



INCREASING THE ACCEPTANCE

OF CULTIVATED MEAT

Factors to consider when designing communication strategies for diverse nations.

by Mark Chong

Global meat consumption is at an all-time high, having doubled from an average of 23 kg of meat per person in the 1960s to 43 kg in 2019—and it is still rising.¹ All agricultural activities require the extensive use of resources like land, machines, and water, causing greenhouse gas (GHG) emissions of varying extents. But animal farming—the breeding and raising of cows, pigs, and other livestock for food, and feed production—is the most resource-intensive form of agriculture, accounting for 57 percent of GHG emissions by the global food industry, which is more than that from all the world’s transportation systems combined.^{2,3}

Moreover, 99 percent of animals raised for food live in factory farms under extremely cruel conditions, with nothing seemingly natural about the process anymore.⁴ These livestock are often packed tightly together in small spaces, regularly injected with antibiotics to keep diseases away as they are highly vulnerable to infections spreading quickly from one another, fed abnormal diets (e.g., corn instead of grass) to fatten them up, and genetically modified and selectively bred through artificial insemination.⁵ It is not surprising that consuming meat produced under such conditions is leading to serious health issues, such as antibiotic resistance and the transmission of animal-borne epidemics.

Yet, despite increasing awareness, global meat consumption continues to rise as the world population grows and consumers remain resistant to altering their meat-centric diets and shifting towards non-animal-based alternatives.

Compared to a vegetarian source, the production of 1 kg of protein from beef requires:



Source: National Institute of Medicine

Additionally, meat production at its current levels of 345 million metric tonnes in 2022 is simply not sustainable (refer to Figure 1). This will make countries dependent on food imports highly vulnerable during extraordinary times or crises, as witnessed during the COVID-19 pandemic, when there were major disruptions in the global food supply chain with the supply of meat, fish, dairy, and eggs especially affected.

CULTIVATED MEAT: A NOVEL FOOD

To promote the much-needed transition towards healthier and more sustainable food consumption, experts have been actively researching and developing innovative alternative proteins that are accessible as well as appealing in taste to consumers. One type of alternative protein proposed is cultivated meat, also variously known as lab-grown meat, cultured meat, cell-based meat, in vitro meat, and clean meat. It is specifically engineered to replicate the sensory and nutritional attributes of conventional meat. Production of cultivated meat involves extracting muscle-specific stem

cells and subsequently cultivating them into muscle tissue. Hence, this process could also potentially augment existing traditional meat (protein) supply. Moreover, its production does away with industrial farming practices, uses less water and arable land, eliminates the need to slaughter animals, and enhances food security.

But despite its health and environmental benefits, along with a taste profile that could potentially resemble that of actual meat, the penetration of cultivated meat into the consumer market remains low. The first hurdle is regulatory approvals, as they are slow in coming. Singapore's approval of lab-grown chicken for sale and consumption in 2020 made it the first country in the world to do so. It was only in November 2022, more than two years later, that the US Food and Drug Administration (FDA), regulator of the biggest market in the world for alternative proteins, declared cultivated meat products safe for human consumption.⁶ In June 2023, the US Department of Agriculture granted its first-ever approval to two cultivated meat companies to sell the product.

GLOBAL MEAT PRODUCTION FROM 2016 TO 2022 (MILLION METRIC TONNES)



FIGURE 1

Source: Statista

But even if regulatory approval is received, the main challenge faced by the novel food industry is consumer acceptance, or the lack thereof. Consumers are generally seen to have food neophobia, which is a wariness of novel or unusual food, and labels such as 'lab-grown' make it worse as the thought of eating meat grown from cells makes people feel 'icky' and squeamish.⁷ Furthermore, it does not help that the cultivated products have yet to achieve price parity with conventionally-produced meat. This will not happen unless the industry is able to build tremendous scale to bring costs down, which in turn depends on consumer demand.

While there are many factors that may drive consumer acceptance and hence demand, there are three key aspects novel food manufacturers must consider when developing their market strategies: cross-country factors, communication elements, and individual psychological well-being.

CROSS-COUNTRY FACTORS

Managers need to understand that people from different cultural backgrounds react differently to the idea of novel foods.

Social image motivations

Social image motivations significantly contribute to the varying levels of acceptance of cultivated meat among individuals in Western countries like the US as compared to Asian countries like Singapore. People choose foods not only for nutritional and sensory reasons but also for their desire to stand out or convey a particular impression of themselves to others, especially in social situations. For example, several studies have indicated that men engage in impression management via their food intake to boost their masculine identity.⁸ However, cultural factors determine which social motivation—e.g., the desire to stand out or create a positive impression—predominates within a country.

