OVERCOMING BARRIERS
Solutions for adopting electronic traceability

September 2020

Role of Human Behavior in Electronic Traceability Implementation

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Introduction

Illegal, unreported, and unregulated (IUU) fishing damages fish stocks around the globe. Additionally, illegal fishing practices can sometimes occur alongside human rights abuses. Now, the world is waking up to these injustices. Government import regulations are working to ensure illegal products don't enter national markets, and some consumers are voicing their preference for certified and sustainably harvested fish[1].

Electronic traceability is the recording and sharing of relevant seafood product information via electronic means[2]. Full chain, electronic traceability entails the electronic capture and sharing of seafood product information from the point of catch until the final point of sale. It has the potential to make it easier for the seafood industry to comply with regulations and meet consumer demands.

Thankfully, companies currently deliberating making the switch to electronic traceability are not the first companies to undergo this conversion. The trailblazers who have piloted electronic traceability—along with their NGO partners—have written case studies, described solutions that helped them overcome obstacles, and created tools to make the process easier for others. The **Seafood Alliance for Legality & Traceability (SALT)** has distilled this information to walk the seafood industry through the barriers to adopting electronic traceability and provide potential solutions to overcoming the challenges a company might face.

This blog is the fifth in the series, "Overcoming Barriers: Solutions for adopting electronic traceability". In the previous blogs, SALT addressed the **indirect benefits for industry** when they adopt electronic traceability, the **direct benefits and costs**, the **challenges of sharing data seamlessly**, and the solutions to **troubles with technology**. In this final blog of the series, we will examine how human behavior can both impede progress towards and catalyze traceability.

[1] Sterling et al., 2015
[2] Future of Fish Seafood Traceability Glossary

Humans often resist changing behavior—whether that's because of a hesitancy in trying new technology, reluctance towards operating in a new way, skepticism about changing an existing culture, or an objection to deviating from a status quo. These drivers of our behavior can be broken down into three primary categories that apply to the continued prevalence of IUU fishing—perceptions, self-interest, and lack of information[3]. Some may perceive that IUU fishing practices are normal; others may view IUU fishing as a way to further their financial self-interests. Finally, a lack of accessible information and simple explanation of what IUU fishing is, why it's harmful, and how to avoid it is often lacking. We can use these three categories as a lens through which to similarly view behavioral challenges to implementing electronic traceability.

In this blog, we address the barrier of behavioral change to electronic traceability implementation and cover the following points:

Behavioral Barriers:
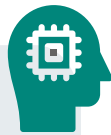
Perception:
How a competitive culture can fuel mistrust among industry, and how complicated fisheries regulations can fuel less compliance

Self-interest:
How physical, financial, and emotional rewards (such as skepticism about changing habits, fear of penalization, and interest in preserving tradition) might impede traceability progress

Lack of Information:
How inadequate education on regulations and the importance of traceability affect implementation

Solutions:

Below, in the 'Solutions' section of this blog, we'll delve into specific tactics to help foster collaboration and build trust to implement traceability more effectively.

Co-design:
Involving stakeholders in design and selection of the traceability system

Incentives:
Rewarding those that take part in the traceability system

Education:
Raising awareness of the multiple benefits offered by electronic traceability

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[3] Behavior Change Interventions to Reduce Illegal Fishing

Photo by SALT

Behavioral Barriers

Perception

Competitive Culture

There are not always plenty more fish in the sea. To harvest sustainably from the ocean and maintain healthy fish stocks, there are a finite number of fish to be taken. And as the industrialized fleets have enabled fishing to go longer, faster, and farther, those resources are becoming increasingly limited. Fewer fish and more aggressive fishing tactics have helped to fuel a culture of competition in the fishing world. The fishing industry is often said to have a 'culture of competition, not collaboration'[4]. This ingrained competition can impede progress towards traceability, since traceability doesn't come about because one company goes forward with it. Implementing traceability requires collaboration—and trust—from all companies along the supply chain[5].

Traceability calls for a level of collaboration not traditional in the seafood industry[4].

Despite this traditional culture of competition, there has been an encouraging increase in collaboration over time (e.g., fishery improvement projects, precompetitive collaborations, industry-wide sustainability initiatives).

