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CORRIGENDUM TO: A CLASS OF POWER FUNCTION DISTRIBUTIONS: ITS PROPERTIES AND APPLICATIONS

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Abstract. The T-Power{Log-logistic} framework was used to develop a new distribution called Gamma-Power{Log-logistic} distribution. The distribution was published in Unilag Journal of Mathematics and Applications, Volume 1, Issue 1 (2021), Pages 35-59 [1]. The partial differentiation of the log-likelihood function with respect to k is not correct but has been corrected in this corrigendum.

1. Corrigendum

In this corrigendum, the Gamma-Power{Log-logistic} distribution (GPLD) proposed by [1] is corrected and the corrected part is presented in this Corrigendum.

2. Maximum Likelihood Estimation (MLE)

The log-likelihood of the pdf of Gamma-Power{Log-logistic} is

$$\ell = logL = nlog\frac{k}{\Gamma(\alpha)} + nklog\lambda + \alpha nlog\beta + (\alpha k - 1)\sum_{i=1}^{n} logx_i \tag{2.1}$$

Partially differentiating the log-likelihood function in equation (2.1) with respect to k gives

$$0 = \frac{\partial \ell}{\partial k} = \frac{n}{k} + nlog\lambda + \alpha\sum_{i=1}^{n} logx_i - (\alpha+1)\sum_{i=1}^{n}\frac{\lambda^k log\lambda - x_i^k logx_i}{\lambda^k - x_i^k} - \beta\lambda^k\sum_{i=1}^{n}\frac{x_i^k(logx_i - log\lambda)}{(\lambda^k - x_i^k)^2} \tag{2.2}$$

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3. Conclusion

This corrigendum corrected the error in Equation (2.66) in [1] published in Unilag Journal of Mathematics and Applications, Volume 1, Issue 1 (2021), Page 51. However, the Equation (2.66) does not affect the simulation and applications results, because the simulation and applications results were directly based on the numerical optimization of the log-likelihood function in Equation (2.63) in [1] on page 51 using maxlik function in R [2]. Hence, Equation (2.66) in [1] has been corrected and the corrected equation is Equation (2.2) in this corrigendum.

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