Assessing the Value and Role of Seafood Traceability: A Value-Chain Perspective

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Definition: Traceability

- Traceability *is not* about data, identifiers, bar codes, RFID, tags, and any information that needs to be linked together to make traceability possible.
  - These are all critical, but not sufficient…

- ***Traceability is about systematic ability to access any or all information relating to a product under consideration, throughout its entire life cycle, by means of recorded identifications.***

  - For this to happen, a traceability system must keep track of when the units (and the associated identifiers) are created, used, joined together, split up and finally disposed

What's Driving Traceability?

- **Regulatory pressures** typically in response to a public good (e.g. sustainability) or for animal/plant welfare
- More efficient operations and **materials management** to reduce waste and working capital costs
- **Accessing new customers and markets** to increase revenue and market share
- More reliable and rapid decision making in response to **business risks**

Drivers of Seafood Traceability

- Address IUU Fisheries
- Market Demand
- Seafood Fraud
- Seafood Safety
- Regulatory Requirements

U.S. Presidential Task Force

- Four main themes for recommendations:
  1. Combat IUU and fraud at international level
  2. Strengthen enforcement and enhance existing enforcement tools
  3. Create and expand partnerships to address problems
  4. Create a traceability program

- 11 of the 15 recommendations require or imply traceability practices/systems

Seafood Traceability Project

1) Year long study of traceability of 9 global chains
   - 48 companies – 85 individuals interviewed
   - From catch/harvest to retail and food service companies
   - A non-representative survey of seafood value chains

2) Develop an ROI financial tool to evaluate traceability benefits and costs

3) Consumer perceptions of traceability—conjoint analysis
   - Identify attributes of specific species of seafood that most influence consumers' purchasing decisions and consumers' willingness to pay.
   - Canada, China, Germany, The Netherlands, USA

Surveyed Business Participants

Total of 48 businesses, together comprising 9 value chains:

- Fishing fleets
- Aquaculture farms
- Primary processors
- Secondary processors
- Distributors
- Retailers
- Food service operators

Annual revenues range from USD $190,000 to over $60 billion

Chain	Species	Aquaculture or Wild-Caught	Country of production or capture	Country in which sold to consumers	Market type: retail or foodservice	Form in which sold to consumers
A	Cod	Wild	Iceland	Netherlands	Retail	Fresh
B	Tuna	Wild	Fiji	United States	Retail	Canned
C	Sardines	Wild	Canada	Canada	Retail	Canned
D	Tuna	Wild	Thailand	Canada	Retail	Canned
E	Salmon	Aquaculture	Faroe Islands	United States	Retail and Foodservice	Fresh
F	Plaice	Wild	Iceland	Germany	Retail	Fresh
G	Shrimp	Aquaculture	Thailand	United States	Retail	Frozen
H	Mahi mahi	Wild	Ecuador	United States	Retail	Fresh
I	Tuna	Wild	Indonesia	United States	Retail	Frozen

Selected Value Chain Survey and Case Study Findings

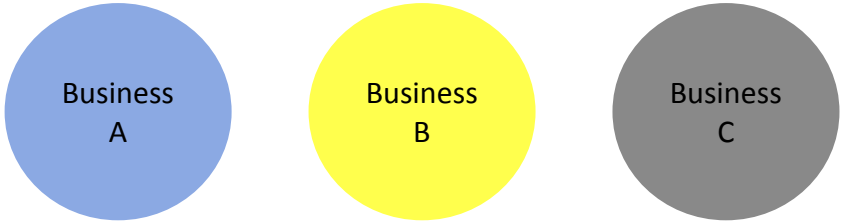
- Types of Value Chains
- Characteristics of Firms and Chains
- Benefits and Costs of Traceability
- Core Differences of Chains wrt Traceability

Classes of Value Chains

(Value Chain Management Centre (2012) *Characterizing the Determinants of Successful Value Chains)*

