CBINSIGHTS

EMERGING TRENDS

Food & Beverage Trends

2019

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NExTT FRAMEWORK

Food & Beverage Trends in 2019

NExTT Trends

INDUSTRY ADOPTION (High → Low)

TRANSITORY Trends seeing adoption but where there is uncertainty about market opportunity. As Transitory trends become more broadly understood, they may reveal additional opportunities and markets.	**NECESSARY** Trends which are seeing wide-spread industry and customer implementation / adoption and where market and applications are understood. For these trends, incumbents should have a clear, articulated strategy and initiatives.
EXPERIMENTAL Conceptual or early-stage trends with few functional products and which have not seen widespread adoption. Experimental trends are already spurring early media interest and proof-of-concepts.	**THREATENING** Large addressable market forecasts and notable investment activity. The trend has been embraced by early adopters and may be on the precipice of gaining widespread industry or customer adoption.

Low — MARKET STRENGTH — High

The NExTT framework's 2 dimensions:

INDUSTRY ADOPTION (y-axis)
Signals include:

- momentum of startups in the space
- media attention
- customer adoption (partnerships, customer licensing deals)

MARKET STRENGTH (x-axis)
Signals include:

- market sizing forecasts
- quality and number of investors & capital
- investments in R&D
- earnings transcript commentary
- competitive intensity
- incumbent deal making

Necessary

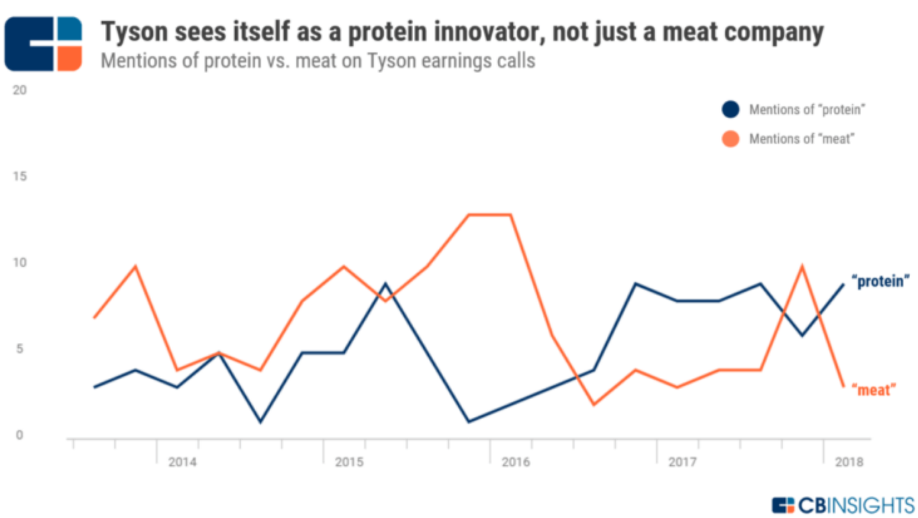
PLANT PROTEIN

Corporates are beginning to embrace plant protein, and 2019 will see the first plant protein company go public. Expect expansion of the trend to new products including vitamins, coffee, and milk.

Plant protein has gained momentum over the past several years and will be a necessary trend in 2019.

The CB Insights market sizing tool values the plant protein market at $11B, and companies have already begun to look beyond plant-based meat replacements to plant-based sushi, plant-based low-calorie sweeteners, and more.

Traditional meat companies, most notably Tyson, have largely chosen to promote plant protein rather than trying to compete against it. Tyson has invested in Beyond Meat twice and aims to reframe itself as a protein company rather than a meat company.



General Mills, through its venture fund 301 Inc., has been active in the plant protein space since 2015, when it backed Beyond Meat. In 2018, its investments included Urban Remedy, a vegan meal delivery service, and Farmhouse Culture, which makes vegetable-based probiotic snacks.

In 2018, PepsiCo acquired plant protein startup Health Warrior and fruit and vegetable snack maker Bare Foods; Nestle took a minority stake in Wildscape, a frozen meal startup that uses "big chunks of vegetables" (though it does include meat); and Impossible Foods, which makes plant-based burgers, launched partnerships with White Castle, FatBurger, and other meat-focused restaurant chains.

Many of these companies have already announced planned 2019 expansions:

- Beyond Meat, which uses pea protein to make beef and chicken substitutes, has tapped bankers to help it go public in 2019. This would be the first plant protein IPO — and the first IPO of a VC-backed food startup in the US.

- Impossible Foods, which has so far only distributed through restaurants, plans to expand into grocery stores. It's also targeting growth in Asia, after launching in Hong Kong in 2018.

- Food manufacturing companies will significantly ramp up production of pea protein. Earlier this year, Cargill invested in PURIS, North America's largest producer of pea protein, and it now plans to open a second US plant. Ingredient companies Archer Daniels Midland and Farbest will also open a new pea protein plants, while Roquette will expand atop its October 2018 acquisition of a pea protein processing unit.

As the trend continues to gather momentum, food and beverage companies in a range of categories will likely integrate plant protein into their products. We may see new launches of vegan vitamins, or bottled coffee drinks that use plant-based milks.

For more on the topic, check out our report on our meatless future.

PRIVATE LABELS

Broader struggles in the retail world are pushing retailers to invest more in their own private labels, which they hope will increase margins and strengthen shopper loyalty.

