

# Conclusions and Recommendations

This section is divided into three sections. First, the general conclusions are presented in context of the four target questions this review set out to address. Second, gaps in the literature and emerging trends for future exploration are presented. Third, recommendations are outlined, drawn from the theoretical and empirical base on which this rapid review has been conducted.

## 1. Answering the Four target questions

### **(1) What impact (if any) does food labelling have on consumer decision-making?**

The limited time (approximately six to ten seconds on average) consumers spend attending to food products means that there is a restricted slot for any of the multitude of food labels to have a chance of impacting choice behaviour. Of the many types of food labels that appear on pre-packaged food products, the labels that consumers are likely to attend to most, and that will have a direct impact on their purchasing decisions are those that carry information regarding price, quality and value for money. Specific consumer groups that have particular motivations to attend to labels (for example for medical or lifestyle reasons) will make purchasing decisions based on food labels that contain information other than price, brand, and value for money.

In the main, a vast body of meta-analytic work and systematic reviews, as well as many recent individual empirical studies, suggest that food labels such as those containing information about nutrition, food safety information, organic status or sustainability consumption do not reliably change consumer behaviour towards healthier, safer, or environmentally friendly food choices.

### **(2) What are the most persuasive aspects of food labelling that impact consumer decision-making? (2a) What are the reasons behind the persuasiveness of some food labelling to change behaviour? (2b) What factors limit the persuasiveness of food labelling on behaviour change?**

In the main, front of pack (FOP) labelling that contains nutritional content claims, celebrity endorsements and promotional offers are the most persuasive labels on pre-packaged food. The reason that these labels in combination are so persuasive is that they complement the common interests of consumers which are price and value for money that are targeted by promotional offers, and quality often targeted by celebrity endorsement. Nutritional content claims on FOP labels are an effective marketing strategy, but require scrutiny given that claims may not precisely align with the actual nutritional value of the food product.

To understand what the limitations are on the persuasiveness of food labelling, it is worth considering the work conducted on special consumer groups, because they are in effect the most reliable captive audience for food labels. Work examining these groups (either motivated for medical or lifestyle reasons) suggest that style of labelling (for example too small), content of labelling (for example information is contradictory or ambiguous), and inconsistency in the labels used across countries (for example there is no harmonisation or standardisation of food labels) are common issues. Thus, even for groups that are significantly motivated to attend to food labels, there appear to be problems with the labels such that they do not yet communicate the essential information in an accurate, easy to process format.

While it is the case that consumers prioritise price, quality and value for money above most other factors, some consumers are motivated by issues concerning health and sustainable consumption. However, consumers also scrutinise the information that they can rely on, because it can be trusted and is easy to process. Bold nutritional claims, paired with promotional offers, branding, and price are effective because there is most consensus on what they mean, which make them less ambiguous and more easily trusted. This also explains why labelling of this kind is most effective, because price and information about the product are often combined. This provides vital clues as to how labels concerning health, safety and sustainability need to be improved and paired with pricing systems in order to generate effective behavioural change.

## 2. Gaps in the Literature and Emerging trends

**Electronic-labelling (alternatively referred to as smart labelling, e-labelling) and AI-Automated support systems** It is worth highlighting that the technologies, the type of labelling, and the function of the labelling differ hugely, and only indicate one small part of a bigger emerging set of disruptive technologies which will change the way in which food is sold, and how shoppers make their choices. The literature in these areas is still nascent, and so more work needs to be done to track which labelling methods and technologies are currently in use, or will be in use in the next 5 to 10 years. In addition, it would be important to also assess which technologies will be adopted in the near future, what attitudes consumers have towards them, and their likely adoption into their food shopping habits.

Labelling systems to support retail: Stores are now adopting electronic shelf labelling. This is where the displays of the price can be updated daily (which otherwise has to be done by hand), and can also display the barcode, descriptions of the product itself, and country of origin. The function of this system is to increase the efficiencies in price adjustments that are made frequently. Also, there have been developments in the direction of smart packaging. This is where packaging contains chemical and biosensors to monitor the quality and safety of food (for example sensing freshness, presence of pathogens, CO<sub>2</sub>, O<sub>2</sub>, pH, temperature, and other relevant indicators). Finally, in the context of food safety, block chain technologies are being used to develop a framework for digitising food production, so that retailers (and regulators) can track food production, along with tracing back the origin of an outbreak.

Automated systems to support retail: The next level up are AI systems that utilise in store (as well as online) shopping behaviour to anticipate customer demand, automation of store operations, as well as price optimization.