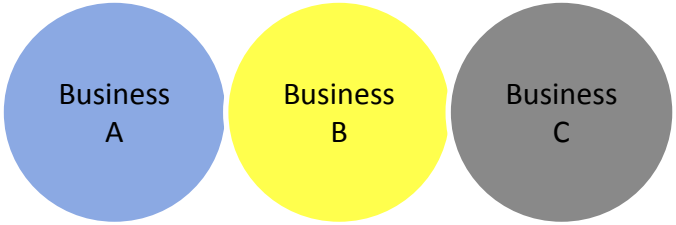
Fragmented Chain (0)

- Short term interactions
- Information is withheld
- Price, volume, and quality are the only factors in decisions.
- Relationships are adversarial
- Chain struggles to adapt to change



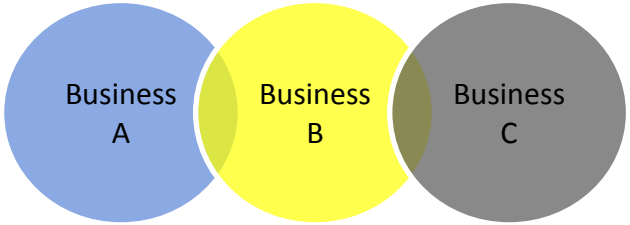
Cooperative Chain (2)

- Medium-term operational cooperation.
- Degree depends on strategic coordination which depends on:
  - compatibility of different businesses' cultures
  - external environment



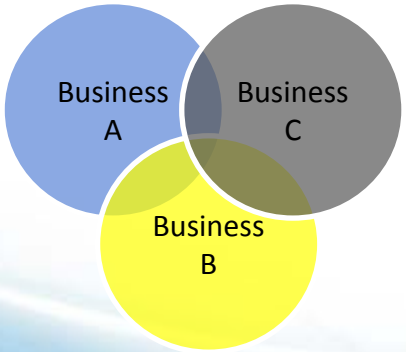
Coordinated Chain (5)

- Businesses share:
  - complementary objectives, attitudes and leadership styles
- Benefits of greater commitment to each other are recognised.
- Some in the chain adopt strategically aligned structures and perspectives.

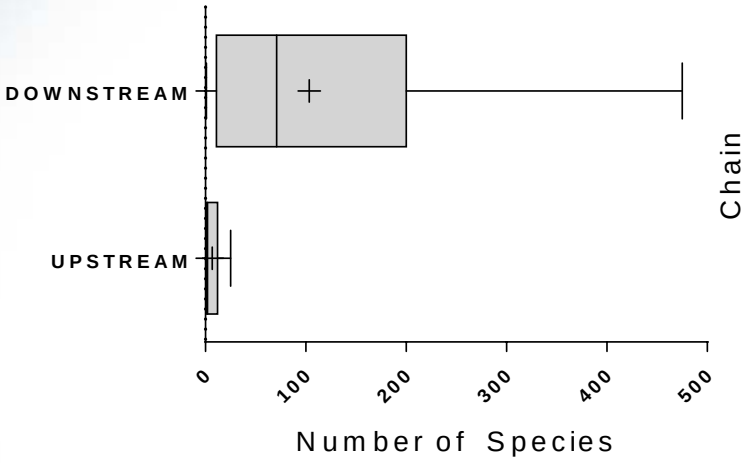


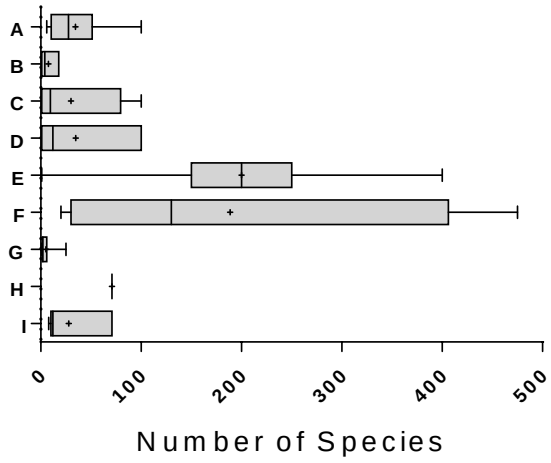
Collaborative Chain (2)