Countries like the US are often characterised as having a 'loose' culture because of weaker social norms and a higher tolerance for deviant behaviours. They tend to be individual-centric and encourage people to express themselves in unique ways and do things differently from others. Therefore, the motivation to stand out through eating behaviour or food choices as a means of self-expression is more closely aligned with Americans than Singaporeans.

Countries such as Singapore are more likely to put a greater emphasis on the social image motivation of impression management. This is because of Singaporeans' distinguishing cultural trait of 'kiasuism', which is a mindset that constantly entails "comparison with others ... to avoid falling behind or losing out to others".⁹ Another relatable way of explaining

Cultivated meat is specifically engineered to replicate the sensory and nutritional attributes of conventional meat.

kiasuism is that it can be seen as a distinct mix of 'fear of missing out' (FOMO) and 'keeping up with the Joneses'. Due to this cultural motivation to be ahead of others, Singaporeans may engage in impression management practices. For instance, by being the first to try cultivated meat, they strive to be perceived as trailblazers in their social circles.

In fact, we find Singaporeans' acceptance levels of lab-grown meat to be even higher than that of Americans. This is driven by their desire to project an image of being 'ahead of the curve' in their thinking and behaviour (compared to other nationalities) by being more receptive to novel foods such as cultivated meat.¹⁰

Aversion to tampering with nature

An aversion to tampering with nature has been found to increase one's resistance to novel technologies and a bias towards natural products.¹¹ Consumers tend to judge cultivated meat as unnatural because it is not of conventional animal origin, and hence harbour doubts about its alleged health benefits and safety.¹²

However, this perceived (un)naturalness varies across countries. For instance, in the US, not only does the general public consider cultivated meat to be 'unnatural' since it comes from laboratories and not farms, but many organisations such as the Center for Food Safety also consider FDA's favourable assessment of cultivated meat as grossly inadequate.¹³ In contrast, we find that even though most of the respondents in our study on the 'effects of framing, nomenclature, and aversion to tampering with nature on consumer acceptance of cultivated meat in Singapore' perceived cultivated meat to be unnatural, all of them were willing to try it. We posit that our survey may have led our respondents to reconsider some of the purportedly undesirable elements of conventional meat (versus the desirable elements of cultivated meat) and made them realise that conventional meat production has its downsides too.¹⁴

COMMUNICATION ELEMENTS

How a message is framed and how a product is named affect overall consumer perception and acceptance. They may also be more important and impactful than what the message is about. Cultivated meat producers therefore need to manage extrinsic properties such as the core message and product name to position their products favourably in the consumer's mind.

Message framing

The framing of a message is an important issue, as consumers often do not know what to expect of novel products. It can be done in many ways, one of which is positive framing, which has been found to have positive effects on consumer attitudes. Cultivated meat marketers can create positive framing on two dimensions—by emphasising the personal benefits and highlighting the societal benefits of consuming the product. Studies based in Western countries show that messages that focus primarily on benefits for consumers, such as improvements in health and safety, are more effective in promoting consumer acceptance of cultivated meat than others that emphasise the benefits for society, the environment, or animals.¹⁵

On the other hand, a study that my co-researchers and I conducted in Singapore found that no single frame is most effective in promoting the acceptance of cultivated meat among meat eaters.¹⁶ However, 'animal welfare/reduction of animal slaughter' and 'reduction of carbon emissions and global warming' frames are exceptions, as they notably increase acceptance among individuals who identify themselves as Buddhists. This is because the principle of compassion for all sentient beings is central to Buddhist beliefs. Therefore, the frame emphasising animal welfare resonates more strongly with them than frames focusing on benefits for consumers. As Buddhism is a dominant religion in Singapore (31 percent of the population is Buddhist¹⁷), this finding may have practical implications for communication about cultivated meat in Singapore.

Frames centred around sustainability and food self-sufficiency may also become more influential in Singapore, given that the island nation, located near the equator, is particularly vulnerable to the impacts of climate change. The country's record-breaking temperatures in recent years have heightened awareness among consumers about the risks associated with global warming. Moreover, with food imports becoming increasingly expensive (in addition to being unreliable in times of crisis), the potential of cultivated meat to help Singapore achieve its "30 by 30" food sustainability goal (sustainably produce 30 percent of its nutritional needs by 2030)

becomes more prominent in the minds of its people. Accordingly, the "good for society" frame may become more salient and effective if current conditions persist.

