup>, Kihoro J.M.<sup>2</sup>**<sup>1</sup>Corresponding author, Department of Actuarial & Statistics, DeKUT<sup>2</sup>Department of Statistics & Actuarial, Jomo Kenyatta University of Agriculture and Technology

E-mail:

**Abstract**

Statistically, change point is the location or the time point such that observations follow one distribution up to the point and then another afterwards. Change point problems are encountered in our daily life and in disciplines such as economics, finance, medicine, geology among others. In this paper, the power of the likelihood ratio tests for a change point in binomial observations whose mean is dependent on explanatory variables is investigated. Artificial neural network technique is used to estimate the conditional means. These estimates are compared with ones obtained using the generalized link functions.

It is shown through simulation that the power of the test increases as the size of sample. The test is found to have less power when the change point is near the edges than when the change point is at the centre. The test is also more likely to detect a change if the magnitude of the change is large. In all the instances, the neural network method is found to perform better than the parametric method.

**Keywords:** change point, likelihood ratio test, binomial distribution, power of a test, artificial neural-network