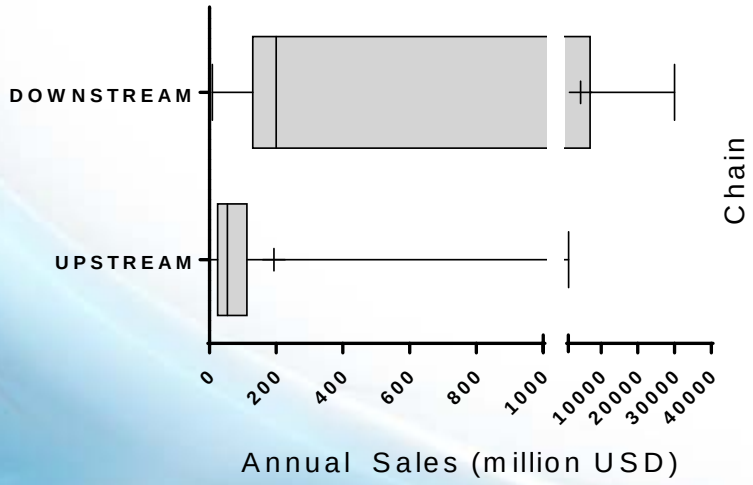
- Long-term strategic alignment
- Sharing resources and/or developing capabilities which deliver mutual benefits Possess compatible cultures, vision and leadership,
- Co-invest in relationship-specific products, services and assets.
- While significant rewards, there are also greater risks from inter-dependence.

