



Valuing Traceability Implementation

Overview

The Institute of Food Technologist’s Global Food Traceability Center (GFTC) created a calculator to assess the costs and benefits of implementing traceability systems compliant with the guidance developed through the Global Dialogue on Seafood Traceability (GDST). Companies can use this tool to explore the financial bottom line for their organization based on their sector, revenue, current level of traceability, and other critical factors like legal expenditures, recalls, information management, and costs of shrink. To demonstrate the range of returns, GFTC simulated four organizations representative of the range of participants in the GDST interoperability pilots, varying sector, scale, and level of change in traceability systems required to achieve compliance with the voluntary standard (Table 1).

Simulated Scenarios

The simulations explored the costs and benefits of implementing a GDST-compliant digital solution over a 5-year time horizon with low interest rates of 1%, in line with current lending conditions. Sectors represented by simulations included a harvester, a processor, an integrated harvester/processor/distributor, and a retailer. Attributes of simulated organizations were representative of GDST-member companies, as reflected in their most recent financial statements. The harvester scenario was modeled after average attributes of tuna fishers in the Marshall Islands¹. For the retailer, only revenues related to seafood were included in the model, to test the limited scope of adopting a GDST-compliant system specifically for that category, consistent with the types of changes explored by retailers in the GDST membership. Additional details related to the scenarios tested with the calculator are included below (Table 1).

Table 1. Organizational scenarios tested in traceability ROI calculator

	SECTOR	ANNUAL REVENUE (US\$)	CURRENT LEVEL OF TRACEABILITY	FUTURE LEVEL OF TRACEABILITY
SAMPLE ORG. #1	Integrated – Producer/Harvester, Processor, and Distributor	\$2.4B	Non-compliant hardware	GDST-compliant digital solution
SAMPLE ORG. #2	Processor	\$4.1B	Electronic	GDST-compliant digital solution
SAMPLE ORG. #3	Retailer	\$3.8B, seafood only	Non-compliant hardware	GDST-compliant digital solution
SAMPLE ORG. #4	Harvester	\$120k	none	GDST-compliant digital solution

¹ Marshall Islands Marine Resources Authority. 2019. MIMRA Annual Report FY2017. Available from: <http://rmimimra.com/media/attachments/2019/02/15/mimra-annual-report-fy2017.pdf> (accessed 19 Mar 2020).



Findings

Costs and benefits of adopting traceability and their relative importance vary widely across organizations of different sectors, scales, and current levels of traceability. The switch to GDST-compliant traceability systems for seafood will likely be easiest for large, multi-national retailers that have already adopted integrated traceability systems. For them, the marginal cost of modifying their seafood systems for compliance is rapidly paid back in cost savings. Information management and recall cost savings were the two greatest sources of financial benefit for the modeled large-scale retailer. The internal rate of return for the modeled retailer scenario was 62%, the highest of all simulations.

Recalls are particularly costly, with the average cost of a recall estimated at \$10M in 2012², with many companies incurring over \$100m in direct costs per recall, and some much higher. The 2008 peanut contamination recall cost more than \$1 billion³. Traceability systems, particularly integrated solutions like GDST-compliant versions, can reduce the direct costs of recalls 90% for short shelf life products and 95% for longer shelf life products. Because many seafood products have shorter shelf lives, the calculator estimates 90% reductions for adoption of GDST-compliant solutions.

Implementing GDST-compliant traceability was also a good investment for large-scale processors, however they faced additional challenges and costs related to handling. The overall internal rate of return was still projected at 29%, but costs associated with batch/lot traceable handling and labeling procedures, i.e. efficiency losses related to slower run times, more changeovers, smaller lots lowered returns compared with large retailers and integrated operators.

Small harvesters face the greatest costs in adopting GDST-compliant systems, as they currently have limited traceability costs and systems, so there is very limited opportunity for cost savings. For harvesters, adopting these systems offer an immense opportunity for increased revenue from new markets. However, they may require outside investment to make the preliminary cost outlays associated with implementing and maintaining a system.

Table 2. Results of traceability implementation estimated through ROI calculator simulations over 5-year time horizon

	INTEGRATED	PROCESSOR	RETAILER	HARVESTER
NET PRESENT VALUE (NPV)	\$540M	\$921M	\$851M	\$48.5k
INTERNAL RATE OF RETURN (IRR)	59%	29%	62%	8%
TOP BENEFIT	Info. Mgmt.	Info. Mgmt.	Info. Mgmt.	New Markets
TOP COST	Syst. Maintenance	Handling	Syst. Maintenance	Syst. Maintenance

² Recall: The Food Industry's Biggest Threat to Profitability. Available from: <https://www.foodsafety magazine.com/signature-series/recall-the-food-industrys-biggest-threat-to-profitability/> (accessed 19 March 2020).

³ Wood, H. 2017. The cost of product recalls to food businesses. Available from: <https://www.rentokil.com/blog/cost-of-product-recalls/#.XnPNv4hKhPZ> (accessed 19 March 2020).

