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Talking Points: To Infinity and BYND

Lessons Learned for Meat Alternatives From the Introduction of New Ingredients

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Summary

In this month's edition, we share some thoughts on the market for meat alternatives, including drawing some parallels with the introduction of other new food ingredients:

1. Things Can Only Get Better. Why the quest for the perfect meat substitute will not end with the Beyond Burger, Impossible Burger, or even Omnipork.

2. Inferiority Is Complex. For a host of reasons substitutes rarely perform as well as the real thing.

3. A Recipe for Success. On the importance of recognizing your niche, the changing definition of value, and opportunistic pivots.

4. The Consumer and Complexity. Are we experiencing the latest example of the food industry seeking complex solutions over much simpler ones?

It feels like a day doesn't go by without another story in the media talking about the rise of meat alternatives, a good indication of how this relatively small but fast-growing category is moving into primetime. After all, in CPG-land, few categories are growing at such a double-digit pace, and besides, it is a lot more exciting to talk about the Impossible, Incredible, and Imposter burgers (not to mention Omnipork) than to write about declining canned soup sales, again. For example, The Wall Street Journal recently ran an editorial calling-out the US state governments of Louisiana and Missouri for trying to ban plant-based food companies from using words like 'milk' and 'meat' in order to protect beef burgers and the wider profitability of the animal kingdom from an onslaught of veggie-based market competition. Shoppers, the Journal rightly pointed out, are smart enough to know the difference. After all, even children manage to grasp the fact that there is no butter in peanut butter, bears in gummy bears, or that man's best friend was not an ingredient in that Fourth-of-July hot dog.

By far, the biggest news story in this space to date has been the successful IPO of Beyond Meat (BYND) back at the start of May. The shares were initially priced at USD 25 per share and, as of mid-July, were trading at about USD 160 per share. This puts the company's valuation at close to USD 10bn, just USD 2bn shy of Campbell Soup's market capitalization. Not bad when you consider Campbell pulled-in about USD 9bn in revenue last year, and Beyond Meat made 1% of that, at around USD 90m.

Here at Rabobank, we continue to receive numerous inquiries about this market, and have been pleased to provide some impartial advice to counteract a lot of the hype and hysteria out there, responding to these kinds of FAQs:

Q. Is it a fad or lasting trend? – **A.** A bit of both, actually.

Q. What is driving this? – **A.** Important new drivers center around sustainability, animal welfare, and health & wellness, but none of these add to the taste profile.

Q. How big will the market go? – **A.** Bigger, but not as big as some are making out.

Q. And, what's the fixation with burgers? – **A.** Welcome to America!

Although a lot has already been written about the resurgent interest in meat alternatives, we take a slightly different path here and make a few observations, lessons-learned if you like, based on the market entry of other substitute food ingredients. Meat is interesting in that it is both a food ingredient and an end product. As we go on to discuss, the market for dairy alternatives offers a great contemporary comparison, but we believe the world of ingredients, such as sweeteners, has something interesting to say too.

1. Things Can Only Get Better

The current renaissance of interest in meat alternatives is just the latest, albeit exciting, chapter in a long history of attempts to replace meat (which, in turn, is part of a broader narrative around substitute foods). The meat alternative timeline starts during the first millennium with tofu (from soy) and, with many twists and turns, takes us to Battle Creek, Michigan, where John Harvey Kellogg pioneered commercial 'meatless meats' with products such as Nuttose in 1896, the precursor to the peanut-based Nuteena, which Kellogg's produced up until 2005. (Surely time for a comeback?)

More recent milestones include ADM inventing textured vegetable protein (soy protein) in the 1960s and the development of Quorn (fungus protein) and Tofurky (tofu & wheat protein) in the mid-1990s. Fast-forward another couple of decades to today, and we see the aforementioned companies getting their products into Whole Foods Market's meat aisle, as well as in fast-food restaurants such as Burger King. As recently as July, Perfect Day announced plans to commercialize lab-grown milk-based ice cream. And, Tyson's 'Raised & Rooted' fusion burgers (a blend of beef and pea protein) will be coming to your skillets and grills this fall, though, to be fair, this isn't as innovative as you might think. Many hot dogs have been using vegetable protein for years.