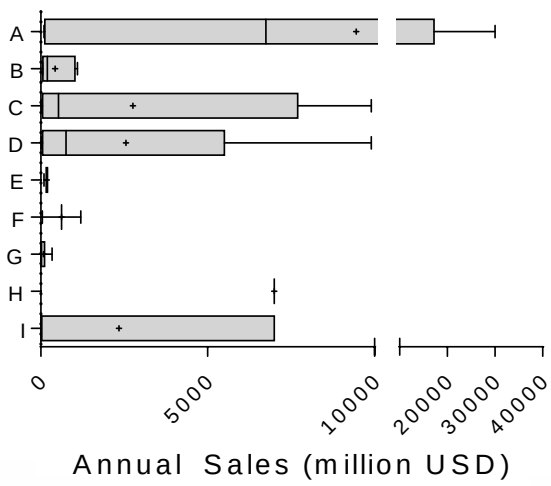


Sales and Species



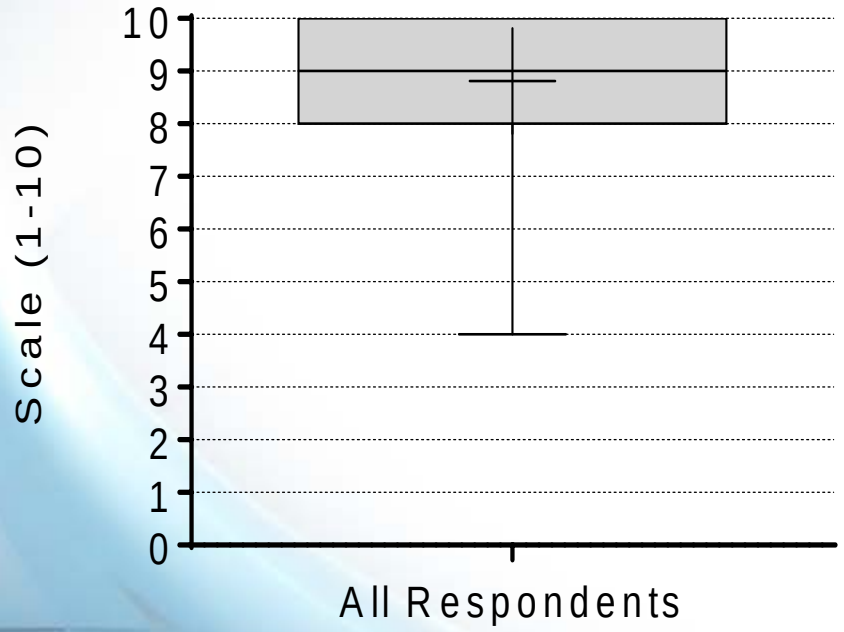


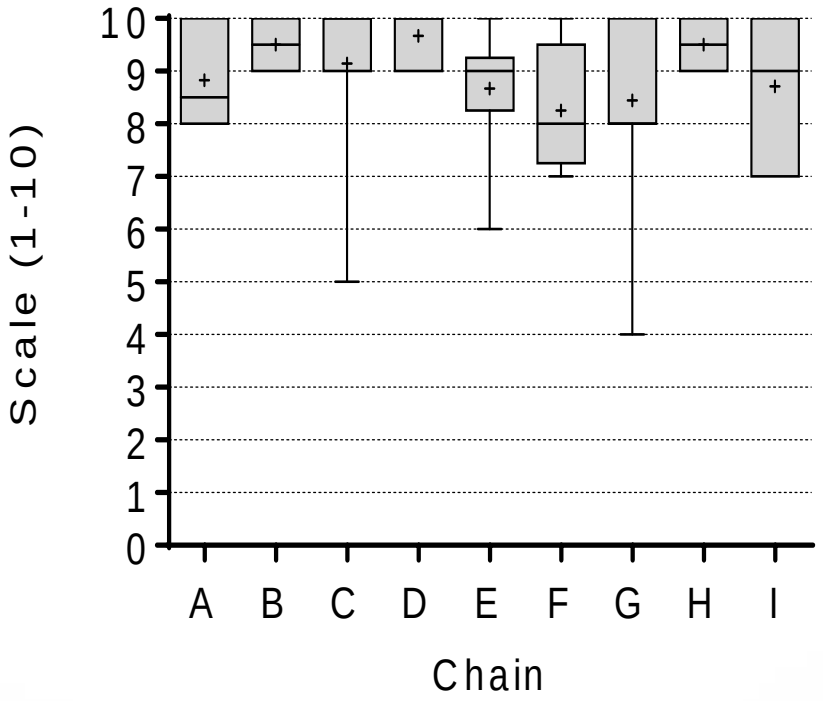




