Costing Traceability: Who Pays It?

The consumer always pays the costs in the food supply chain, but that doesn't mean they'll buy into it.

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Traceability is a valuable underpinning tool for businesses in the food supply chain, providing the benefits of quick recalls, meeting government regulation and increasing consumer trust. But everything has a cost, so who pays for traceability?

What costs are involved in traceability?

[Traceability](#) is a system that shows the movement of goods as they travel from primary producer to plate and involves "tracking" and "tracing". Tracking or following a product, group of products or product derivatives forward to the retail shelves is matched with tracing materials back to their origins.

There are obvious costs associated with any kind of traceability system, whether it is the simple government mandated "one up, one down" system, or a complex high tech traceability system. One up, one down refers to the system many regulatory bodies require for access to their market, which needs any link in the chain to know their immediate supplier and immediate customer. At the other end of the scale, some of the most complex and expensive traceability systems out there include recent proprietary "blockchain technology" traceability systems, which often come with a [whole host of problems](#), including that they are still emerging technology.

One up, one down models are the simplest form of traceability, as well as the cheapest. The cost of this system tends to include the cost of manual labour involved in processing the information required, whether that is on paper or manually adding information to a database. Because the one up, one down system is necessary for companies to participate in the market, the cost of this kind of traceability is often seen as a cost of doing business.

Many of the current emerging traceability projects and the previous RFID based traceability projects have shown large productivity improvements. These are heralded as cost saving delivered by the projects. However, on closer inspection these cost saving are directly related to reviewing the current manual work practices and implementing automated data capture to replace manual data entry and associated error rates.

While cheap and simple traceability systems are common, they may not be the best solution for an individual business, and other traceability systems, with varying levels of complexity, are available. Whether you want to implement automated data capture with the "Internet of Things", a proprietary Blockchain system, simple barcode scanning of everything, or just stick to paper, [there is no one size fits all approach](#).

Various emerging technology traceability systems have claimed to solve the traceability crisis in the past, but we still have the same problems as 20 years ago. Blockchain is exciting to many companies, but historically, new and exciting technology has also been exciting to many companies. It is important to remember that when something is too good to be true it often is, and to do your research when thinking about implementing any kind of technology into a food supply chain.

All traceability solutions can be placed under four main headings: one up, one down, brand owner portals, industry portals and emerging technology. Biological source verification is also available, but while not a traceability model, enable source verification.

As we've already covered one up, one down systems, what is a brand owned portal, and what is the difference between a brand and industry portal? Portals are generally just a storage tool for information, which can be shared, distributed and monitored by the owner of the portal, and those with access authorisation. A brand portal is owned by a brand or company, and information is uploaded along the supply chain. These usually have a traceability website or data available for consumers. An industry portal is a portal which is industry owned, and which data can be uploaded and downloaded along the supply chain. Absolute compliance is required for information uploaded to the supply chain, in order to ensure everything is consistent and compatible.

Other traceability options include biological based traceability technology, which has been around for the last 50 years and is well known. There isn't a lot of new science in this space, just better application of the science and lower equipment and processing costs.

DNA based traceability for livestock has been around since 1997 with a product called SureTRAK, developed for MSA as a method of verification of MSA product at retail. It was very simple and very low cost. When MSA used SureTRACK it cost less than 20 cents an animal to run the whole of industry program including conducting regular tracebacks. SureTrack was used by MSA for about 10 years. It was also used by a number of Australian meat processing companies for about 10 years and is still used by various cattle brands for product verification in overseas markets.

Following on from SureTRAK, in 2007 APL developed a traceability system called the Physi-trace project, based on trace element and isotopic analysis. The project at the time was costed at 10 cents per animal including conducting regular tracebacks. There are now numerous companies around the world providing trace element and isotopic analysis solutions for product verification. Honey is one of the global products that is suffering from substitution on a large scale. It is easy to mix honey from multiple countries and claim it is from a certain region or location and it is very hard to disprove. Trace element and isotopic analysis is a very robust way for the honey's source to be verified. But the honey industry has the same commercial problem - who will pay?

The reason that many companies stopped using DNA traceability was because it was a cost to the company, and over the period it was used for very few tracebacks. A number of brand owners have found the same issue over the many year the they have run traceability programs. It is never used in a way that shows return investment for the cost. Traceability solutions are available, but they haven't been taken up because they can't seem to show commercial value. The company HarvestMark has been around since the early 2000s and provides traceability solutions for fresh produce (it can also be applied to meat primal cuts). They are well established globally as well as having representation in Australia. The technology is very low cost and is easy to use, but they still only get very limited uptake. The roadblock for these technology solutions seems to boil down to the question: who pays for traceability?