A similar plotline has played out in the sweetener industry for decades, in which each new sweetener that emerged has been heralded as the 'holy grail' of sweeteners (that is, the mythical substance that tastes and acts like sugar, but with fewer calories). There are over 40 alternative sweeteners trying to out-sugar sugar in pursuit of our innate insatiable desire for sweetness while, at the same time, trying to liberate us from the calories that have expanded all our waistlines. Over a decade ago, the natural sweetener stevia claimed this title. Despite having many positive attributes, including a better taste profile, stevia's market share today remains miniscule and dwarfed by the demand for sugar, which still claims over 75% of world sweetener demand. The latest 'holy grail' in the sweetener world looks set to revolve around allulose, the very low-calorie sweetener found naturally in figs and jackfruit and made commercially by companies such as Ingredion and Tate & Lyle.

The point here is that the quest for the perfect meat substitute will not end with the Impossible Burger or Beyond Burger because, as both companies have openly shared, their products are very much a work in progress. If pushed, both would no doubt admit their patties from the early years didn't taste that great but are on an incremental upward path of improvement. As the Beyond Meat prospectus humbly stated, "The success of the plant-based dairy industry was based on a strategy of creating plant-based dairy products that tasted better than previous non-dairy substitutes… We believe that by applying the same strategy to the plant-based meat category, it can grow to be at least the same proportion of the... meat category in the US." Current estimates put the non-dairy milk category at 13% of the size of the total dollar market for milk (in volume terms, it is just 5%).

These are certainly not the tofu burgers of yesteryear, and they are getting better one reformulation and improved flavor system at a time. As one regular reader noted, "the success behind these newcomers can be mostly attributed to the fact that, in comparison to previous veggie burgers, its taste, texture, and appearance have come fairly close to that of real meat." Like Soylent, some of the new plant-based food companies have adopted the language of software companies, proudly trumpeting improved versions, such as when the Impossible Burger switched from wheat to soy proteins at the start of the year in an attempt to be meatier (i.e. more realistic). Food as software is a novel approach. Certainly, full marks for transparency (which does not have to mean a 'clean label') and unabashedly telling us what you are doing, but excessive reformulations, refinements, and tampering may not play well with all consumers.

The whole history of sweeteners, meat alternatives, and other substitute foods, suggests that things are indeed getting better with incremental improvements over time, but what about achieving that 'holy grail' of a perfect replacement? This brings me to my second point.

2. Inferiority Is Complex

We've already alluded to this, but, entrepreneurial hype notwithstanding, substitutes rarely ever perform as well as the real thing across market segments for the simple fact they are not the real thing. There are many reasons for this, including the cultural challenges consumers face in adopting new foods coupled with the long shadow cast by the negative image, inferior status, and all-round checkered past of substitute ingredients and foods. This ranges from the ersatz products used during periods of scarcity (such as World War I when, for example, acorns were used in coffee) to the lingering food safety concerns over artificial ingredients (such as intense sweeteners). Examples include the much-maligned sweetener aspartame, despite being one of the most rigorously tested food ingredients on the planet, as well as saccharin, which once had to carry on those familiar pink sachets found in every diner in the country the health advisory: "Use of this product may be hazardous to your health. This product contains saccharin which has been determined to cause cancer in laboratory animals." Yikes!

More recently, consumers are following Michael Pollan's urgings to avoid products with more than five ingredients (or ingredients you cannot pronounce), increasingly 'looking under the hood' and ever suspicious of attempts to 'improve' their food and of what exactly is being put into their food. Even the 'food fraud' of using adulterants in our food plays a part in feeding our fears, such as the melamine scare in China when the industrial chemical was added to milk and infant formula to give the appearance of a higher protein content. While we are certainly not implying any such malfeasance on the part of today's industry, we are simply making the point that the substitute and 'alternative' food industry comes with baggage.