Retailers like Walmart, Target, and CVS are no longer just selling other brands' products. Now, they're investing more heavily in their own private labels, squeezing out the brands that stock their shelves.

Retailers and e-commerce marketplaces can use the data they've gathered from selling other brands' products over the years to design their own private labels. Their position can also help them monitor online and offline shopper behavior.

Amazon and other sites can track which shoppers are bargain-hunters, frequent browsers, vegan enthusiasts, and more, based on their current shopping behavior, then design products to target the segments they see as most profitable.

Retailers are rolling out their own private labels to increase margins and fight against e-commerce giants like Amazon. Notable 2018 moves include:

- Albertsons' O Organics private label hit $1B in sales. The company is rolling out 1,400 new private-label products, more than double its 2017 rate.
- Kroger's Simple Truth brand hit $2B in sales, and Kroger partnered with Alibaba to sell its private labels in China.
- Target has rolled out new private-label brands including Made by Design, a home furnishings brand, and Smartly, a low-priced home care brand.
- Walmart rolled out new private-label brands this year, including a wine brand. It also acquired D2C apparel brand Eloquii, following its past acquisitions of Bonobos, Moosejaw, and Modcloth.

Facing increased competition, retailers turn to private labels

Albertsons

Albertsons is on track to launch 1,400 new private label products in 2018, more than double its 2017 rate. Its O Organics brand hit $1B in Jan'18.

Kroger

Kroger's Simple Truth brand hit $2B in annual sales this year, and Kroger just partnered with Alibaba to sell its private labels in China.

TARGET

Target plans to expand its private label offerings and in Jun'2018 rolled out new home goods label Made By Design.

Walmart

Walmart aims to boost loyalty through private label growth; in Jun'2018 it launched wine private label Winemakers Selection.

E-commerce platforms are jumping on the private labels trend. Amazon now offers over 120 private-label brands. Smaller marketplaces like Boxed and Thrive Market have also rolled out private labels.

These e-commerce retailers are well-positioned to spot gaps in the market: online marketplaces can track the products that shoppers search for but don't find, analyze which categories have relatively less competition, and find prices that could be undercut. They can also better understand how people are using their products to optimize their marketing messages.

Private labels represent an increasingly necessary driver of revenue and shopper loyalty for retailers, but a growing threat to traditional CPG brands.

DIRECT-TO-CONSUMER DISTRIBUTION

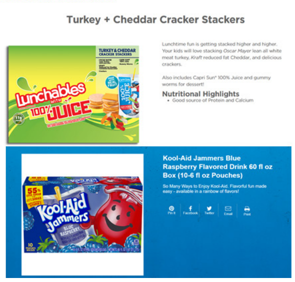
Food leaders have been slow to adopt direct-to-consumer distribution, but that's beginning to change.

Historically, CPG leaders like Coca-Cola, Kellogg's, and General Mills haven't operated their own points of sale. But as they face increased competition from private labels and D2C startups, that could start to change.

Brands have traditionally relied on retailers — Walmart, Kroger, and others — to sell their products. Amid the rise of e-commerce, they've generally relied on Amazon rather than selling their products themselves online.

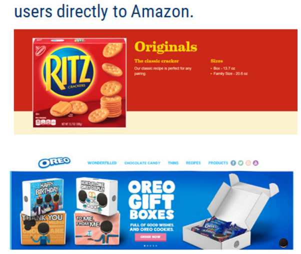
Food leaders maintain websites, but have outsourced e-commerce to Amazon

Kraft Heinz's brand sites list products but don't link to buying options; these products, including Kool-Aid and Lunchables, do sell on Amazon.



General Mills' brand sites highlight nutritional information, recipe ideas, and news, but don't sell products. Some have "Buy Now" links that show options on Amazon and other sites.

Mondelez's brand sites highlight products; some sites, like Ritz, don't sell products, while others, like Oreo, have an "Order Now" link that takes users directly to Amazon.



Even when food incumbents have launched new, “trendy” brands (such as Kellogg’s recently launched probiotic cereal, Hi! Happy Inside), brands’ websites typically haven’t sold their own products.

Meanwhile, the retailers on which CPG leaders have traditionally relied are investing heavily in private labels, becoming competitors rather than partners. And nearly all investor-backed food startups offer direct-to-consumer (D2C) purchasing options online.

By moving to direct-to-consumer, food companies could gain more control over the presentation of their products, deepen their relationships with shoppers, hedge against the growing private label threat, and collect more and better shopper data.

Selling D2C continues to pose challenges for CPG incumbents, and this will be an ongoing challenge in 2019. We expect food corporations to continue to acquire startups with D2C distribution, as well as to work on expanding their logistical infrastructure into other existing product lines. These companies could also invest in startups with D2C distribution and develop in-house D2C supply chains for new brands.

SUGAR REDUCTION TECHNOLOGIES

Food and beverage companies are taking advantage of new technologies to reduce sugar in their products, meeting consumer demand for healthier foods.

Companies in traditionally unhealthy categories are shifting their portfolios away from candy and toward healthier snacks and protein.

Nestle sold off its US candy business in January, partially due to competition from Hershey and Mars — but Hershey itself plans to focus more heavily on snacking, while Mars has focused investments on pet care.