Exceptions to this problem are enforced traceability solutions through regulation, such as NLIS. NLIS was around in the early 90s as a technology that companies could use for traceability of livestock. During this time the technology had virtually no uptake commercially for all the reason stated above. It was only later when it because a regulatory requirement that uptake occurred. So NLIS is now a cost of compliance rather

than a commercial traceability solution. NLIS has achieved commercial traceability objectives, but it's primary function for many companies is meeting state law requirements to sell livestock.

In summary, before a technological project takes place for some traceability solution or technology, a small commercial feasibility project should be conducted to check all the points above. If the commercial feasibility project shows that there is commercial viability, there is commercial demand and there are suitable frame works for the operational adoption in the domestic and export markets, the project can be considered. But if the commercial viability, commercial demand and operational adoption frame works don't stack up, the project should not proceed.

What do consumers really want?

Consumers have various [ethical drivers](#) that impact what they buy. The most basic of these drivers is the consumer expectation that food is safe, and many consumers assume it is the responsibility of government to ensure this safety. Traceability is often considered as a 'given' by consumers as part of ensuring food safety.

More consumers today are questioning where their food comes from, and they care more deeply about the ethical and nutritional claims that a product makes. In the past, consumers have bought products based on the quality of the product, and their individual budget. While these drivers still affect consumer choices today, consumers will also pick up a product, turn it over and read the claims it makes. If the product meets their personal values, principals and ethics, as well as being within their budget, they'll buy that product.

Not all consumers want to know the exact cow their milk came from, however, and for these consumers traceability doesn't affect their purchasing choice. Many consumers only care about whether a food is traceable when there is a need for a recall, or a scandal.

When consumers find the products that meet their ethical concerns, their desired quality and matches their budget, they will almost always buy the cheaper of those options. When choosing between two brands that make the same emotive claims, traceability claims do not factor into the consumers choice unless the products are of comparable price and quality. Just because your product can show the process along the supply chain doesn't mean anyone will buy it if it costs twice as much as its comparable non-traceable competitor.

So while consumers should absolutely have the right to purchase products that meet their emotive and nutritional preferences, it is important not to overestimate how many consumers want to purchase these products. Higher value products that can demonstrate meeting all the emotive claims cost more to source, process and package, which means that the average cost of production across all products must be higher.

**How do we balance traceability costs?**

How do we match what consumers want with what consumers are prepared to pay?

The consumer always pays the costs for growing, processing, transporting and retailing food products. As we've discussed above, consumers care about emotive drivers, and brand differentiation can be considered an emotive claim. If there is brand loyalty or perceived higher product quality, there is often a price premium associated with the brand. Food products that meet the minimum quality, traceability and food safety

requirements set the base budget price. Any additional traceability and costs to meet emotive claims will increase the long term average price of a food product. There is always a price value demand curve.

Consumer buying behaviour

Price/ convenience buying

Influenced by marketing

Emotive buying
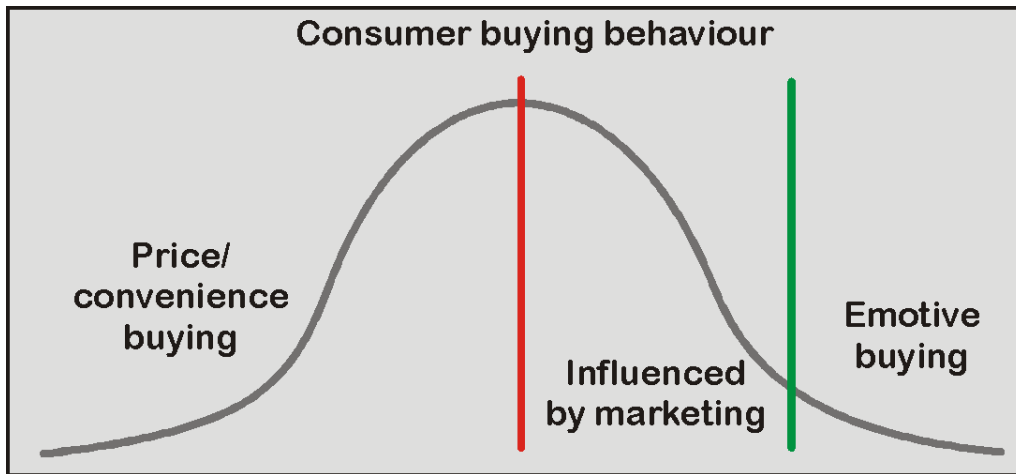
The more costs associated with delivering traceability and ensuring emotive claims are true, the higher the retail price. This higher price results in a lower demand compared to the lower cost similar food products. Price differentials can be a competitive advantage for some businesses if the market can withstand the higher price. Over time consumer expectations continue to change in terms of what is acceptable as the minimum requirements for quality, traceability and food safety. Retailers, brand owners and government slowly respond to these changing minimum acceptable consumer expectations and pass the costs to consumers.

