A guide to reformulation in the food and drink industry

This is a supporting document for the Guide to reformulation in the food and drink industry teaching resource PowerPoint presentation. Developed in 2023.

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Icebreaker:

Start thinking about product formulation by imagining your favourite food, drink, or snack product.

How often you eat it will dictate how influential it is on your nutritional intake.

What properties of the product do you enjoy; smell? Texture? Flavour? Are these unique to that brand? If you changed the product, would you accept a slight change in these properties… do you think customers would even notice!?

Do you know what nutritional benefits the product gives you (fibre/vitamins/protein/energy)? Does it contain nutrients that you should limit (saturated fat/sugar/calories)? If you could make it healthier, would you enjoy eating it more, or less? Would you want to know if the manufacturer made it healthier?

These are all considerations when reformulating. Many manufacturers want to shout about making their products healthier, to encourage consumers to incorporate their brand in a balanced, healthy diet. Others opt for 'silent reformulation' and don't promote any recipe changes.

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Reformulation is the process of changing the recipe of a product, also known as Existing Product Development.

A manufacturer might want to change a recipe for a number of reasons;

- Due to trade disruptions, or weather events, certain ingredients might be harder to source or become more expensive.
- Many consumers are looking for healthier snacks and meals, so manufacturers may make their foods healthier to stay competitive, or win new customers.
- If evidence shows that an ingredient has health risks, a manufacturer would need to reformulate and remove it. This was recently the case with Titanium Dioxide which was used to make white products in baking appear whiter, and is now banned by the European Union.
- Sustainability is a key issue for many brands, and they may wish to replace ingredients that contribute to deforestation or have a high carbon footprint.

- As well as ingredient prices increasing, other costs can increase for manufacturers including electricity, gas, labour, and packaging. Raising the price of a product can risk losing customers, so a manufacturer might look for cost savings by swapping or reducing the use of the most expensive ingredients.
- In 2018 the Scottish Government launched it's paper titled "A healthier future: Scotland's diet and healthy weight delivery plan" which reviewed the various reasons for ill health and obesity, and what could be done about it. Reformulation was identified as one of the most effective ways industry can help improve dietary health, and the Reformulation for Health programme was established to help Scottish manufacturers make their food healthier. This support is key because the majority of food manufacturers in Scotland are classed as small to medium sized enterprises (SME) and may not have the staff or budget to reformulate alone.

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When it comes to public health, making food healthier can have a massive impact. Every year, Billions of pounds are spent by the NHS managing illnesses caused by unhealthy diets.

The UK government has released a number of voluntary targets for the food industry to work towards, to reduce the amount of salt, calories, and sugar in many types of food.

There have also been initiatives from non-government organisations such as Action on Salt, and Action on Sugar, who have run successful campaigns to encourage reformulation. The UK is a leader in salt reduction thanks to campaigning from Action on Salt, which has encouraged both consumers at home and food manufacturers to use less salt. In the 9 years up to 2014 the UK population's salt intake dropped 11%.

There are now restrictions in place for promoting foods that are classed as being High in Fat, Sugar, and Salt (HFSS) in England. This classification is based on a Nutrient Profile Score, which rates the healthiness of a product based on the amount of fat, saturated fat, sugar, salt, protein, fruit, vegetables, and fibre. The Scottish Government is in the process of considering similar restrictions in Scotland.

Recent legislation of Mandatory calorie labelling dictates that cafes and restaurants in England that employ over 250 people (ie. Large chains that would have the capability to calculate their calorie content) must state the calorie content of dishes on their menu. The Scottish Government is in the process of considering similar restrictions in Scotland.

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This slide shows the reformulation programmes that have been set by UK government. Most of these are non-enforceable guidelines for manufacturers to aim for, however the Soft Drinks Industry Levy imposes financial implications on the products introducing a financial incentive for reformulation. It proved very successful because it is much easier to reformulate a liquid product – sugar plays a lesser role in soft drinks than it does in solid food products which contain more ingredients and are more complex. Sugar in a soft drink can often be replaced by artificial sweeteners and natural flavourings with limited impact on the product.

* Why not compare the labels of a full sugar and sugar-free drink products and note the difference in ingredients? *

The sugar reduction programmes have been less impactful because sugar plays more roles in solid food products, both physically and chemically.

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Food brands are in competition with each other to be the item chosen by consumers. They can spend a lot of time and money monitoring purchasing patterns and what consumers want to see in a product, called a trend. This could be convenience, indulgence, or the perceived healthiness of a product – it tends to vary between different types of food. This will be very influential in reformulation. If a manufacturer is spending time and money changing a product and labelling, they want to make that change count and future-proof their product.

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There is an entire industry tracking consumer trends and behaviours. Big manufacturers can spend thousands of pounds purchasing consumer trend data, while a smaller manufacturer or high street butcher might ask their customers directly or through social media what is important to them. The fight is on between brands to be one most chosen from the shelf...

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Every reformulation is different, and even two manufacturers reformulating similar products may choose different strategies.

These are some important landmarks that a typical reformulation project will follow.

You need to know where you're starting from; calculate the 'baseline' nutritional specification of the product using the recipe and portion size information.

This can then be benchmarked against competitor products, legal thresholds for making labelling claims (such as 'source of fibre'), other health targets such as the salt reduction targets, and thresholds that have legal implications such as sugar content for soft drinks.

From here, it can be calculated if there are any standards that could be met through reformulation. Are there any other changes that the brand wants to make to the product? This is the action plan.

