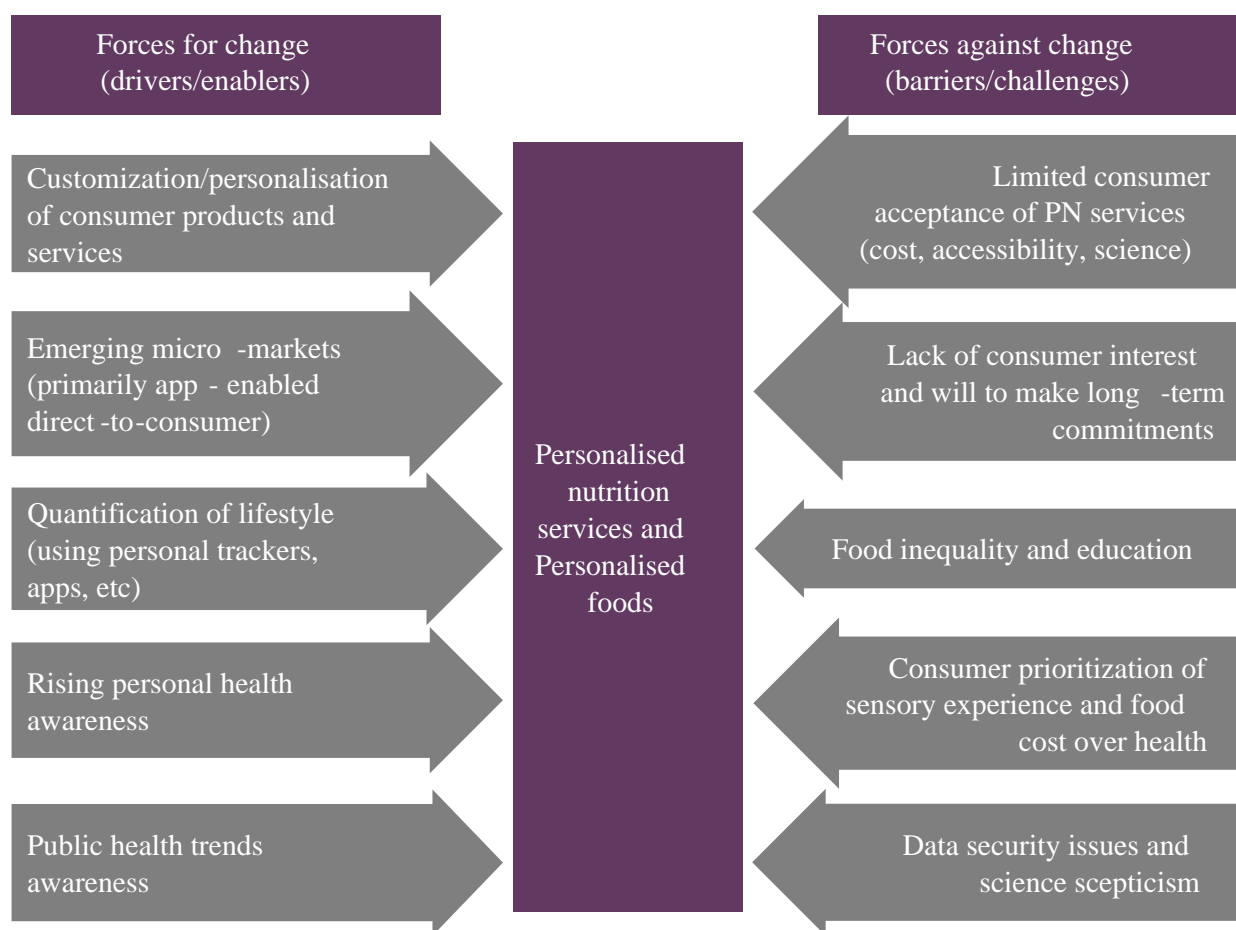


# The Evolution of Personalised Nutrition: Consumers and Society – Trends and implications for widespread uptake

The trends presented here briefly, summarised in Figure 15, have been recognised as specific input trends into the PN sector by a number of studies and reflect the most prevalent consumer trends that might affect uptake of PN more or less directly.