Labelling systems to support consumers: Several bricks and mortar stores already have price scanners that enable shoppers to scan the barcodes of food items, which are an efficient way for consumers to track the cost of the shopping basket/trolley of goods. For instance, barcodes can be used to communicate details regarding the nutritional value of foods (for example change4life- a barcode scheme developed by PHE); the findings suggest some limited uptake, and in turn limited success in achieving behavioural change in improving nutritional consumptive habits. Electronic coupons, as well as QR-codes which are a matrix barcode, can contain more information about the product aside from price. Combined with a smart phone, a variety of labelling methods can be used to inform consumers of promotional offers; though uptake of these different modes of communicating promotional offers is still mixed. Nonetheless, this is of particular interest to consumers, because they expect that their shopping experiences in actual stores need to match their online experiences, for which they have easy access to information regarding in-store promotional offers. Also, for specific consumer groups, such as those with food allergies, there is certainly interest in having scannable food products to make better informed food choices.

Automated systems to support consumers: There are two forms of decision-support systems where the methodology is currently being trialled. These decision-support tools, while early in development, are likely to signal a pattern of consumer behaviour of the future. The first is assisted decision-support systems, where an application on a smart phone or on laptop can be activated to help make recommendations for a shopping list (to be used online or in bricks and mortar stores). It is based on past preferences, so that it can tailor recommend promotional offers, as well food options such as nutritional meals. The future of shopping may also be in the form of automated assisted decision-support systems. These systems entail a move away from active choice that recommender systems still offer, but instead fully automate choices. In sum this would mean the selection of weekly food shops is entirely automated, once consumers enter their budget and other key preferences.

### **3. Conclusions and Recommendations**

#### **Conclusions**

(1) Food labelling that contains information other than price, brand, quality, value for money, or promotional offers, has had limited persuasive power to change consumer behaviour (for example in the direction of sustainable, healthy, safer choices). This is largely for two reasons: consumers spend a matter of seconds on each food item they select, and because of this, consumers prioritise, price, brand, and value for money above all else.

(2) The food labelling landscape is made all the more complex given that the concepts behind the labels are unclear because they are themselves multi-faceted (for example sustainable can mean low CO<sub>2</sub> emissions, ethically grown/sourced/ produced, organic), the scoring of the concepts varies by country (for example traffic light labelling of nutrition), and there is inconsistency in how stringently the conditions are applied (for example mixed levels of stringency for warnings of the presence of food allergens by country and label type).

(3) A vast number of studies, and meta-analyses indicate that food labelling alone is not a sufficient method to support positive behavioural change (for example towards sustainable, healthy, safer choices) unless other types of methods are used. These can include combinations of taxes and subsidies (for example a redistributive pricing mechanism) or other behavioural change methods (for example schemes like Fresh Street (UK, 2020) - a community based intervention combined with a voucher scheme to increase uptake of fresh fruit and vegetables; a Thursday Veggie Day (Belgium, 2009) community and school intervention involving NGOs and government support). They also involve matching the different types of consumers to interventions to target different lifestyles and thus avoiding a one-size-fits-all strategy; as well as developing methods for disrupting habitual habits at the point of choice [based on eye tracking work] and counter-advertising methods that encourage scepticism around the front of package promotional claims of health).

#### **Recommendations**

(1) Efforts to improve the quality and accuracy of information that food labels contain, and represent is necessary for two reasons: 1) thinking currently – a) due to their role in communicating statutory food safety information and b) special consumer groups depend on food labels (for example food allergens) and so efforts to coordinate food labels across countries to improve the accuracy and consistency of the information labels contain/refer to is still necessary; 2) thinking ahead – there will still be a demand for accurate food labels because smart/AI technologies such as assisted and automated decision-support systems will either base their recommendations or even make choices on behalf of the consumer from the details contained on food labels.

(2) Efforts to achieve behavioural change in the direction of sustainable, healthy and safer food choices requires a considerable co-ordination of multiple methods: choice incentivizing (for example subsidies, taxes, vouchers) and choice preserving (for example community schemes, school schemes), which require trialling before launching on a population-wide scale. While these methods in combination require efforts to ensure trialling them before implementation on a wide scale, it is worth noting that the impact on behaviour is unlikely to be detected within a short time scale (for example weeks, months). The evidence based thus far suggests that this type of approach leads to sustainable and generalisable behavioural change, but in the long term (for example 6 months, 12 months).

(3) In support of the emerging technological innovations in retail, and given the vast knowledge gaps that persist, this project presents some insights from a recent behavioural survey that examines the beliefs, attitudes and expectations of the efficacy of three types of interventions: smart applications (for example, assisted/automated smart systems), financial (for example taxes, subsidies), behavioural (for example labelling, campaigns).