But, getting to the heart of it, the key issue with 'alternatives' is their functional shortcomings. Let's go back to the sweetener industry to help explain this. As my colleague Andy Duff observed in '*Carb-itrage: The Evolving Market for Sugar Substitution*,' replacing sugar is not as straightforward as it might seem. First off, there is taste where "in both beverages and foods, sugar has a distinct taste profile that is not simple to replicate." The newer sweeteners have certainly come a long way from the metallic aftertaste of saccharin but are not there yet. And, on top of this, "sugar contributes a number of other attributes to a food product – among them bulk, texture, physical changes when exposed to high and low temperatures, and preservation/shelf life." When we compare all the alternative sweeteners in the market, we find they can often do a good job of approximating to sugar in some end-uses, but completely fail in others. Bottom line, despite the numerous sweeteners available, there are no perfect all-around alternatives. Take high fructose corn syrup (HFCS) for example. Technically, it is a near-perfect substitute for sugar in chilled sodas. But it fails as a sweetener in your morning coffee (the coffee would taste sweeter and sweeter as it cooled down) and is not much better in confectionery, where sugar's crystallizing properties trump those of HFCS. Likewise, the zero calories of intense sweeteners make them superior to sugar in diet and low-calorie beverages, but their lack of volume and texture (they are only used in minute proportions) makes them almost redundant in other food applications.

As the author also points out, there is rarely any single magic-bullet replacement solution, "instead, achieving substitution, while minimizing any changes to product characteristics that the consumer values, has meant adopting a cocktail of substitute products and technologies." Put another way, you cannot escape the iron law of substitutes: replacing one ingredient invariably means having to replace it with at least two other ingredients, and this is where it gets complicated. Because they are not perfect substitutes, the faux products typically require a bunch of ingredients to mimic what you are replacing, which, in turn, can come with their own functional, nutritional, and marketing challenges.

Bringing it back to meat alternatives, the current portfolio of options may play well in the burger and nugget space, but they are clearly a long way from being able to replicate your sirloin steak, Sunday roast, or gnawing on a lamp chop. (Perhaps a plant-based bone is in fact the 'holy grail'?) And on the iron law, it should come as no surprise, therefore, to see how meat-alternative companies are already being challenged not just on the lack of plants in these plant-based foods, but also the sheer number of ingredients it takes to replace meat (way more than five; some have over 20 which puts them into the 'ultra-processed' Twinkie territory). Even particular ingredients are proving problematic. For example, a quick Google search reveals numerous discussions on: Impossible's GRAS-designated, genetically-modified, plant-based ingredient theme; the ubiquity of coconut oil as an ingredient in many of these burgers; as well as their high salt levels and calorie count. As my colleague Cyrille Filott pointed out, Nutri-Score (the front-of-pack nutrition labelling scheme that originated in France and is being adopted by retailers in Europe) awarded only a C-grade to Beyond Meat (A is most healthy, E is unhealthy), flagging its calorie count and salt content, and suggesting overseas expansion is not necessarily going to be walk in the park for some of these products. This bring us to the perennial question around market potential.

3. A Recipe for Success

Back in the day when I walked the floors of ingredient trade shows like the IFT EXPO, I often encountered the outrageous claims of novel ingredient entrepreneurs, whose common ambition was to achieve "ten percent market share in ten years." Looking at the estimates being made on the prospects for meat alternatives suggests little has changed. We've already commented on Beyond Meat's ambition to follow in plant-based dairy's footsteps and acquire 13% of the market, and we cannot say for certain if meat alternatives would mirror the growth curve of plant-based milks (or organic food or craft beer for that matter). Certainly, in the case of plant-based dairy, they share some of the key drivers and popular perceptions around sustainability, animal welfare, and health & wellness. But there are other dissimilar drivers too, such as lactose- and milk protein-intolerances and the broader product suite, including the explosion in flavor options. Though who is to say chocolate (mole) flavored meat won't become a thing?