**Figure 15 Trends, drivers and challenges: Consumers and society**



## Consumer and societal trends supporting the uptake of PN

**Customisation/personalisation of consumer products and services and emerging micro-markets**

Customization/personalisation of consumer products and services and emerging micro-markets are two longer-term trends that have been shaping consumer expectations and interests for at least two decades. From fashion to cars, software and financial services, to food and takeaway lattes, many product categories are now well established with myriad customisation options, either built into a stratified product range, or with customers to choose between many options. At the same time marketing has been using “individuality” as a selling point for many consumer product categories for a very long time. With digital technologies and smartphones enabling easy D2C selling, a number of micro-markets are becoming a part of the commercial ecosystem and are increasingly expected by consumers, including in the food personalisation sector. For example, [Keto and Company](#) is a sales and information platform offering low-carbohydrate ketogenic foods; [FODmarket](#), offers products for a diet rich in FODMAP ingredients (fermentable oligosaccharides, disaccharides, monosaccharides and polyols), or [Beyond animal](#), a platform for vegans, connects vegan businesses, consumers and investors in that sector. Personalisation has meanwhile also entered the restaurant space with electronic menus that allow customers to customise a dish down to the ingredient proportions. For example, [Vita Mojo](#) in the UK provides electronic solutions for the restaurant and kiosk segment that enable fast personalised ordering.

## **Quantification of lifestyle and rising health awareness**

Quantification of lifestyle and rising health awareness are two longer-term trends, which linked by digital technologies, have enabled easy tracking of various lifestyle and health parameters via wearable devices. Initially seen as a curiosity market segment taken up early by professional athletes, it has become now a widely used way to obtain feedback about certain personal health parameters. The importance of feedback in the health-related behavioural change domain has been well researched, and measurement of status quo together with subsequent feedback after behaviour change is one of the fundamentals in this area (Macready et al., 2018). Familiarity with tracker devices and data apps for lifestyle and health analysis will further increase among consumers and will make purchasing PN services a very familiar customer experience, with the added excitement of providing samples for DNA or gut microbiome analysis. In addition, science-based web product offerings, such as ancestry services, or linked to citizen science projects will further drive increasing familiarity with certain scientific concepts. Moreover, it appears that personal scientific information, at least in the context of a large EU trial on PN nutrition (Food4Me), motivates to change behaviour around food intake (Ordovas et al., 2018).

## **Rising personal and public health trend awareness**

Rising personal and public health trend awareness increasingly appears to be influencing consumer choices, at least in affluent strata of society. Following general media reporting, there are a number of diseases that have been reported for decades as worrying health concerns on the personal as well as public level. Among these most prominently reported are cancer, diabetes, obesity, and dementia (Alzheimer's disease), and to a lesser extent allergies including food allergies. Due to their indeed rapidly increasing prevalence over the past two decades, many consumers will have statistically been affected by them at some point in their life. To what extent generations who have been growing up with these media reporting trends are more likely to take up PN advice is not clear, especially as the correlation between health information and healthy behavioural change does not appear to be as rational as one might think, in particular when it comes to healthy food choices. However, this awareness context somewhat prepares and possibly motivates consumers for understanding the need for personalised approaches to achieve health goals. This may become important should national health providers decide to promote PN services.

## **Consumer and societal barriers to widespread uptake of PN**

## **Limited consumer acceptance of PN services**

Limited consumer acceptance of PN services, and a number of concerns have been identified in studies carried out for over a decade to assess consumer sentiment around PN. Consumer attitudes that play a role in decision making whether to use PN services or not were concerning: willingness to undergo genetic testing (if part of the PN offering), ease of access, willingness to pay, medical needs, and trust in provider with respect to data security and privacy. A large EU study found for example that willingness to undergo genetic testing for PN services was around 27% on average over a decade ago, but could vary considerably between countries and age groups, with older age groups being more willing to be tested if an underlying health issue was present. On average around one third to 50% of consumers would try PN services if convinced by clearly communicated science and other preconditions. Variations in willingness to pay are linked to nationality and affluence, with for example German and UK consumers less willing to pay at all, and Spanish consumers much more willing to get tested and pay for it.

