Digital labelling: cost-benefit analysis

27 January 2026

Introduction

We have undertaken cost-benefit analysis (CBA) of the recommended option for a phased hybrid approach. Our CBA assumes that this approach will ultimately lead to legislative reform to enable digital labelling. The benefits and costs are assumed to commence once this reform occurs. That is, it assumes that any digital labelling trial is completed, and legislative reform is put in place to enable digital labelling. We make this assumption to ensure we have a tangible and tractable factual scenario for which to quantify benefits and costs.

We also focus on digital labelling occurring in a specific sector: food and beverages. We choose this sector due to the availability of good data, and the importance of labelling in food and beverages for marketing purposes for businesses and information purposes for consumers.

There are a range of potential benefits from enabling digital labelling for food and beverages, but to keep the analysis tractable we focus on three:

- Benefits to domestic manufacturers from freeing up space on labels;
- Benefits to exporters from cost savings from producing fewer variants for different countries; and
- Benefits to consumers from improved access to information.

There are also some costs associated with one-off IT implementation costs, ongoing digital link costs, and redesign costs. We also consider costs from reduced information to consumers with poor access to mobile technology. We elaborate on these benefits and costs below.

Throughout our analysis we make a number of assumptions for simplicity and tractability, but which do not detract from the rigour and transparency of our approach. Further details of our assumptions and calculations are set out in the Appendix. Given that there are various sources of uncertainty in our analysis, we report a range for our results. In the absence of any information of the distribution of the net benefits within this range, our preferred point estimate of the overall net benefit is the midpoint of this range.

Benefits to domestic manufacturers from freeing up space

Including a digital link on a label allows the manufacturer to move information off the label into the digital environment. This would allow the manufacturer to reduce the size of its label, saving printing costs, and/or enable the freed-up space to be used for increasing branding (which can increase product differentiation, allowing the manufacturer to capture more producer surplus[1]).

We quantify this benefit by calculating the printing cost savings from moving some information off a product label. As an alternative to saving printing costs from the freed-up space, a manufacturer may use that space for branding. If the benefits to the manufacturer of using the space for branding exceed the cost savings from less printing, then we would expect a rational manufacturer to use the freed-up space for branding. Accordingly, by calculating only the printing cost savings, we are calculating a lower bound on the benefits of freed up space.

We note also that this assumes that label space on packaging is a constraint. There may be some packaging where label space is not constrained, and therefore a manufacturer can add a digital label without freeing up any space. Whether space is a constraint may depend on the size of the food and beverage product e.g., smaller products may be more space constrained than larger products. Many common food and beverage items are likely to be medium to large items (e.g., bread, cereals, dairy products, pasta, etc) and may be less space constrained. We therefore scale our benefits down by assuming label space is a constraint for 10-40% of food and beverage stock keeping units (SKUs).

Our calculations assume that a certain area of a label that is otherwise utilised for 'non-critical' product claims is moved on to a digital label, which takes up less space on the label. Using an estimate of the number of food and beverage labels printed per annum, we calculate the total freed-up space, and determine the printing cost savings associated with this space.

The total benefits from freeing up space range from $0.09m to $16.7m per annum, with a midpoint of $8.4m per annum.[2]

Benefits to exporters from fewer label variants

We quantify a benefit to exporters from digital labelling through the savings to exporters from being able to shift country-specific label variants into the digital environment. With printed labels, exporters need to produce multiple label variants that are specific to different countries, covering aspects such as different languages, different nutritional information, and different logos or certifications. Digital labelling allows some of these

[1] We assume that this differentiation also improves information and matching to consumers, such that the producer surplus increase is not at the expense of consumer surplus. We have not incorporated any consumer surplus benefits in our analysis, which is conservative.
[2] All numbers reported are rounded, but calculations are based on unrounded numbers.

variants to be moved online, which generates cost savings in terms of design and printing costs.

Our calculations assume that 1-2 variants can be moved into the digital label, across exports to a small number of overseas countries that allow this form of labelling. We calculate the cost savings from this based on the estimated number of food and beverage SKUs that are exported.