Drivers aside, an important objective of any comparative exercise is to come up with something plausible and (ideally) to deliver a large number to excite investments and possibly also, terrify incumbents. In reality, there are numerous case studies for companies to choose from to help justify their market estimates and valuations. Most product launches follow the familiar 'S' curve over time, where growth follows an 'S' shape as it passes through the stages of prototyping, market introduction, through to rapid growth, and ultimately maturity and decline. The billiondollar question is, given all the market drivers and consumer preferences, at what percentage of market share is your product's 'S' curve going to peak? Returning to the introduction of other new ingredients and what they might tell us about the market potential for meat alternatives, three observations come to mind.

i. Find your functional niche. First is the point we already made about providing superior functionality in certain markets. When introduced, HFCS was the food tech of its day, a beneficiary of advances in biotechnology, better enzymes, and fermentation that allowed starches to be cheaply converted into sweeteners that were a near perfect substitute for sugar in sodas. In the decade from the mid-70s to the mid-80s, HFCS's share of the beverage sweetener market went from less than 10% to over 90% as Coca-Cola and PepsiCo got on-board.

ii. Value is much more than just price. A contributing factor in many new sweetener launches was a clear price discount, in part to compensate for the inferiority of the product but also to encourage adoption. The swift seizure of the soda market by HFCS was, in part, a result of the enticing 25% price discount compared to sugar. At a time when food and beverage recipes were viewed as least cost formulations, it was too good to ignore.

Interestingly, this is not the strategy being pursued by meat- or dairy-alternative companies, who are pricing at a high-margin premium, recognizing that consumers will value some of the attributes of the products and brand (mission, environmental credentials, animal welfare, etc.) beyond the mimicry of meat's taste and appearance. They are also no doubt aware of the difficulties of competing in markets where the frying oil is the most expensive ingredient in a chicken nugget. Price is not the only consideration in the overall value proposition, and companies have found ways to elevate prices by differentiating through values. The smart thing both meat- and dairy-alternative companies have been able to do is help move the conversation beyond the binary bleat of "GMO bad, natural good" or "never more than five ingredients" to a more multidimensional Maslow-like 'hierarchy of needs', where attributes such as mission, sustainability, etc. form an integral part of the product's value and are factored into the traditional purchasing decision (taste, price, etc.) or outrank other drivers, such as freshness. For example, Impossible Burgers are sold frozen via foodservice, and many plant-based milks are aseptic, shelf-stable, and really don't have to sit in that refrigerator. It is unclear as to whether or not these drivers will sustain a price premium over time. At the end of the day, taste and price remain the top drivers, and the annual consumer surveys of the International Food Information Council confirm this. After all, one cannot taste sustainability.

iii. Serendipity. Putting down the success of a product to Lady Luck might sound like a bit of a cop-out, but there is some truth to being in the right place at the right time. Aspartame, the first ingredient in modern times to successfully brand itself, rode the wave of the launch of Diet Coke in the 1980s. Splenda saw its sales advance with the rise of the Atkins low-carb diet in 2000. Stevia shot to fame on the back of the push for natural ingredients over artificial. Similarly achieving success in the way they did was not in the original business plan, and required an opportunistic pivot. Intense sweeteners were originally targeted at diabetics; their use in weight management came much later. Oatly oat milk was aimed at the lactose-intolerant crowd before the Brooklyn baristas started to 'gram' about its foaming properties. And meat and dairy analogues were once the final destination for vegans, until flexitarian consumers started factoring ethical and environmental concerns into their shopping habits.

4. The Consumer and Complexity

We close with two final thoughts:

i. Keep close to the consumer. We know that rising stars and runaway successes always attract their fair share of naysayers and critics. As we have already seen, like other substitutes, critics are questioning the naturalness (more specifically, the healthfulness and safety of the ingredients) of meat alternatives. With this in mind, it is always worth remembering to stay as close and connected to the consumer as possible, in case the narrative changes and drifts too far away for you to influence. As soda sales started to slip at the start of the century, diet beverages were seen as the future of the market, until they came under greater scrutiny because of their artificial ingredients and sweetness profile that failed to deliver, and they ultimately fell victim to changing consumer perceptions about what is healthy and natural. Even when some of these negative perceptions are the result of misinformation or bad science, they leave a mark. Meat-alternative companies take note: consumers are fickle, and today's solution and good idea can quickly become tomorrow's problem and bad idea.

ii. Complexity over simplicity. Today's renewed search for alternatives to meat, milk, and sugar, for reasons of calorie reduction, health, and sustainability, has left me wondering if all this isn't just the latest example of the food industry seeking complex solutions over the much simpler one of just deciding to eat (and waste) less of the single ingredient we are trying to replace. Perhaps we don't need to look too far for 'holy grails', we have already been eating them for millennia?

Imprint

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