But it's not just about changing the product lineup. Corporations like Nestle, Ferrero, Unilever, Mars, and Mondelez are also pledging to reduce the sugar in their products. Advances in biotechnology and new sweeteners gaining traction can help them do so.

In 2019, we see particular momentum in:

- **Stevia** — Extracted from a plant, stevia sweetener is more than 200x sweeter than sugar. Companies like Ingredion, Coca-Cola, and Tate & Lyle have been researching and rolling out new molecular formulas such as Reb M, Reb A, and Reb J.
- **Monk fruit** — Based on an Asian melon, monk fruit extract is over 150x sweeter than sugar. Startups like Rau Chocolate have begun to use it, and in February 2018 Unilever rolled out monk fruit-sweetened gelato.
- **Mushrooms** — Startup MycoTechnology, backed by Kellogg's venture fund, uses mushroom molecules to create bitter blockers. Blocking bitterness helps foods taste sweeter and can allow sugar reductions of more than 40%. MycoTechnology expanded into Europe in late 2018, opening a new market for mushroom-based sugar reduction technology.
- **Empty space** — Is the future of candy… less candy? Nestle worked for years on a new sugar structure that is literally hollow — it still tastes sweet to the tongue but has less caloric mass. It launched its first porous sugar product, called Milkybar Wowsomes, in March 2018, and there may be more to come.

ALTERNATIVE OFFLINE POINTS OF SALE

With consumers less likely to visit centralized shopping locations, brands need to go to the consumer and open points of sale in new places.

It's widely known that brick-and-mortar retail is struggling. Beyond moving online, brands are seeking new offline channels for getting products into shoppers' hands as conveniently as possible.

They're going to shoppers, rather than asking shoppers to go to them.

No matter how fast e-commerce delivery gets in 2019, the quickest way to get a snack or drink will still be to grab it from a kiosk you pass by during your daily routine.

In 2018, food producers launched dozens of partnerships with alternative offline distribution channels that should bear fruit in 2019, including partnerships in:

- **Travel** — Emirates Flight Catering launched a $40M joint venture with Crop One, an indoor farming startup, to build the world's largest vertical farm in Dubai. The farm will supply Emirates passengers with fresh produce.
- **Ride-hailing** — Startup Cargo, which installs mobile-operated kiosks to sell packaged goods in ride-hailing cars, expanded significantly throughout 2018. It officially partnered with Uber in the US and Grab in Singapore, and stocks products from Mondelez, Kellogg's, and other leading corporates.
- **Smart homes** — While companies from Amazon to Walmart have considered smart appliances that automatically reorder empty products, this technology isn't yet mainstream. As the technology improves, and as companies' desire for shopper data drives them to try to move deeper into the home, we expect to see more experimentation here in 2019.

And where are millennial shoppers with disposable income on a daily basis?

They're at the office.

It’s cliché by now to joke about the ping pong tables and nap pods filling Google’s halls (not to mention Amazon’s in-house dog park), but smaller offices are also increasingly stocking their fridges with healthy snacks, premium coffees, and other benefits.

These perks help employers attract workers. And now, real estate management companies like WeWork are using perks to attract employers themselves.

Recently, WeWork even launched its own retail channel, called WeMRKT, that sells products from 10 CPG startups that work out of WeWork offices.

A new crop of startups is also helping companies deliver CPG products to offices, helping new brands get their foot in the door and big companies test out new products and flavors in a controlled environment.

Startups create marketplaces in offices

Experimental

POP-UP RETAIL

Pop-up retail continues to gain steam as a marketing tactic, customer engagement driver, and data collection strategy for brands.

Selling directly to consumers doesn't only take place online. Food leaders including Kellogg's, Coca-Cola, Unilever, and Nestle have all begun trying to connect with shoppers directly in the brick-and-mortar world.

Some are acquiring retail chains to establish points of sale. Nestle acquired Blue Bottle in 2017, and Coca-Cola acquired Costa Coffee in 2018.

Others are experimenting with pop-up stores. Pop-ups don't necessarily emphasize immediate product sales, but they tend to promote experiences. Companies believe these temporary, experiential pop-ups create marketing value, drive social media sharing, and encourage brand loyalty.

Cheetos, owned by PepsiCo, has opened several pop-up restaurants with celebrity chef-designed menus that use Cheetos in every dish. Seatings at the limited-time restaurants have booked up within hours of opening.

Direct-to-consumer CPG startup Brandless has opened pop-up stores in LA and NYC, offering product showcases, tastings, a fair-trade coffee bar, and more, while Kellogg's opened an Instagram-friendly cereal cafe in NYC. Pure Leaf, a tea brand created in a partnership between PepsiCo and Unilever, also opened a pop-up cafe in NYC.

Direct-to-consumer beverage startup Dirty Lemon opened a cash-free pop-up in New York City. Payment was based on the honor system, where visitors were given a number to text to pay for the items they took via mobile. The startup has discussed plans to re-allocate its digital marketing budget toward brick-and-mortar pop-ups.

As companies face growing pressure to sell directly to consumers, we'll likely see more experimentation with pop-ups in 2019.

However, since these initiatives often come out of companies' marketing budgets, we may see quick pull-backs if companies' financial conditions change.

VOICE COMMERCE

Amazon continues to promote voice commerce, but shoppers have yet to bite.

Nearly a quarter of Americans own smart speakers, according to Nielsen, but very few of those Americans are using their smart speakers to shop.