Product naming

William Shakespeare's famous quote, "What's in a name? That which we call a rose/ By any other name would smell as sweet", does not always hold true. It is widely acknowledged that the name given to something can influence how people evaluate it. For example, the renaming of the unappetisingly named 'Patagonian toothfish' to 'Chilean sea bass' enhanced its marketability and sales.¹⁸ Naming can also be used to make something less appealing. For instance, it was noted that replacing the word 'beef' with 'cow' and the word 'pork' with 'pig' on a menu increased consumer empathy, disgust, and the willingness to pick an alternative vegetarian dish; it also decreased one's willingness to eat meat.¹⁹

We find that most Singaporeans dislike the term 'lab-grown meat' mainly because it sounds clinical or scientific. Their preferred choice and the one that evokes the most positive responses is 'cultivated meat', while they also like terms such as 'clean meat' and 'cultured meat'. 'Clean meat' evokes an impression of healthiness, a healthier alternative, or clean eating, and also piques consumers' curiosity to find out more about such products, while the term 'cultured meat' sounds like a New Age term and is considered a choice they are 'comfortable' with.²⁰ American consumers meanwhile have been found to be less averse to the term 'cultured meat', compared to 'artificial' and 'lab-grown' meat.

Social media influence

Social media influencers have been credited with inducing changes in consumers' attitudes and behaviours across a range of products and services. For instance, the acceptance of plant-based meats in the US has been greatly influenced by celebrity endorsements from notable figures such as Madonna, Miley Cyrus, Natalie Portman, Mark Wahlberg, and Chrissy Teigen.²¹

Typically, there are two types of social media influencers: either they show referent power based on their popularity and attractiveness to the target audience (e.g., celebrities), or expert power owing to their knowledge in a given area (e.g., scientists). We found no significant difference in the influence of both celebrities and experts on consumer acceptance of cultivated meat in Singapore as well as the US. This allows for the application of influencer engagement to promote cultivated meat acceptance in either country and even in other regions that have similar socio-economic characteristics.²²

PSYCHOLOGICAL WELL-BEING OF INDIVIDUALS

The psychological well-being of an individual plays a central role in food choice and consumption. People with higher subjective well-being have lower food neophobia and thus are willing to try novel foods. This is because people with a higher sense of well-being are generally found to have a stronger health motive, implying that if they consider cultivated meat to be a healthier alternative, they would be more inclined to consume it.²³ Similarly, they also have a stronger ethical motive and are driven by the desire to engage in moral and pro-environment behaviours. Hence, the potential of cultivated meat to enhance sustainability and eliminate animal cruelty would appeal to them. In contrast, people with poorer well-being, who are anxious or unhappy, seek familiar foods for comfort and exhibit food-neophobic tendencies. We find this to be particularly true in the case of Singaporeans: those with better psychological well-being have a stronger grasp of the potential benefits offered by cultivated meat; the benefits offered by cultivated meat also align well with their motives.

LESSONS FOR CULTIVATED MEAT COMPANIES

The dramatic drop in the sales volume of plant-based meat products in the US in 2022 has worried the industry. Specifically,

the decline of eight percent in the unit sales of plant-based meat, the leader of the novel food pack in the US and its largest market, does not seem to augur well for the future of the new kid on the block (i.e., cultivated meat).²⁴

However, cultivated meat companies and brands must look at this as an opportunity, since consumers dissatisfied with existing products such as plant-based meat are looking for other environment and animal-friendly products that offer both health benefits and good taste.²⁵ It would be wise for them to keep in mind the following points when devising their go-to-market strategies:

- Use the term 'cultivated meat' and avoid using 'lab-grown meat' to describe the product.
- In countries with significant Buddhist populations, focus the messaging on how cultivated meat contributes to animal welfare/reduces animal slaughter and minimises carbon emissions/global warming. Highlight not just the benefits of cultivated meat, but also the undesirable elements of conventional meat in the messaging.
- Prioritise product launches in collectivistic countries, as people in these societies (like Singapore) are more likely to focus on social image concerns. Target their high social image concerns by focusing marketing communication on product 'firsts', e.g., the first cultivated chicken meat to



be served in restaurants. Also, ensure high visibility of a product's usage to others through social media. Because collectivistic consumers are more concerned about saving and gaining face, they will be more driven to present a desirable impression of themselves or gain higher prestige by using or endorsing a product that is visibly popular among others.

- Keep in mind the well-being profile of potential customer groups and offer them more targeted information regarding the advantages of cultivated meat in terms of health, safety, and positive impact on society. In addition, use search advertising to target advertisements and other messages to communicate these messages.²⁶
- Target marketing communication efforts in countries with populations that show a higher happiness or well-being index.

CONCLUSION

Cultivated meat has the potential to address several of the health, environmental and ethical issues associated with conventional farming. However, the widespread acceptance and adoption of cultivated meat by consumers cannot be taken for granted. Through this article, I have highlighted key findings from my studies that may help cultivated meat companies to foster the acceptance of cultivated meat. More specifically, they may wish to pay attention to consumers' social image motivations and their psychological well-being as well as message framing, product naming, and aversion to tampering with nature. [LMI](#)

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