But collaboration can feel rare, especially to those more upstream in the supply chain. Some may feel reluctant to be more transparent with supply chain partners, believing that sharing information could lead to the loss of business secrets and a competitive disadvantage[6]. Mid-supply chain companies may not want to disclose their best sourcing practices, for fear that others will undercut their prices or increase demand so they ultimately lose out on opportunities. Harvesters may worry about sharing specific GPS location data, as they don't want to reveal their favored fishing grounds for fear of overexploitation. In a culture based on competition for a common resource, it's understandable that companies have this concern.

Competition is not harmful in every lens; it may also fuel adoption of more sustainable practices so companies can better appeal to supply chain partners and customers that value transparency. Additionally, all proprietary information does not have to be shared; a company can practice traceability while also still maintaining some of their trade secrets via **commercial traceability**. Commercial traceability is the practice of sharing the minimum amount of information needed to support full chain traceability, while still withholding confidential company information[7]. For one example of commercial traceability, **read more** about how Hy-Vee, a retailer, partners with its suppliers to improve the sustainability of seafood products they sell.

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[4] Current Barriers to Large-scale Interoperability of Traceability Technology in the Seafood Sector
[5] Traceability 101
[6] Getting There from Here: A Guide for Companies Implementing Seafood Supply Chain Traceability Technology
[7] Future of Fish Seafood Traceability Glossary

Photo by SALT

Mistrust of Regulations

Companies may also be wary or mistrustful towards authorities or technology implementers, especially those who push them to adopt traceability technology that doesn't have a clear return on investment. Relationships have to be fostered among the supply chain and between those that assist with traceability implementation—whether that's technology providers and/or NGOs. For instance, if a company or NGO is working with individual fishers to implement electronic catch documentation, trust is key[8]. Without trust, stakeholders may be less willing to buy into the traceability system, risking its overall utility.

Field example:

In a pilot to test traceability technology in the Asia Pacific region, Thai Union found that the willingness of captains to voluntarily adopt technology depended on the personality of the captains themselves and how progressive they were. However, Thai Union found that even the most progressive of captains were still wary of handing data over to authorities[9].

An existing absence of trust is not fatal to the beginning stages of traceability implementation. Trust can be built—both between companies and with organizations outside of the supply chain. **Building trust requires time, targeted effort, and coalescing around the fact that stakeholders have the same goal: to create a seafood industry that can be sustained in perpetuity.**

Across the supply chain, from harvesters to suppliers and distributors, mistrust may also fuel an unwillingness to abide by import regulations that require or prefer electronic traceability. Top-down regulations, where stakeholders had no input, may result in less voluntary compliance if they don't have faith in the regulations[10]. This is especially relevant to electronic traceability, for though the industry is moving towards the widespread adoption of it, most systems are currently voluntary. If stakeholders feel like it's being imposed onto them, they may be less likely to take part.

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[8] Seafood and Fisheries Emerging Technologies (SAFET) Conference 2019 Summary Report
[9] Behavior Change Interventions to Reduce Illegal Fishing
[10] Thai Union eCDT and Crew Communications Pilot: Assessment Report

Self-interest

Even in an ideal world where widespread trust and collaboration existed across the seafood industry, some resistance to traceability implementation will likely persist because of self-interest. Behaviors that serve self-interests are ones that enable physical, financial, or emotional rewards[10]. Self-interest behaviors that might impede traceability implementation include an aversion to changing methods, a fear of penalization, and a desire to preserve tradition.

Changing Habits is Hard

Changing how one completes a task, especially a task done in a certain way for a long time, can be difficult. Supply chains have recorded catch documentation and sales transactions via paper for generations. As a result, many in the seafood industry have a long-standing preference for paper. **As the use of paper is so ingrained—to not only recording transactions but to many facets of our lives—it has perpetuated a 'paper addiction'**[11]. A preference for paper exists also because some find it easier to use. For instance, using paper makes it easier for some to swap or substitute products for their clients[12]—a quick scratch across text allows something new to be written. However, swapping products without clear, consistent record-keeping can result in fraud (intentionally or unintentionally)[12].