In mid-2018, a report from The Information found that only 2% of Amazon Alexa users (roughly 1M people) have shopped for products in 2018 using the voice interface. Of those, only 10% (10,000 people) had positive enough experiences that they shopped on Alexa more than once.

Despite challenges, voice commerce is likely to become mainstream in CPG before it reaches apparel or other sectors, as people don't feel as much of a need to see basic packaged products, especially those they've previously ordered, before buying them.

Amazon, the smart speaker leader in the US, aims to use CPG as a stepping stone for spreading voice commerce. During the 2018 holiday season, it offered CPG leaders special incentives if they designed ads that encouraged viewers to shop by voice with Alexa.

Amazon is motivated to spread voice shopping, in order to collect more shopper data and own a point-of-sale inside customers' homes. Ultimately, it could use voice to promote its own private-label products.

A recent Amazon patent describes how Alexa could sense whether shoppers are sick based on their voices, and proactively suggest cold medicine or chicken soup.

Amazon considers new ways to gather data, encourage shopping via smart speaker

Amazon views its Echo speakers and other Alexa-enabled devices as data-collection outposts inside shoppers' homes. A recent patent, granted in October, shows one way Alexa could turn personal data into private label product sales: by sensing a user's mood or whether the user might be sick, and proactively suggesting products.

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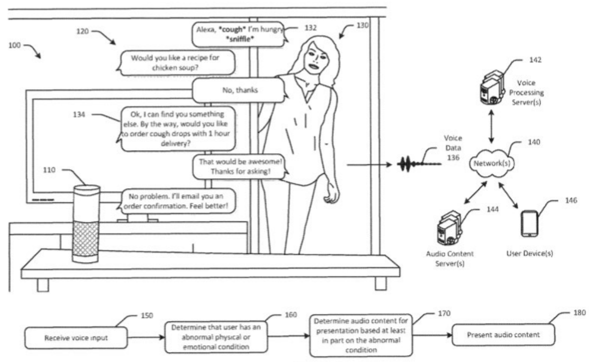
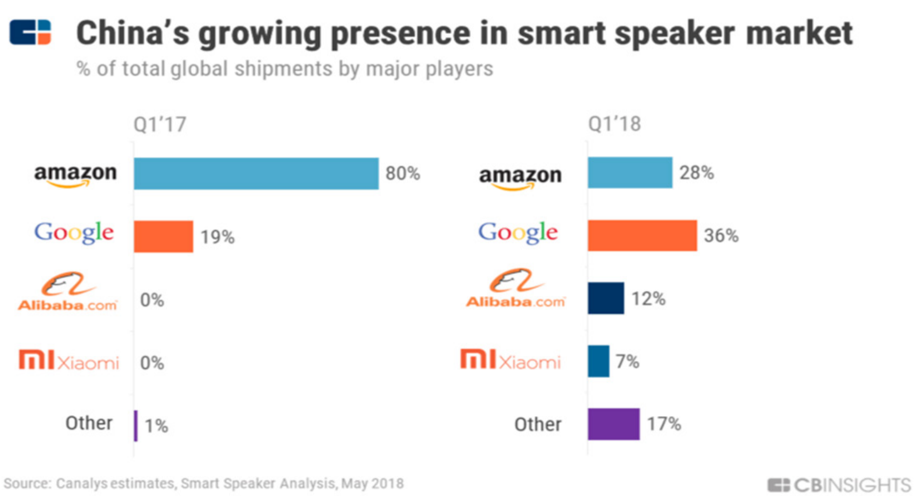


FIG. 1

Food leaders should, perhaps, be wary of using their own advertisements to promote Amazon's voice commerce system.

However, they should also prepare for a world in which voice commerce is more mainstream.

In China, the smart speaker ecosystem has developed more quickly than in the US, and Chinese conglomerate Alibaba is gaining global market share. Since July 2017, Alibaba has sold more than 1M of its Tmall Genie smart speakers, a shopping-focused speaker comparable to the Echo. The company now plans to roll the speaker out to 100K Marriott hotel rooms.



CANNABIS

As legalized cannabis spreads in North America, beer companies are leading the way in investing in the growing trend.

The food industry has seen cannabis edibles, using both THC and the non-psychoactive CBD, take off over the last decade.

Consumers in California purchased $180M worth of cannabis-infused food and drinks last year, which amounted to 10% of the state's total marijuana sales. That percentage rose to 18% in February 2018, according to a Green Market report.

And it's not just California that's seeing a growing edibles market. Sales of pot-infused treats increased 121% in Washington state, where recreational marijuana is legal, in 2016. And since Colorado first allowed recreational marijuana use, sales have tripled from $17M in Q1'14 to $53M in Q3'16.

Dixie Elixirs was one of the first companies to enter the market. The Colorado-based company sells marijuana-infused products such as truffles, chocolate bars, mints, juices, and many more.

Now, other companies are popping up as well, including Mirth Provisions (cannabis-infused edibles and drinks), Auntie Dolores (cannabis oil snacks), Defonce Chocolatier (a high-end chocolate company), and Cheeba Chews (chocolate taffy), to name a few. Many of these emphasize wellness and premium experiences in their branding.