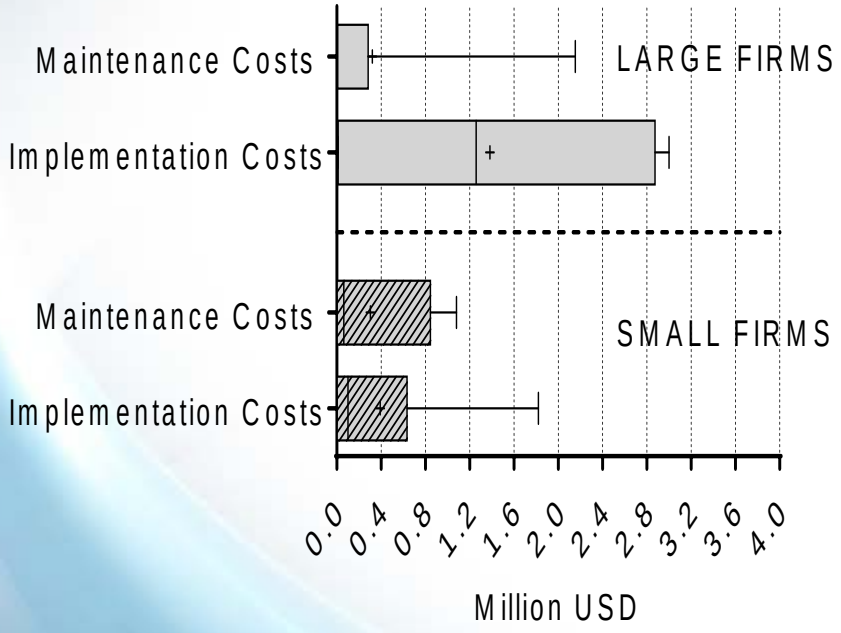
Importance of Traceability

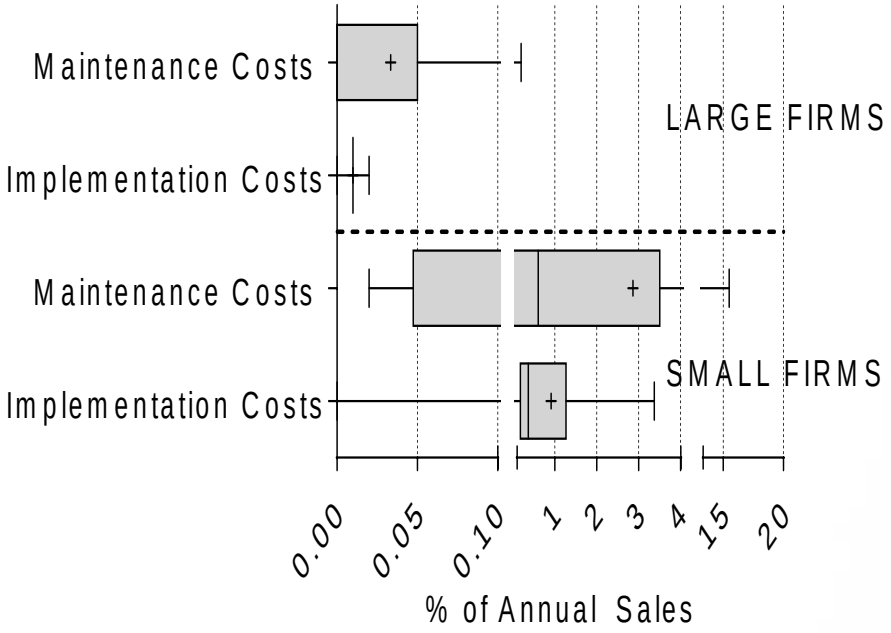
(*0=completely unimportant, 10=extremely important)*