How can that plan be achieved? There are many components of a product, and any or all of them could be reformulated.

Reformulating a component that is used in many different products is a great way to broaden the impact of reformulation… this could be the shortcrust pastry in the pie case, or the puff pastry of the pie lid… if you make the pastry healthier, every flavour of pie produced by that manufacturer will be healthier.

What about the filling of the pie; Can the gravy be made with reduced sodium gravy mix? Can more vegetables be added? Can some red meat be swapped for pulses or another meat that's lower in saturated fat?

Some ingredients can simply be reduced, such as salt in many instances, as it is used in small amounts. Ingredients that are needed for bulk or functionality will need a replacement. There are lots of healthy alternative ingredients available, such as using fibre and starch for fat replacement.

Once a new recipe has been developed it needs to be tested out. Industrial cooking can be quite different to cooking in a home kitchen, with many different pieces of equipment and processes involved. Does the product look and taste similar enough to the original to be acceptable to the consumer? Sensory analysis can be carried out to asses this.

RESOURCE: https://www.foodafactoflife.org.uk/14-16-years/food-science-14-16-years/sensory-science/

Salt and sugar can reduce the growth of bacteria and fungi, giving a product a longer shelf life. Is the shelf life of a reformulated product still acceptable?

Once the product has been settled on, the brand needs to decide on a marketing plan; will the change be kept secret? Will it be promoted and advertised? Do their consumers want to indulge in a treat product thinking it's rich in sugar and fat, or do they want to be able to easily identify that the reformulated product fits into their healthy lifestyle? This varies between product categories and brands.

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There are a lot of different skills within this process, with jobs ranging from IT, to nutrition, to sensory science, to marketing and communication.

The food industry hosts a vast amount of different types of careers, in an office, a laboratory, a kitchen, board room, to the factory floor itself.

RESOURCE: https://www.fdfscotland.org.uk/fdf/what-we-do/people-and-employment/careers-and-skills-development/scotland-careers-resources/

RESOURCE: https://butcherycareers.co.uk/

RESOURCE: https://farmingfoodsteps.co.uk/

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Each ingredient serves a role in a product, and changing a recipe needs to be done with careful consideration.

Most ingredients give bulk to a product. Removing an amount of an ingredient such as butter from a cookie, doesn't automatically make for a healthier cookie; the finished batch of cookies would be smaller, and the percentage of other ingredients such as sugar would increase as they are then a fraction of a smaller product.

The five taste flavours: Sweet, salty, sour, bitter, and umami, all come from the ingredients and need to be balanced during reformulation.

Sugar and salt can suppress microbial growth, extending the shelf life of foods.

Sugar and fat are especially important for many structural properties of products.

The mouthfeel of a product is also affected by key ingredients such as fat.

They are also important in many chemical reactions that happen during cooking, such as the maillard reaction.

RESOURCE: https://youtu.be/9ewSQzPpWA8

Are any new ingredients more expensive than the original? A new recipe needs to be cost-effective – would consumers be willing to pay more for a healthier product? Can a cheaper ingredient be used, to gain a cost saving?

All of these factors need to be considered but can be managed.

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Sustainability is a growing priority for manufacturers. Many businesses are working towards being certified as B corp, which indicates their incorporation of social and environmental practices. Some food products also advertise the carbon footprint of products, to help consumers make responsible choices.

This is affected by factors including ingredients, cooking, packaging, transport, and storage of a product.

Using multiple ingredients that travel across the globe can result in the finished product having a high carbon footprint (lots of energy was used to transport the ingredients to the manufacturer). Some ingredients are particularly energy-intensive to make, or the process of growing and processing could have a negative impact on the local environment (think deforestation for palm oil crops).

A product could be reformulated to use more locally sourced ingredients, to improve the sustainability of the finished product. Many brands have removed palm oil, and the retailer Iceland has pledged to stop selling products containing palm oil.

RESOURCE Sustainable Palm Oil: Sustainable palm oil | The Food & Drink Federation (fdf.org.uk)

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What's the potential of shaving off a few grams of sugar and saturated fat from a biscuit?

If lots of manufacturers made even small adjustments to their products, the cumulative effect for consumers can add up.

Here are some real life examples of product reformulations and the impacts…

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At the start of this session you were prompted to think of a product you enjoy eating.

Now you've had an introduction to reformulation, have a deeper think about how you could reformulate this product.

Use the nutritional information from the packaging to identify what nutrients you would address.

What nutritional improvements could you make to the product? Are the fat, sugar, and salt content similar to competitor products? Is the product included in the 2024 salt and calorie targets? Can the fruit, vegetable, or fibre content be increased? Could this nutritional change allow the product to use new labelling claims?

Use the Explore Food nutritional calculator to discover key ingredients that contribute to the product's nutritional specification and air miles. Are there locally produced, or low carbon ingredients that could be used in the product?

Resources

- FDF Scotland Reformulation for Health webpage
- FDF Scotland reformulation guide
- Food Education Scotland
- Food a Fact of Life sensory analysis resources
- Institute of Grocery Distribution Reformulation topic page
- FDF High in Fat, Sugar, and Salt (HFSS) toolkit
- Summary sheets for 2024 salt and calorie targets
- FDF Scotland Youtube channel
- FDF Sustainable Palm Oil
- Public Health England reformulation programmes
- Quality Meat Scotland Butchery Careers resource
- Quality Meat Scotland Farming Footsteps education resources
- EU labelling claims
- Explore Food nutritional calculator