In this paper, we analyze the dynamics of models for the fractional replicator equation of the form

$$D^\alpha x_i = g(x_i)(f_i - \phi), 0 < \alpha < 1$$

for selected growth functions $g$.

We investigate the local stability of the equilibrium points. More importantly, the conditions for the existence of a Hopf bifurcation at the positive equilibrium point are also presented.

We like to argue that fractional order equations are more suitable than integer order ones where we show the effect of fractional orders in the stability of the equilibrium. We support our works by numerical results. Numerical simulations have been used to verify the theoretical analysis.

REFERENCES


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