Meanwhile, a number of leading beer and liquor producers have begun to hedge against declines in alcohol consumption by investing in cannabis:

- Constellation Brands, the company behind Corona and other brands, invested roughly $4B into cannabis producer Canopy Growth.
- Beer brand Lagunitas, owned by Heineken, launched THC- and CBD-infused beverages.
- Molson Coors partnered with cannabis producer The Hydropothecary Corporation to develop a standalone business focused on non-alcoholic, cannabis-infused beverages.

However, since cannabis is not currently legal on a federal level, it's still risky for large, global companies to invest.

BLOCKCHAIN-BASED SUPPLY CHAINS

Each new food safety scare pushes food companies toward blockchain-based supply chains, which promise greater transparency.

Walmart recently announced that it's forcing all of its suppliers of leafy greens to get on the blockchain by September 2019.

The announcement represents a major expansion of the blockchain supply chain programs that Walmart has been piloting since late 2017. Along with Unilever, Tyson, Nestle, and other food leaders, Walmart belongs to The Food Trust, a blockchain partnership with IBM.

Food scares — like the E. coli outbreak spread through romaine lettuce in late 2018 — have created more urgency around supply chain transparency. It took the government several days to trace the source of the recent outbreak, while blockchain can reduce that time to mere seconds. Following the outbreak, the FDA hired Walmart's vice president of food safety to help them advocate for blockchain-based solutions.

Other initiatives that took hold in 2018 include Alibaba's launch of a blockchain-based food traceability platform to improve food safety (similar to IBM's platform in the US). Alibaba worked with PwC to launch the program, and its first partners include New Zealand dairy giant Fonterra and vitamin maker Blackmores. These companies will now sell blockchain-verified products on Tmall in China.

Beer giant Anheuser Busch InBev partnered with Accenture, shipping company APL, and logistics company Kuehne + Nagel to experiment with tracking beer shipments via blockchain, while the FDA discussed the possibility of implementing blockchain after the romaine lettuce recall.

Blockchain retail and consumer initiatives grow in number

Select blockchain initiatives (2017 – 2018)

Date	Summary	Select Retail/Consumer Players	Select Other Players
Apr'18	Verified jewelry sourcing	Helzberg Diamonds	IBM
Apr'18	Food and safety tracking	Alibaba.com, Fonterra, Blackmores	New Zealand Post, Australia Post
Mar'18	Tracking beer shipments	AB InBev	Accenture, Kuehne+Nagel
Aug'17	Food safety and tracking	Walmart, Nestlé, Unilever	IBM

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Backed by industry leaders, we expect blockchain pilot programs to expand in the food industry in 2019.

But blockchain isn't a cure-all for supply chain safety issues. The decentralized database offers a more efficient way to keep track of products than other current methods, but people at each stage of the supply chain still have to check products and provide safety information honestly.

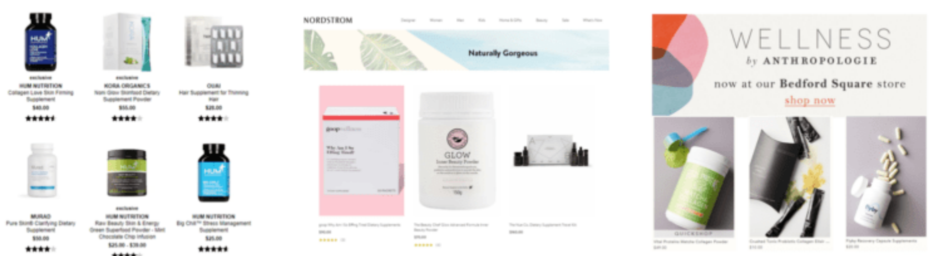
BEAUTY-BOOSTING FOODS

Foods and supplements that promise beauty benefits are on the rise, but the trend may be mostly based on marketing.

Beauty supplement brands are popping up left and right, producing everything from marine collagen to “brain dust.” Major retailers from Sephora to Nordstrom to Anthropologie are betting on this trend, stocking their shelves with products that promise “beauty from within.”

BEAUTY & APPAREL RETAILERS + DEPARTMENT STORES

Retailers bet on inner beauty supplements



Snapshot of select beauty supplements from Sephora, Nordstrom, and Anthropologie online stores

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A range of food industry players have backed the trend. For example, food and beverage investment firm CAVU Venture Partners funded collagen supplement producer Vital Proteins in November 2017, citing opportunity for growth in the collagen nutrition space.

Other food brands are adding collagen to products and emphasizing skin health benefits, including butter coffee brand Bulletproof, bone broth startup Kettle & Fire, and supplement startup Hum Nutrition, which works with Urban Outfitters. Plant-based meal delivery company Sakara Life sells collagen supplements in an online “clean boutique.”

We see numerous factors driving food brands and retailers into the ingestible beauty space.

Beauty is booming, especially skin care sales. Beauty brands are exploding across the globe right now, and skin care products are particularly popular. According to NPD Group, skin care contributed to 45% of the beauty industry’s total gains in 2017.

Blurring lines between food and beauty. With an increase in beauty products featuring natural and organic ingredients, interest in plant-based products is sweeping across the food and beauty spaces.

Increased emphasis on gut health and the microbiome. Ingredients like prebiotics and probiotics, which balance and promote healthy gut bacteria, have been trending across beauty and food.

Millennials prioritize health and wellness. Millennials are spending more on products and experiences promoting well-being and health. Beauty ingestibles support this trend.