The total benefits from these cost savings range from $3.4m to $15.2m per annum, with a midpoint of $9.3m per annum.

Benefits to consumers from improved access to information

Consumers can benefit from digital labels through improved access to information. For example, digital labels can be updated immediately once new information emerges (e.g., on nutritional information or cross-contamination). They also allow for different designs, or zooming in/reading aloud, to help consumers with vision or language barriers that might otherwise struggle with smaller print on physical labels.

We proxy these benefits to consumers by analysing the time savings that come from finding information on a digital label versus a physical label. We assume a small proportion of digital labels are scanned and help the consumer, and value the time saved from accessing this information digitally rather than through a more difficult to read printed label.

The total benefits from these time savings range from $0.1m to $10.8m per annum, with a midpoint of $5.5m per annum.

However, there is an argument that digital labels will add time rather than save it e.g., if accessing a phone, scanning a label, and reviewing content on a webpage is more time consuming than reading a printed label. To be clear, the time saving is intended to be a *proxy* for improved accessibility of information more generally, but it nonetheless may be a relatively poor proxy for this reason.

In addition, not all consumers have access to a mobile phone, and some may not be sufficiently comfortable or familiar with using their phone for scanning a digital label. These consumers are likely to face a cost from the shift of information from printed to digital labels. We have not attempted to quantify this cost.

For these reasons, our approach has been to assume that any benefits to consumers from improved access to information are offset by costs to consumers that will have difficulty accessing a digital label. That is, the total quantified consumer benefit is assumed to be zero. These benefits and costs can be considered separately in qualitative terms.

Costs

The costs we quantify are those related to IT systems used to facilitate digital labelling. These include one-off costs for the underlying IT systems and ongoing costs to maintain

digital links. The one-off costs range from $100,000 to $300,000, and ongoing costs range from approximately $1,400 to $17,000 per annum.

There will also be some one-off redesign costs associated with new digital labels, which range from $1.7m to $15.2m across the total number of SKUs.

Summary

In net present value terms over a 10-year period, **the net benefits range from $9m to $212m, with a midpoint of $111m.**

We have not analysed other benefits and costs that are more difficult to quantify. Additional unquantified benefits include:

- Additional benefits to food and beverage product manufacturers in being able to efficiently update labels in response to changes in ingredients. This may include both cost savings on reprinting and reduced waste from labels on products held in inventory.
- Dynamic benefits from technological innovations that may emerge to make use of digital labels (e.g., third party apps).

Appendix: assumptions underlying net benefit calculations

Benefit/cost	Input	Parameter	Source and calculation notes
Freeing up space	Number of food and beverage SKUs	3,370 – 10,110 SKUs	We use a total SKU range of 5,000-15,000 per supermarket, estimated from Figure 4.5 of the Commerce Commission's Grocery Market Study. We take 67% of these as food and beverage SKUs, based on data from Woolworths's online store, showing that of 23,017 items in its product categories (excluding the 'Christmas' category), 15,513 (or 67%) are food and beverage SKUs.
	Labels printed per SKU per annum	86,100-275,520 labels printed per SKU per annum (across all supermarkets)	Statistics New Zealand Business Performance Benchmark data shows that stock turnover per annum for supermarket and grocery stores ranges from 10-16 per annum. We assume that each SKU has, on average, 10-20 units stocked at a given time, implying total units stocked per annum for a given SKU (and supermarket) of 100-320. Across 861 supermarkets (Commerce Commission Annual Grocery Report 2024, Table 2), this yields total units stocked per SKU of 86,100-275,520. We use this as our estimate