> *Field example:*
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> *In 2019, SALT visited a processing plant in Belize that was piloting electronic record-keeping. According to some staff, paper was faster for record-keeping. It allowed them to use a method they were accustomed to–shorthand. Paper was especially convenient when they needed to move quickly, such as when fishers unloaded their catch and were eager to collect their payment and go. But after staff recorded the data on paper, they had to re-enter the information into the electronic record-keeping system. So, they saved time upfront by using paper but took more time overall.*

[11] [Traceability 101](#)
[12] [Seafood and Fisheries Emerging Technologies (SAFET) Conference 2019 Summary Report](#)

Those not as familiar with technology may be especially reluctant to try a new electronic system. **Older staff, not as well versed in technology as the younger generations, may feel disadvantaged**[12]. As a result, they may require extra time and training before they achieve uptake. However, one traceability pilot found that there was a difference between technical trepidation and overall willingness:

"The use of e-logbook technology was difficult for some of the older captains who were resistant to changing habits and had designated the e-logbook filling to another crewmember. The captains did use Hi-Chat [a digital chat platform], thus it seems the problem is with user interest rather than technical capability[13]."

Penalties Stoke Fear

Traceability allows for a closer look into previously undisclosed nodes of the supply chain. But, some may be concerned that more transparent supply chains would cause punitive measures if they were found to be supplying products derived from IUU fishing practices, intentionally or unintentionally. Organizations with more power may have the ability to shift their sourcing to companies that have sustainability certifications or an ethos for responsibility; smaller players may worry whether they could follow suit.

Traditions Preserve Identity

This specific barrier may be more applicable to harvesters; for many of them, fishing is a part of their identity. Their parents, grandparents, and an untold number of generations before them fished the same waters they now do. As a result, many long-standing family companies are hesitant to deviate from tradition[14]. Some may feel like abandoning tradition means simultaneously sacrificing identity[15]. One approach to address this issue comes from **Rare**, a nonprofit working to inspire communities to engage in conservation, which uses pride in one's place to encourage preserving identity while still making critical changes for conservation[16]. Rare's approach reframes the issues: replacing traditional record-keeping methods will preserve other traditions, such as artisanal fishing practices. **When leveraged properly, the drivers of self-interest can also help to promote and encourage progress towards traceability.**

Lack of Information

For those whose behavior needs to shift with new regulations, they might ask, "Why does a regulation exist, who designed it, and what will complying with it achieve?" Much of this information exists in the public sphere, but it is largely inaccessible, buried within reports or articulated poorly on a webpage, perpetuating behavioral challenges to implementing electronic traceability. In some cases, information and education alone on regulations and sustainability may be enough to sway opinions and change behavior. However, both education and capacity building are often necessary to overcome the other barriers listed and alter behavior to improve progress towards traceability[16].

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[13] Thai Union eCDT and Crew Communications Pilot: Assessment Report
[14] Getting There from Here: A Guide for Companies Implementing Seafood Supply Chain Traceability Technology
[15] Behavior Change Interventions to Reduce Illegal Fishing
[16] Behavior Change for Nature

Photo by Steffen B. on Unsplash

Solutions

Human behavior is not just a potential barrier to traceability implementation; it can also be leveraged to catalyze traceability via:

Co-design

Incentives

Education

Co-design

Encouraging participation from a wide swath of users when creating a traceability system brings in their needs and unique perspectives. When users are included in the system's creation, it means those who eventually use the system helped build it, rather than being asked to adopt something new. This is frequently referred to as *co-design*. **Co-design can foster ownership, generate buy-in, and build trust regarding a traceability system—all helping to combat and address the behavioral challenges we've covered in this blog.**

> *Co-design is the active engagement of stakeholders in the design of a system, to ensure that the results are usable and meet their needs[17].*

However, traceability systems should not be completely custom. They still have to integrate with other tracking systems, and the more seamless the integration, the better. In **an earlier blog in this series**, we discussed the utility of straightforward data exchange across the supply chain. Designing a traceability system with input from stakeholders entails balancing both flexibility to meet users' needs and standardization to make data exchange easy across supply chains and throughout different markets.

Co-design and managing the feedback that goes into such a process can be difficult and cost considerable time and effort. However, putting the time and effort in upfront at the design stage to foster ownership among stakeholders can lead to a more effective traceability system in the long run[18]. The process of co-design also opens up the opportunity to create an environment of inclusivity by bringing in women and other traditionally under-represented groups into the process[19].

