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Sustainability performance evaluation of tropical fruit supply chain in Indonesia using the best-worst method

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Electronic supplementary material (ESM)

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Table S1. Global weight on reliability criterion

PO		Accu- racy of demand	Price from farmers	Selling price from PO	Price informa- tion	The period of time for shipment	Shipment amount	Quantity and capability of transportation infrastructure	Punctuality in shipment	Product quality
PO1	global weight	0.018	0.073	0.073	0.073	0.029	0.018	0.018	0.018	0.146
PO2	global weight	0.019	0.091	0.091	0.091	0.023	0.029	0.036	0.033	0.119
PO3	global weight	0.000	0.095	0.095	0.095	0.027	0.027	0.032	0.032	0.095
	min w_j	0.000	0.073	0.073	0.073	0.023	0.018	0.018	0.018	0.095
	max w_j	0.019	0.095	0.095	0.095	0.029	0.029	0.036	0.033	0.146
	$(\max w_j + \min w_j)/2$	0.010	0.084	0.084	0.084	0.026	0.023	0.027	0.026	0.121
	normalised weight	0.010	0.084	0.084	0.084	0.026	0.023	0.027	0.026	0.121
	Overall nor- malised weight	0.485								

PO – producer organisation

Sources: Authors' own elaboration

Table S2. Global weight on responsiveness criterion

PO		Frequency of shipment	Duration of shipment	Demand shipment
PO1	global weight	0.045	0.130	0.025
PO2	global weight	0.029	0.078	0.017
PO3	global weight	0.091	0.039	0.013
	min w_j	0.029	0.039	0.013
	max w_j	0.091	0.130	0.025
	$(\max w_j + \min w_j)/2$	0.060	0.084	0.019
	normalised weight	0.060	0.084	0.019
	Overall normalised weight	0.163		

PO – producer organisation

Sources: Authors' own elaboration

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Table S3. Global weight on agility criterion

PO		Fulfilment of extreme demands	Safety stock	Overtime
PO1	global weight	0.015	0.009	0.043
PO2	global weight	0.026	0.011	0.056
PO3	global weight	0.024	0.008	0.040
	min w_j	0.015	0.008	0.040
	max w_j	0.026	0.011	0.056
	$(\max w_j + \min w_j)/2$	0.021	0.010	0.048
	normalised weight	0.021	0.010	0.048
	Overall normalised weight	0.078		

PO – producer organisation

Sources: Authors' own elaboration

Table S4. Global weight on cost criterion

PO		Retribution fees	Shipping costs	Return fee on shipping activity	Labour salary & management
PO1	global weight	0.036	0.009	0.027	0.062
PO2	global weight	0.022	0.033	0.009	0.061
PO3	global weight	0.037	0.069	0.008	0.029
	min w_j	0.022	0.009	0.008	0.029
	max w_j	0.037	0.069	0.027	0.062
	$(\max w_j + \min w_j)/2$	0.029	0.039	0.017	0.045
	normalised weight	0.029	0.039	0.017	0.045
	Overall normalised weight	0.131			

PO – producer organisation

Sources: Authors' own elaboration

Table S5. Global weight on asset management criterion

PO		Payment contract system	Payment period	Pay-off period
PO1	global weight	0.022	0.095	0.016
PO2	global weight	0.014	0.088	0.023
PO3	global weight	0.014	0.097	0.031
	min w_j	0.014	0.088	0.016
	max w_j	0.022	0.097	0.031
	$(\max w_j + \min w_j)/2$	0.018	0.093	0.024
	normalised weight	0.018	0.093	0.024
	Overall normalised weight	0.134		

PO – producer organisation

Sources: Authors' own elaboration

Table S6. Global weight on green SCOR criterion

PO		Organic certificate	Green process	Strategic planning for ecological management	Product innovation/ diversification
PO1	global weight	0.011	0.016	0.048	0.021
PO2	global weight	0.030	0.048	0.030	0.012
PO3	global weight	0.040	0.085	0.060	0.017
	$\min w_j$	0.011	0.016	0.030	0.012
	$\max w_j$	0.040	0.085	0.060	0.021
	$(\max w_j + \min w_j)/2$	0.025	0.051	0.045	0.017
	normalised weight	0.025	0.051	0.045	0.017
	Overall normalised weight	0.137			

PO – producer organisation; SCOR – Supply Chain Operations Reference

Sources: Authors' own elaboration

Table S7. Global weight on social criterion

PO		Job opportunity	Potential for profes- sional advancement	Community Relations	Health and safety
PO1	global weight	0.032	0.066	0.018	0.012
PO2	global weight	0.034	0.098	0.029	0.020
PO3	global weight	0.026	0.055	0.010	0.010
	$\min w_j$	0.026	0.055	0.010	0.010
	$\max w_j$	0.034	0.098	0.029	0.020
	$(\max w_j + \min w_j)/2$	0.030	0.076	0.020	0.015
	normalised weight	0.030	0.076	0.020	0.015
	Overall normalised weight	0.141			

PO – producer organisation

Sources: Authors' own elaboration

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Table S8. Optimal weights and consistency ratio from PO1

Main criteria	Sub-criteria	Weight of main criteria	Weight of sub criteria	CR of sub criteria < associated threshold	CR of main criteria
Reliability	accuracy of demand		0.062		
	price from farmers		0.062		
	selling price from PO		0.327		
	price information		0.062	0.024	0.095
	the period of time for shipment	0.467	0.106	< 0.340	< 0.341
	shipment amount		0.106		
	quantity and capability of transportation infrastructure		0.106		
	punctuality in shipment		0.106		
Responsiveness	product quality		0.062		
	frequency of shipment to high value market		0.225	0.050	
	duration of shipment from PO to high value market	0.200	0.650	< 0.135	
Agility	demand shipment		0.125		
	fulfilment of extreme demands		0.226	0.095	
	safety stock	0.067	0.129	< 0.129	
Cost	overtime in shipment processing		0.645		
	retribution fees for shipping		0.267		
	shipping costs		0.067	0.071	
	return fee on shipping activity	0.133	0.200	< 0.252	
Asset management	labour wages & management in sorting and packaging		0.467		
	payment contract system		0.167	0.071	
	payment period	0.133	0.714	< 0.129	
GreenSCOR	pay-off period		0.119		
	organic certificate		0.111		
	green process		0.167	0.1	
	strategic planning for ecological management	0.096	0.500	< 0.199	
	product innovation/diversification		0.222		

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Table S8 to be continued

Main criteria	Sub-criteria	Weight of main criteria	Weight of sub criteria	CR of sub criteria < associated threshold	CR of main criteria
Social	job opportunity	0.128	0.250	0.089 < 0.252	
	health and safety		0.516		
	community relations		0.141		
	potential for professional advancement		0.094		

PO – producer organisation; SCOR – Supply Chain Operations Reference

Sources: Authors' own elaboration