			of the number of labels that would need to be printed.
	Digital label area in cm^2	$4cm^2$	Minimum recommended size for effective scanning (QR code packaging best practices for better scans · Digital Link)
	Number of non-critical claims on labels	2.3045	A weighted average of voluntary label claims across milk and yogurt products in the US, drawn from this study: The Prevalence of Competing and Complementary Claims on U.S. Food Product Packaging: A Case Study of Claims on Milk and Yogurt
	Non-critical claim area per claim	3-4 cm^2	Assumed range. The Ministry undertook a sample mapping exercise to consider what information can be moved off physical labels into the digital environment. While this exercise did not provide a precise value, a small area of non-critical claims for food and beverage products is not inconsistent with the sample mapping.
	Proportion of products where label space is a constraint	10-40%	Assumed value, based on many food and beverage products being medium to large products where space is likely to be less of a constraint.
	Printing costs	\$0.001/cm^2 to \$0.0029/cm^2	Variation in costs from a label print run in black vs full colour, of different sizes, sourced from https://paclabel.co.nz/printing/food-label-printing/
Fewer export label variants	Variants per SKU (prior to digital labelling)	3 to 5	Assumed, but likely to be conservative in context of EU requirements for a single SKU

			requiring 10-15 label variants (https://www.manageartworks.com/blog-post/eu-labeling-complexity-how-cpg-brands-can-streamline-packaging-operations). Note that not all products will require this many variants (depending on countries exported to, etc)
	Number of export markets	10	NZ export data for food products shows that exports to the top 10 countries cover 70% of exports
	Number of SKUs exported	674 – 2022 SKUs	Based on the number of food and beverage SKUs in the printing cost calculation, with an assumption that 20% of SKUs have export versions
	Variants per SKU (after digital labelling)	1 to 4	Assume that digital labelling allows a reduction of 1 to 2 variants, which can be shifted to digital updates
	Number of markets adopting digital labelling	5	Assume that half of the 10 export markets allow digital variants. In the time available for this CBA, we have not been able to undertake a detailed review of the uptake of digital variants in New Zealand's export markets. While it may be that uptake of digital variants ramps up over time, to simplify the analysis we assumed a fixed uptake of half of the markets. This assumption may overstate the benefits, although a counteracting effect is that a larger proportion of the benefits may occur early e.g., if Australia, which accounts for a large share of

			New Zealand's food and beverage exports, is an early adopter because of the joint food system. By not mapping the uptake of individual countries, we may be understating the benefits.
	Design cost per variant	$500-$1,500	Conservative estimate based on estimates of $500 to $2,500/$5000 (in USD): https://www.designrush.com/agency/package-design/trends/how-much-does-packaging-design-cost; https://packpaa.com/managing-your-packaging-design-cost/
Improved access to information to consumers	Number of SKUs	3,370 – 10,110 SKUs	As in printing cost savings calculation
	Labels printed per SKU per annum	86,100-275,520 labels printed per SKU per annum (across all supermarkets)	As in printing cost savings calculation
	Proportion of QR codes scanned	5%-10%	Assumed value, that only a relatively small proportion of codes are actually scanned by consumers
	Share of products where digital information materially helps shopper	10%-20%	Assumed value, that even if a QR code is scanned, it may not necessarily help the consumer
	Time saved per scan (seconds)	10-20 seconds	Assumed value. If a QR code is scanned and it helps the consumer, then they will save some time from otherwise having to search a printed label for the information

	Value of time	$35/hr	Median hourly earnings, June 2025 quarter, https://www.stats.govt.nz/information-releases/labour-market-statistics-income-june-2025-quarter/
Costs	Ongoing costs to maintain digital links	$0.42/SKU - $1.70/SKU per annum	Based on USD monthly pricing for GS1 digital links of $80-$200, converted to NZD at a 1.77 exchange rate and converted to annual pricing. Included SKUs are 1,000 (for the $80 plan) and10,000 (for the $200 plan), so we calculate $/SKU per annum
	Design costs per SKU	$500 - $1,500	As in fewer export label variants calculation
	Number of SKUs	3,370 – 10,110 SKUs	As in printing cost savings calculation
	One-off IT implementation costs	$100,000 - $300,000	Assumed range, based on our understanding of IT costs for establishing a new system