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[17] Participatory Design
[18] Abalobi: case study by UNESCO-Pearson Initiative for Literacy
[19] Designing gender-responsive technology for more equitable supply chains

Field example:

*SALT saw first-hand the importance of co-design during their visit to a tuna traceability pilot in the Philippines, conducted in partnership with USAID Oceans. SALT heard from nearly everyone they interviewed that stakeholder inclusion was necessary for the successful uptake of this new system. Interviewees revealed that it was critical to make sure that fishers, processors, and others from the private sector felt heard and involved. For more lessons learned during this pilot implementation, check out the **recent report** produced by USAID Oceans.*

Incentives

Incentives to participate in an electronic traceability system may assuage concerns that such a system would create considerable additional work. This is especially relevant for those upstream in the supply chain that typically benefit less and experience fewer direct rewards. Incentives could manifest as rewards from buyers, such as monetary gains or cold storage access. Incentives could also come from government agencies, especially for small-scale fishers, such as subsidies for fuel[20]. However, fuel subsidies are not the most beneficial, as they can yield little financial return for fishers. Instead, advocates push for a conditional cash transfer program, which is a short-term way of putting money directly into the pockets of fishers or paying directly towards traceability hardware and software[21]. Government support, especially for those further along the supply chain like distributors and retailers, might manifest as policy support, tax benefits, licensing discounts, or insurance benefits[22].

Field example:

In the Philippines, USAID Oceans has recently piloted a new electronic catch documentation technology for small-scale fishers—which caught the eye of one businessman. This businessman saw the value potential in traceable tuna and is paying a premium price to fishers that use the catch documentation technology[20]. This is just one organic example of potential monetary incentives that can encourage the use of electronic catch documentation.

Education and Articulating Benefits

Regardless of a company's impetus for adopting traceability, the benefits from a full chain traceability system may be enough to warrant greater cooperation and transparency across the supply chain. In our **first two blogs** of this series, we cover how electronic traceability can yield direct economic benefits to a company, such as improved operational efficiency and greater inventory and quality control, and indirect benefits such as potential for improved fisheries management and more opportunities for bettering worker welfare. **A greater awareness of benefits may yield more willingness to actively participate in an electronic traceability system.**

If you'd like more information and educational material about traceability, check out Future of Fish's '**Traceability 101**' toolkit.

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[20] Learning Site Experiences and Lessons Learned: General Santos, Philippines
[21] Changing the narrative on fisheries subsidies reform: Enabling transitions to achieve SDG 14.6 and beyond
[22] Thai Union eCDT and Crew Communications Pilot: Assessment Report

Conclusion

The fight against IUU fishing has to do with both human behavior and technology[23]. Similarly, the hurdles to implementing traceability in the seafood industry have moved beyond mere technological limitations, and are largely now challenges centered on human behavior. Ultimately, it has to be worth someone's while for human behavior to shift. Traceability *is* worthwhile; the potential value is far-reaching—it includes improving the welfare of workers, creating a more sustainable seafood industry, and improving ecosystem approaches to fisheries management. If equipping humans with the tools described above—co-design, incentivisation, and education— their behavior has the potential to change, and the full benefits of traceability realized.

A better, more traceable tomorrow is possible if tackled together.

Contact Us

Have you experienced a unique challenge while implementing traceability? We'd love to hear more about it. Submit a short blog to be featured on our platform of community stories: **Story Hub**.

Resources

Like what you've read so far? Here are key resources to dive deeper into behavioral challenges and traceability:

REPORT	PEER REVIEWED ARTICLE	CASE STUDY
Behavior Change for Nature	**Behavior Change Interventions to Reduce Illegal Fishing**	**Learning Site Experiences and Lessons Learned: General Santos, Philippines**
Rare *2019*	*Battista et al.* *2018*	*USAID Oceans & Fisheries Partnership* *2020*
This report serves as a behavior science toolkit for conservation practitioners. It highlights the need to integrate behavioral approaches into conservation efforts to more effectively promote their adoption and	This article describes insights from behavioral science that may be helpful in augmenting and securing the effectiveness of conventional deterrence strategies as well as in developing alternative means of deterring illegal fishing in fisheries in which high levels of surveillance and enforcement are not feasible.	This report documents lessons learned and next steps from USAID Oceans & Fisheries Partnership's experience developing and testing seafood traceability systems; implementing sustainable fisheries management plans; empowering women and promoting gender equity; and bringing together government and industry to ensure seafood traceability in General Santos, Philippines.

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[23] Francisco Blaha - On the Incentives (and Disincentives) Around IUU Fishing