Market price/ volume sensitivity

Product price due to program cost

Cost effective balance
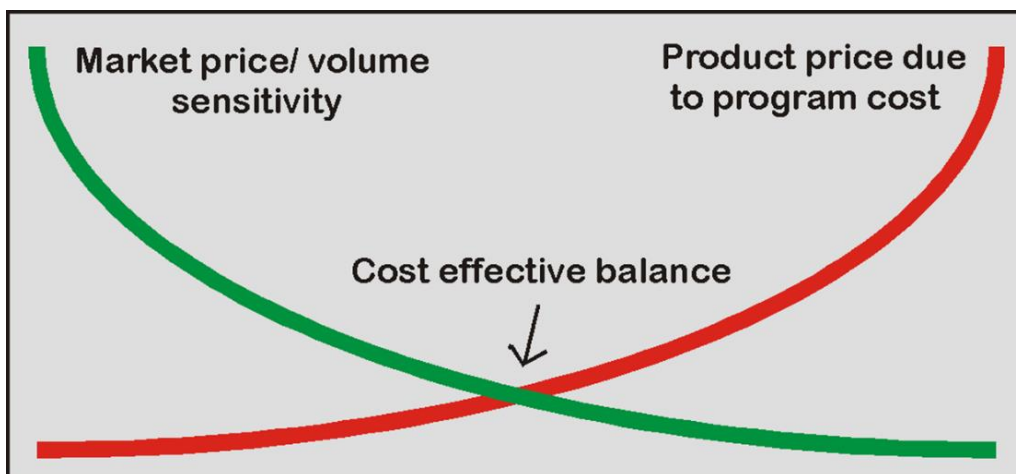
Understanding the costs for the different traceability models as well as the demand price curve for a specific food supply chain is very important. A company is unlikely to succeed if they choose to implement a traceability model that will result in a cost higher than the market is willing to pay.

The issue that has also limited the adoption of traceability technologies is the perceived cost benefits. Any operational costs for a traceability program are a cost incurred by the companies. However, companies have never been able to receive a price increase for traceability. They can get a price increase for quality and emotive claims, but not for traceability. Traceability can't even be considered insurance. With insurance you can make a claim when things go wrong and receive an agreed payout, however, with traceability, proving something is fraudulent does not mean you can get a payout. In the market (consumer, importer,

distributor, food service and government) traceability is perceived as a given. If something goes wrong there is an expectation that adequate traceability is in place to protect the consumer and the market.

Looking at the problem from the price/ demand and program cost perspective there are a different set of challenges.

The Australian 2018 cattle slaughter was just under 8 million. If the program cost was 50 cents an animal the total program cost would be $4 million. A commercial business (or business division) will struggle if its total revenue is capped at a maximum $4 million annually. However, if only specific premium branded products used the solution, the number of head would drop from 8 million head to something like 500,000 head. At 50 cents a head this would be $250,000 per year revenue. This would not be enough to run a national system. This means that the cost per head would need to go up. On 500,000 head the costs would go up to something like $5 per head to create a revenue of $2.5 million which is closer to the value need for the business to commercially run the program. But at $5 per head the number of brand owners that would use the technology would drop. This drop in volume would result in an increase in the cost per head to run the program. In a nutshell, if the volume of the traceability system isn't high enough to cover costs, the cost will increase creating a cycle of increased cost and a decreased demand.

There are always costs involved in implementing any additional systems into a food supply chain. The way consumers interact with traceability claims has changed over time and being able to prove those claims can be a valuable marketing tool for companies. Spend too much on your traceability system and you will price the product out of the market. There is no one size fits all solution, however, and balancing traceability cost with the market value is a difficult tightrope to walk.