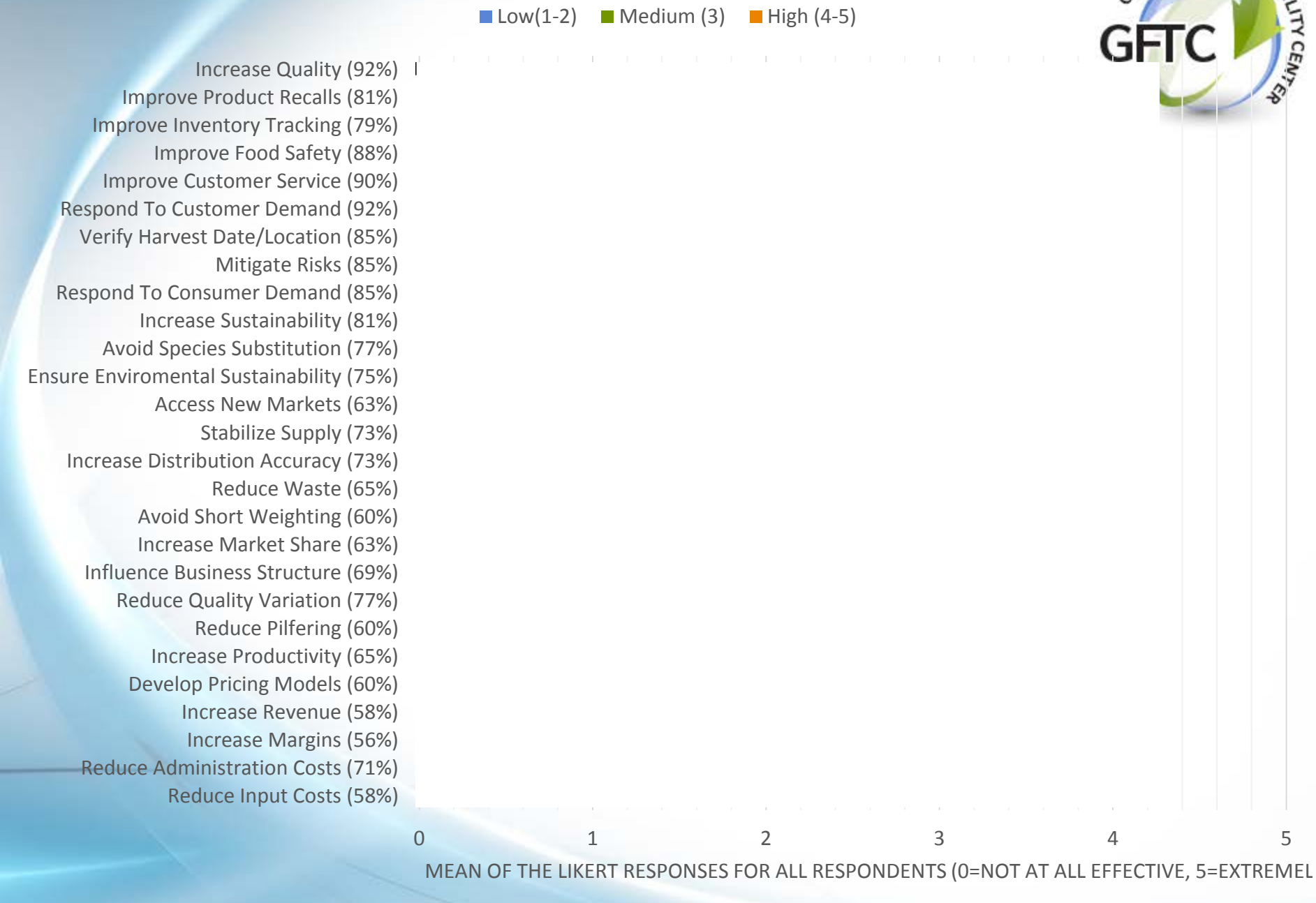


Costs of Traceability





Effectiveness of Traceability Benefits



