

CHAPTER 7

Skew- t Copula

*Roslinazairimah Zakaria,
Noor Fadhilah Ahmad Radi, and Siti Rohani Mohd Nor*

7.1 INTRODUCTION

The Copula method is introduced by Sklar (1959) to represent dependency among variables. Using the copula method, the univariate marginal can be linked to their full multivariate distribution. In other words, a copula is a multivariate distribution function for which the marginal probability distribution of each variable is uniform on the interval $[0,1]$. A multivariate distribution describes the probabilities for a group of continuous random variables. Hence, a copula is flexible in handling the dependency among the multiple variables where it generates a general structure and can link some of the variables or the properties together using a joint probability function. The probability density function (PDF) for a d -dimensional copula C is defined as:

$$C = \frac{\partial^d C}{\partial F_1 \dots \partial F_d} \quad (7.1)$$

and the joint density function related to the copula density is given by:

$$f(x) = c(F_1(X_1), \dots, F_d(X_d)) = \prod_{i=1}^d f_i(X_i) \quad (7.2)$$