

Response to Reviewer 3 Comments

Dear Reviewer 3:

Thank you for your letter and the comments concerning our manuscript entitled "*Evolutionary Game and Simulation of Collaborative Green Innovation in Supply Chain under Digital Enablement*" (*Sustainability* 2178389). Those comments are valuable and helpful for revising and improving this paper. We have carefully considered all comments and revised our manuscript accordingly. In the following section, we summarize our responses to each comment. We believe that our responses have well addressed all concerns from the reviewers. We hope our revised manuscript can be accepted for publication.

Point 1: The Introduction has been improved. However, the multiple references should be replaced with single citation.

Response 1: Thank you for your valuable questions. According to your comments, we have changed all multiple references into single citations.

Point 2: Authors need to study recent articles on Cost-effective subsidy policy for growers and biofuels-plants in closed-loop supply chain, Economically independent reverse logistics of customer-centric closed-loop supply chain, and some others to improve the review.

Response 2: Thank you for your constructive comments. We have strengthened some references that support this study. The details are as follows:

30. Garai, A.; Chowdhury, S.; Sarkar, B.; Roy, T.K. Cost-effective subsidy policy for growers and biofuels-plants in closed-loop supply chain of herbs and herbal medicines: An interactive bi-objective optimization in T-environment. *Appl Soft Comput* 2021, 100, 106949. <https://doi.org/10.1016/j.asoc.2020.106949>
32. Garai, A.; Sarkar, B. Economically independent reverse logistics of customer-centric closed-loop supply chain for herbal medicines and biofuel. *J Clean Prod* 2022, 334, 129977. <https://doi.org/10.1016/j.jclepro.2021.129977>

Point 3: Hypothesis 2 should be put in more concise manner that improves the readability regarding the proportional combination of two game players.

Response 3: Thank you for your valuable questions. Hypothesis 2 is further simplified to make the statement of the article more concise. The details are as follows:

Hypothesis 2. Companies A and B can choose two strategies. Their decision making is not disturbed by external factors. The probability that A chooses the cooperation strategy is x ($0 \leq x \leq 1$), and the probability that A choose the non-cooperation strategy is $1 - x$. The probability that B chooses the cooperation strategy is y ($0 \leq y \leq 1$), and the probability that B choose the non-cooperation strategy is $1 - y$.

Point 4: Table 2 and Table 4 hardly follow a standard pattern. Scopes of improvements can be seen.

Response 4: Thank you for underlining this deficiency. The patterns of Table 2 and Table 4 have been adjusted to make them more formal. The details are as follows:

Table 2: Payoff matrix for both sides of the game.

		B	
		Participation y	No participation $1 - y$
A	Participation x	$S_1 + Mlp(1 + \alpha) - (1 - \alpha)lC - C_1^D + lG$	$S_1 - (1 - \alpha)lC - C_1^D + lG + kM$
		$S_2 + Mlp(1 + \alpha)(1 - l) - (1 - \alpha)(1 - l)C - C_2^D + (1 - l)G$	$S_2 + (1 + \alpha)E_2 - C_2^D - kM$
	No participation $1 - x$	$S_1 + (1 + \alpha)E_1 - C_1^D - kM$	$S_1 - C_1^D$
		$S_2 - (1 - \alpha)(1 - l)C - C_2^D + (1 - l)G + kM$	$S_2 - C_2^D$

Table 4. Analysis of equilibrium points and conditions of the system under different circumstances.

Conditions	Disequilibrium points	Equilibrium points
$U_{A1} + U_{A3} - U_{A2} - U_{A4} - U_5 < 0$, $U_{B1} + U_{B3} - U_{B2} - U_{B4} - U_5 < 0$, and $U_5 + U_{A4} - U_{A1} > 0$ or $U_5 + U_{B4} - U_{B1} > 0$	$P_2 (0,0)$ $P_3 (0,1)$ $P_4 (1,0)$	$P_1 (1,1)$
$U_5 + U_{A4} - U_{A1} < 0$, $U_5 + U_{B4} - U_{B1} < 0$, and $U_{A1} + U_{A3} - U_{A2} - U_{A4} - U_5 > 0$ or $U_{B1} + U_{B3} - U_{B2} - U_{B4} - U_5 > 0$	$P_1 (1,1)$ $P_3 (0,1)$ $P_4 (1,0)$	$P_2 (0,0)$
$U_{A1} + U_{A3} - U_{A2} - U_{A4} - U_5 > 0$, $U_5 +$ $U_{B4} - U_{B1} > 0$, and $U_{B1} + U_{B3} - U_{B2} -$ $U_{B4} - U_5 < 0$ or $U_5 + U_{A4} - U_{A1} < 0$	$P_1 (1,1)$ $P_2 (0,0)$ $P_4 (1,0)$	$P_3 (0,1)$
$U_5 + U_{A4} - U_{A1} > 0$, $U_{B1} + U_{B3} - U_{B2} -$ $U_{B4} - U_5 > 0$, and $U_{A1} + U_{A3} - U_{A2} - U_{A4} -$ $U_5 < 0$ or $U_5 + U_{B4} - U_{B1} < 0$	$P_1 (1,1)$ $P_2 (0,0)$ $P_3 (0,1)$	$P_4 (1,0)$

These are the major changes we have made based on your comments. We appreciate for your warm work earnestly, and hope that the corrections will meet with approval.

Once again, thank you very much for your comments and suggestions.

Yours sincerely

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