Savvy marketing. Many of the vitamins and supplements created by beauty-from-within brands aren’t novel concepts. Marketing beauty-enhancing wellness supplements combined with appealing packaging is helping to fuel consumer interest in beauty-from-within products.

IN-STORE ROBOTS

In 2019, expect retailers to ramp up their investment in inventory management robots, rather than robots that interact with consumers.

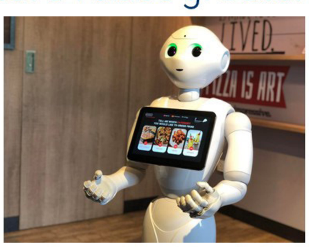
Have robots progressed to the point where retailers can trust them to roam store floors alongside shoppers?

Some malls and stores have tested robot greeters, which can welcome customers and answer basic questions. They can also feed shopper data back to the retailers.

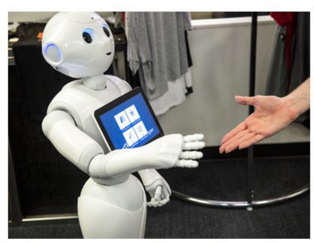
These robots add a novelty factor to stores, which can drive short-term traffic. Most notably, SoftBank's Pepper robot has greeted visitors in tens of thousands of stores, hotels, and other businesses since 2015. In 2017, SoftBank said Pepper was driving double-digit percentage increases in foot traffic.

But we can already see the greeter robot novelty factor starting to fade. In fact, by late 2018, only 15% of companies with SoftBank's Pepper robots planned to renew their contracts, according to Nikkei.

SoftBank's Pepper shows fading impact of in-store robot greeters



Pepper, a humanoid robot launched by SoftBank in 2015, was installed in 10K+ stores, hotels, restaurants, airports, and other venues worldwide to greet shoppers and answer questions. In the short term, Pepper attracted significant increases in foot traffic.



While Pepper is appealing, it doesn't yet solve real problems for shoppers. According to Nikkei, by 2018, only 15% of companies using Pepper planned to renew their contracts with SoftBank. In 2019, SoftBank plans to roll out an autonomous floor-cleaning robot which could prove more useful. [69]

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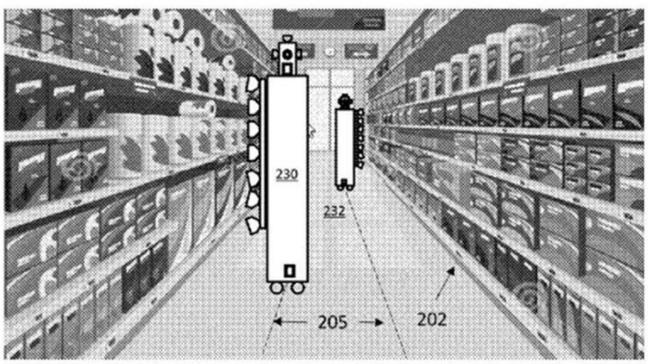
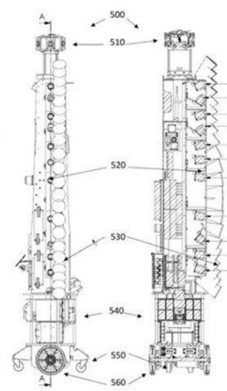
The real value for retailers likely comes from inventory management robots.

For example, Walmart, in partnership with startup Bossa Nova Robotics, has been testing shelf-scanning robots in 50+ stores. The robots will find out-of-stock items, incorrect prices, and missing labels, using computer vision to navigate the shop floor without bumping into people or carts.

Some of Bossa Nova's US patents for shelf-scanning robots are shown below.





If successful, these inventory management robots can help retailers reduce out-of-stocks to increase sales, reduce labor costs, and collect real-time data about the ways shoppers are interacting with the products on the shelves.

Over the long term, automation has significant potential to make retail operations more efficient and to boost margins for retailers.

Some restaurants have recently begun to pilot robot waitstaff as well. Stella Artois (owned by AB InBev) piloted a robot bartender, and Panasonic partnered with one of China's leading restaurant chains, Haidilao, to develop robot waiters.

However, robots that interact with human customers are, in some ways, still a solution searching for a problem.

IOT-CONNECTED PACKAGING

Though still in its early stages, IoT packaging can help CPG brands gather consumer data and automatically send refills when products run out.

Packages don't have to be passive; rather, they can be a valuable tool to help brands gather data on consumers.

Social media can show companies who's talking about their products. But smart packages can let companies understand who's actually using their products — when, how frequently, and more.

And it's not necessarily a one-way street; smart packages can also benefit shoppers by reminding them to take their daily medication, automatically ordering refills, alerting consumers about spoilage, and more.

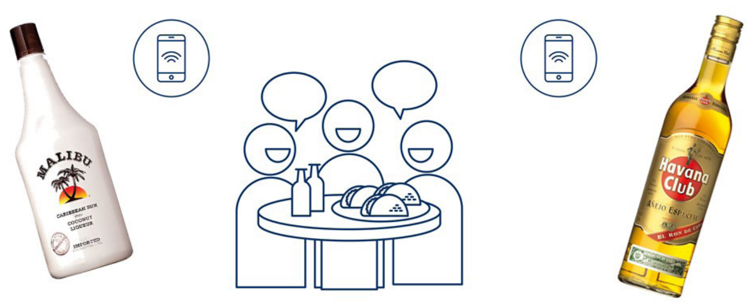
Alcohol giant Pernod Ricard recently endorsed the technology when it piloted using connected bottles to track how people were drinking its products.

