MATRIX

FOR PUBLICATION:

Title of Research	On the Bivariate Extension of the extended Standard U-quadratic Distribution
Keywords	Standard U-quadratic distribution, Kumaraswamy distribution, bivariate distribution, bivariate pseudo family, bathtub shape distribution
Type of Research (Pls. specify if it is study/project/article)	Article
Name of Researchers/Author	Idzhar A. lakibul, Daisy Lou L. Polestico, Arnulfo P. Supe
Objective(s)	To develop a bivariate version of the extended standard U-quadratic (eSU) distribution and compare with the Bivariate Cubic Transmuted Uniform distribution.
Beneficiaries	Researchers, academe, modelers
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Press Release:	Researchers have introduced the bivariate extended standard U-quadratic (eSU) distribution, a significant advancement in statistical distribution that employs the compounding method. This new distribution can generate bivariate shape distributions with unique properties, including both X and Y variables exhibiting bathtub shapes, and features comprehensive properties such as marginal and conditional distributions, various moments, Pearson correlation coefficient, and the stress-strength parameter. Utilizing maximum likelihood estimation and a simulation study for parameter estimation, the Bivariate eSU distribution has shown a superior fit compared to the Bivariate Cubic Transmuted Uniform (CTU) distribution. This development holds substantial implications for sectors reliant on advanced data analysis, such as healthcare, finance, engineering, and environmental science, offering enhanced accuracy in modeling complex bivariate relationships and ultimately benefiting the broader community through improved decision-making and analysis capabilities.
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