Main concerns that impact negatively on the uptake of PN services are around the fact that data collection and analysis is only web-based, and data security. For example, in 2020, 87% of UK NHS users declared that data privacy is of high importance to them, while they are generally trusting and appreciating the services provided by the NHS (71%) (NHS, 2020). This indicates that data security will matter a lot for UK consumers in the commercial sector. Overall, there appears to be a market segment between 30-40 % of consumers who would try PN when certain conditions are met, such as a trustworthy regulatory framework. A correlation was also found between higher trust in the national health care provider and lower willingness to use commercial PN services (Póinhos et al., 2014, 2017; B. Stewart-Knox et al., 2015). These multifactorial inputs into consumer decision-making will make it difficult to predict a clear trend for the UK. However, the fact that UK consumers were less willing to pay for PN services and generally trust the NHS (see above), points toward hesitancy to adopt commercial PN eagerly in the near future, despite much media hype around it.

## **Food inequality and education**

Food inequality and education are two social issues that may severely affect wider uptake of PN in the UK, in particular if regulators should decide to promote it more widely. A government report on food insecurity from late 2021 finds that 15% of UK households are affected by food insecurity, which includes 2.5 million children (UK Parliament, 2021). This makes the UK one of the most food-unequal countries in the OECD and EU. If public health goals are to be pursued with PN approaches in the longer term, then considerable efforts need to go into resolving these issues around primary needs. In particular, it has been shown repeatedly that taste, texture, and cost are the leading motivators for buying a food item, despite all the media attention and advertisement around healthy food (Ignaszewski, 2022; Weinrich, 2019), and it is well established that in most countries less affluent parts of the society would benefit most from a healthier diet. Moreover, social stratification is still pronounced in the UK compared to other countries, and implementing equal educational proficiencies across social strata is still an issue. This means in the context of PN that only a very small consumer segment will currently have the required education to understand the benefits and risks of PN nutrition approaches and would therefore be able to make a reasonably “informed choice”. In this societal context ethical issues around food and educational inequality need to be considered should decision-makers want to roll out PN as a way to achieve public health goals.

Difficulties around information about food and health are generally a common problem among all consumers, also reflected in a recent US survey that asked consumers about their understanding of food related health information and find that 80% of consumers describe themselves as “being confused” by conflicting or unclear information around food-related health information (IFIC, 2018).

## **Data security issues and science scepticism**

Data security issues and science scepticism will impact wider consumer acceptance of PN in the UK. As data protection issues have gained more public attention over the past decade and related legislation has been rolled out across the EU and UK, it is very likely that consumers will want to be able to trust in how their personal health data is handled by PN providers. However, this requires good regulatory oversight and communication by regulators on what certain data standards mean and how breaches of data regulation can be addressed. Data security, reliability of the exchange and transfer of personal data, and trust in the provider have been reported in a number of studies exploring consumer acceptance of PN as highly important when making the decision to use PN services (Poínhos et al., 2014; B. Stewart-Knox et al., 2013, 2015). Other concerns were around actual data breaches, where for example insurance companies or employers might get hold of personal information given to the provider, and about receiving “unwanted” information about health that might cause distress and anxiety (Poínhos et al., 2017).

Given that the Covid 19 pandemic has made very clear that there is approximately a persistent 15-20% segment in many European countries that rejected Covid 19 vaccines, it can be assumed that within the UK there is also a substantial minority that would not take up PN services due to various beliefs around scientific concepts. In particular, as PN lends itself for scepticism, as even for a well-informed scientist in the field the science behind PN is highly complex, and in many aspects at an early stage of understanding. Moreover, PN providers will not be able to be completely “transparent” about their technical processes, even if they wanted to, exactly because of the complexities involved (as mentioned in chapter 5: technology and commercial players). Hence it will be near impossible for the average consumer to make a “truly informed” decision when choosing a PN provider. Consumer choice will therefore have to be based mostly on trust, which makes it necessary for regulators to define and maintain standards in this sector, as well as communicate them clearly to consumers.