SMARTER COCKTAILS

Pernod Ricard pilots IoT-connected bottles

"Connected [glassware] isn't a gimmick…the bottles give us insights into how people drink our brands at home."

- Pierre-Yves Calloc'h, Global Digital Acceleration Director, Pernod Ricard



Leading global packaging providers including Avery Dennison and WestRock have begun to offer connected packaging solutions, saying IoT packages deepen brands' relationships with consumers while collecting data. FedEx was also just granted a patent for a wireless network and connected tags that could track package location.

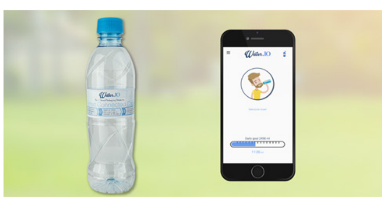
Due to the high investment costs required to produce packaging at scale, the leaders in IoT packaging will likely be incumbents, at least in the near term.

However, the strategy is also attracting startups. Water.IO, for example, provides Bayer and others with IoT caps that promise data collection for brands and automatic replenishment for shoppers.

SMART PACKAGING

Auto-replenishment via smart packaging?

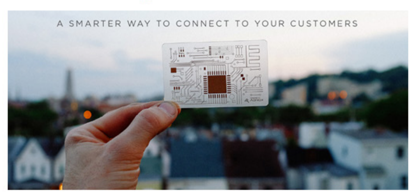
Water.IO



Water.IO develops smart bottle caps that help customers track how much they consume for various goods such as water and detergent. The smart caps can automate replenishment orders.

Select Investor(s): Plug and Play Accelerator

ADRICH



Adrich creates a connected flexible label and adjoining software that tracks post-purchase usage of products. The labels also plan to enable auto-replenishment of goods.

Select Investor(s): Innovation Works

In some ways, IoT packaging could make things more convenient for shoppers: people would no longer need to visit a store, or even a website, in order to get refills on frequently-used products.

However, this could also raise privacy concerns, and shoppers may be reluctant to give brands real-time data on their consumption.

Threatening

LAB-GROWN PROTEIN

As meat incumbents ramp up investment in lab-grown proteins, expect the field to grow in 2019 — and for the first lab-grown dairy to hit the shelves.

Since the first lab-grown hamburger was served to scientists in 2013 (at the cost of $330K), the field has progressed significantly.

Startups and researchers have lowered the cost of lab-grown beef, as well as unveiled samples of lab-grown fish (from Finless Foods) and chicken & duck (from Memphis Meats). Leading meat producers Tyson and Cargill have even backed startups in the sector.

These companies have lowered the costs of lab-grown meat, but have not yet been able to produce it at commercial scale. The process still relies on animal inputs that are expensive at scale and could unsettle shoppers. For example, fetal blood is needed to provide the infrastructure on which to grow the new meat cells.

To solve the problem, researchers are working on ways to use plant material to recreate that cellular scaffolding and create a truly animal-free method for growing meat in the lab. Once they succeed, commercial growth will likely accelerate.

Besides the scientific challenges, lab-grown meat faces regulatory hurdles. For example, what should it be called? How will it be inspected? Who will finalize the regulations?

The USDA and FDA have both laid claim to the segment, and ownership has not yet been clearly determined. Meanwhile, the US Cattlemen's Association petitioned the US government in early 2018 to restrict the use of the word "meat" to products that come from animals.

While we may not see lab-grown meat on our plates in 2019, we'll likely see the field progress toward commercial launches over the following 1 – 3 years.

Future Meat Technologies, an Israeli startup recently backed by Tyson, aims to produce products commercially by 2020, while Memphis Meats is aiming for 2021. (Just, the clean protein startup formerly known as Hampton Creek, pledged to make the first sale of lab-grown meat in late 2018, but hasn't yet succeeded).

Leading animal protein companies invest in lab-grown competitors

Tyson, a leading global producer of beef, chicken, and pork, has invested in lab-grown meat startups Memphis Meats and Future Meat Technologies.

Meat and agriculture giant Cargill, the US's largest private company, invested in lab-grown meat startup Memphis Meats.

Archer Daniels Midland, major food processing corporation, invested in animal-free collagen startup Geltor and formed a joint venture with startup Perfect Day to commercialize lab-grown dairy.

PHW, a major global poultry company based in Germany, invested in Israeli lab-grown chicken startup SuperMeat.

While much of the buzz goes to lab-grown meat, average consumers may encounter other lab-grown proteins before they eat a lab-grown steak or burger. Key proteins include:

- **Collagen** — Startup Geltor became the world's first company to ship a lab-grown protein ingredient in 2017, when it began supplying lab-grown collagen to cosmetics manufacturers. Geltor uses bioengineering and fermentation to create the animal-free collagen, which is already used in certain beauty products and could also be used in vegan foods. In October 2018, Geltor raised an $18.2M Series A with participation from GELITA, a global collagen manufacturer, as well as the venture arm of Archer Daniels Midland (ADM).

- **Dairy** — ADM also recently established a joint venture with startup Perfect Day to produce lab-grown dairy at commercial scale. Like Geltor, Perfect Day uses a fermentation process to create animal-free whey protein. ADM aims to bring Perfect Day's system to commercial scale and begin selling animal-free proteins to food businesses in 2019.