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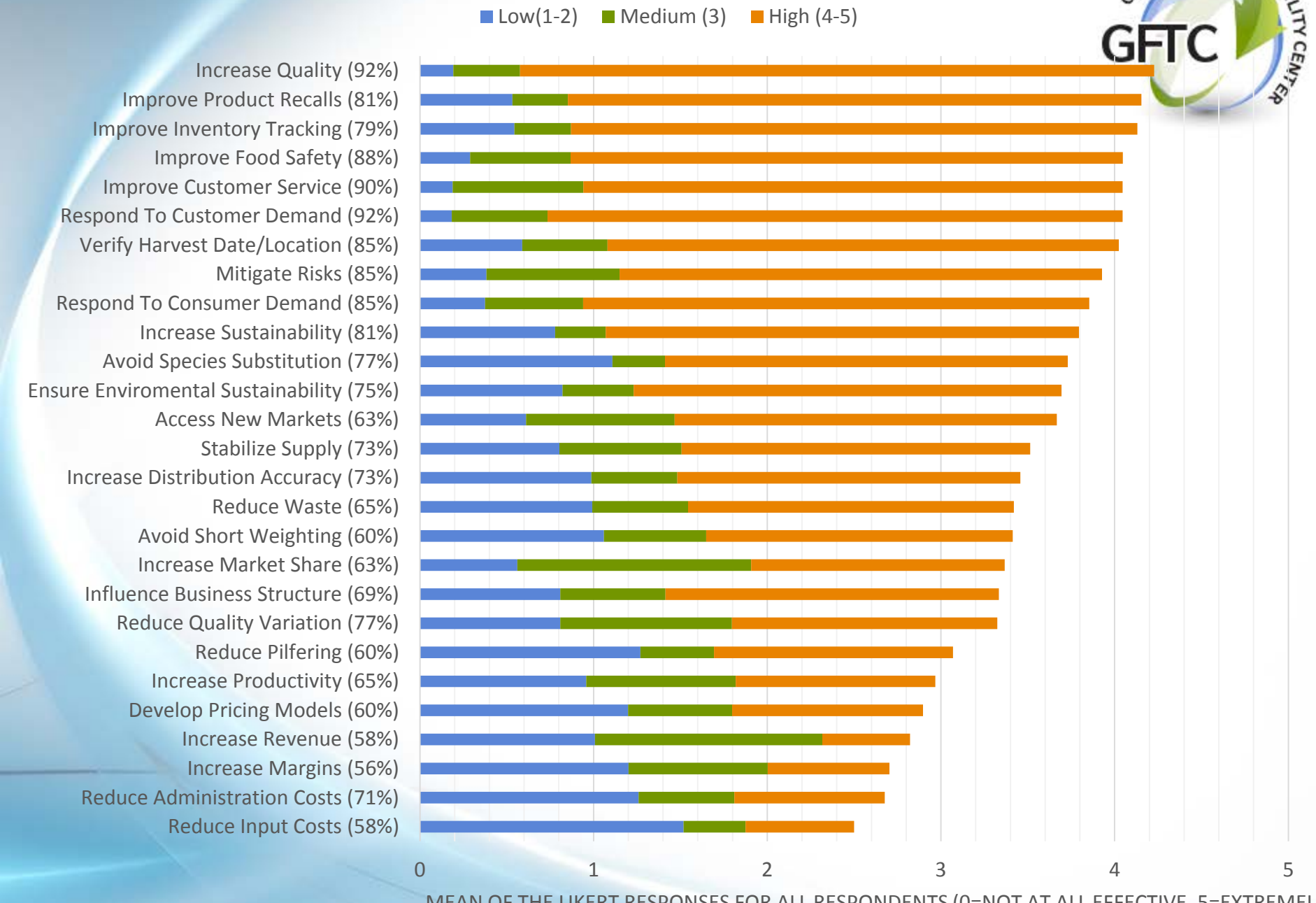
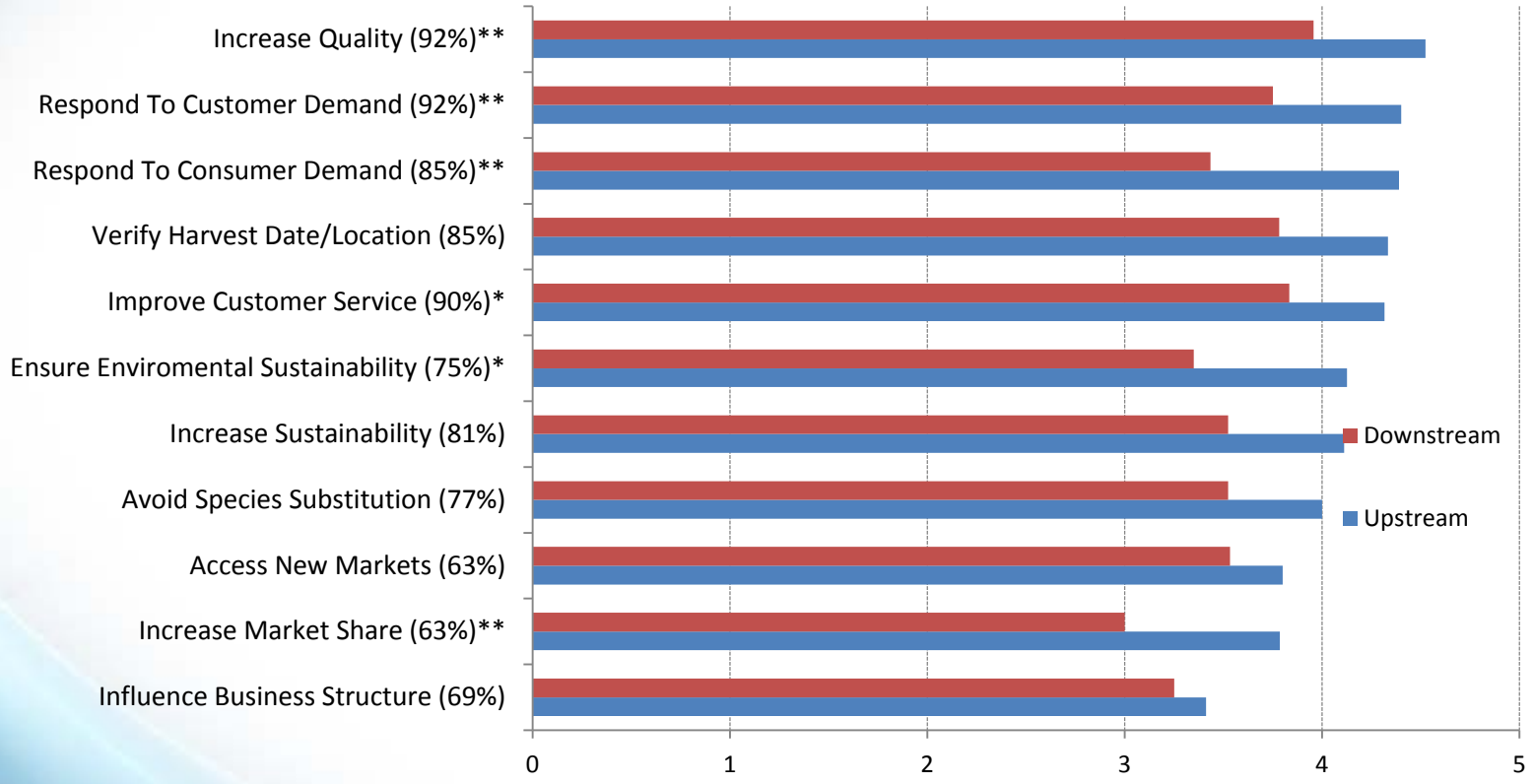


“Driving Efficiency”

(same trends as “Competitive Advantage” and “Mitigating Risks”)



Mean of the Likert scale responses (1=no at all effective, 5=extremely effective

Effectiveness of implementing traceability

Green mean score greater than 3.5, yellow between 2.5-3.5, and red below 2.5.

Dark red indicates that more than 90% of businesses scored only 1 or 2,

Dark green indicates that more than 90% of businesses scored a 4 or 5.

Benefit Categories	Proportion of Respondents	Overall Scores	Scores Value Chain Cluster		
			Cooperative	Coordinating	Collaborative
Ensure Environmental Sustainability					
Improve Product Recalls					
Reduce Pilfering					
Increase Distribution Accuracy					
Verify Harvest Date/Location					
Improve Inventory Tracking					
Avoid Short Weighting					
Avoid Species Substitution					
Increase Sustainability					
Stabilize Supply					
Reduce Waste					
Improve Food Safety					
Increase Quality					
Mitigate Risks					
Influence Business Structure					
Develop Pricing Models					
Improve Customer Service					
Respond to Consumer Demand					
Respond to Customer Demand					
Access New Markets					
Reduce Quality Variation					
Increase Revenue					
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Increase Productivity					
Reduce Input Costs					
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Summary Survey Findings

- **Seafood supply chains are not equal**
- **Traceability related benefits are significant – intensity and breadth**
  - Especially for “Strategically Integrated Chains”
- **Traceability benefits are diffused**
  - Cannot easily measure costs and benefits
  - Higher price is not a benefit
- **Traceability benefits greater for “upstream” firms**
- **Relative costs proportionally higher for small firms**
- **<u>Research Idea:</u> Determine conditions that create/enable “Coordinated and Collaborative” strategic value chains**
- **Next Steps: Develop a Global Seafood Traceability Architecture**

http://www.ift.org/gftc.aspx