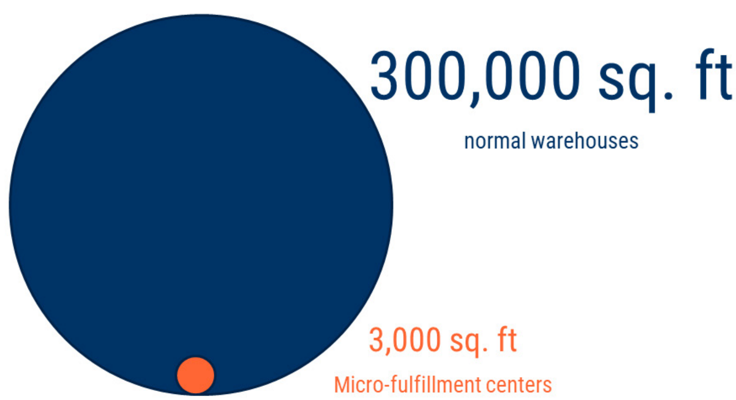
- **Fish** — Finless Foods, a startup designing lab-grown bluefin tuna, believes it can launch its first commercial product by late 2019 or early 2020. The startup's first prototype cost roughly $19K per pound — but since bluefin tuna normally costs more than chicken or beef, Finless Foods believes its product can reach price parity with natural bluefin tuna more quickly than a lab-grown chicken or beef company. Since bluefin tuna are endangered in the wild, lab-grown alternatives will also become more attractive.

AUTOMATED MICRO-FULFILLMENT CENTERS

Grocery chains announced their first partnerships with automated micro-fulfillment startups in 2018, setting the stage for further development in 2019.

In fall 2018, grocery retailer Albertsons partnered with warehousing robotics startup Takeoff Technologies to pilot a small urban fulfillment center. It was the first partnership of its kind with a nationwide grocer.

Takeoff Technologies is betting on the rise of “micro-fulfillment.” The model uses small, robot-powered warehouses to fulfill online orders.



Today, grocers tend to fulfill online orders in ways that could be improved upon with micro-fulfillment centers:

Large, centralized distribution centers, often in suburban or rural areas. In contrast, micro-fulfillment centers are located closer to shoppers, so they can support faster deliveries. They’re also smaller, integrated with robots, and can hold localized inventory optimized to the specific area, so they can pick and pack orders more quickly than can humans in centralized fulfillment centers.

Using human workers, such as from Instacart, to pick and pack orders in stores and deliver them to homes. These in-store pickers, however, can create a worse in-store experience for other customers. They're also not as fast as robots grabbing products from compact micro-fulfillment centers.

Albertsons isn't alone in chasing the trend. Ahold Delhaize and Sedano's also partnered with Takeoff Technologies in late 2018, and Israeli drugstore chain Super-Pharm and supermarket chain Rami Levy partnered with Commonsense Robotics, another robotic micro-fulfillment startup. Commonsense is also reportedly working with US grocery retailers to open 5 micro-fulfillment installations in the US in 2019.

Tiny urban warehouses on the rise

Micro-fulfillment startups have begun to partner with retailers to improve last-mile delivery efficiency.

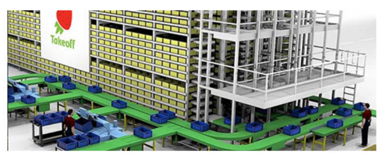
COMMONSENSE ROBOTICS

Commonsense Robotics uses compact robots as a way to fulfill online grocery orders in micro-fulfillment centers, closer to urban areas.

Total Funding: $26M

Select Investor: Innovation Endeavors

Takeoff



Takeoff Technologies creates tech-infused micro-fulfillment centers that can partner with retailers for online grocery pick-up in under one hour. Takeoff partnered with Sedano's and Albertsons in Fall 2018.

Total Funding: $51M

Select Investor: L Catterton

CBINSIGHTS

Kroger, which partnered with leading UK online grocer Ocado in May 2018, aims to use Ocado's technology to develop automated warehouses. Due to Kroger's prominent position in the grocery world (it's the second biggest US grocer after Walmart), the decisions it makes regarding its relationship with Ocado could have an outsized impact on the micro-fulfillment space

E-COMMERCE OPTIMIZED PACKAGING

As sales move online, companies have begun to invest in new packaging designs that making shipping more efficient.

Traditionally, CPG companies used packaging to stand out on store shelves. With limited shelf real estate, packages have to draw shoppers' eyes while crowding out competitors.

In some ways, packaging is less important for attracting new buyers online. But shoppers still want a good packaging experience with products ordered online — for themselves and for any social media photos they might post. They want online purchases of fresh food to arrive unspoiled and safe, and they also want less waste from boxes, wrappers, or styrofoam.

Brands will have to think about how to take advantage of these new opportunities and navigate these new constraints.

Many companies are changing the sizes of product containers to ship goods more efficiently.

Retailers also aim to help — Amazon operates a "customer packaging experience" team and has promoted easy-to-open, recyclable packaging since 2008. For companies wary of relying too heavily on Amazon, startups like Lumi ($9M raised) offer customizable, lightweight packaging for D2C brands.

At the same time, companies should consider taking packaging out of their e-commerce websites.

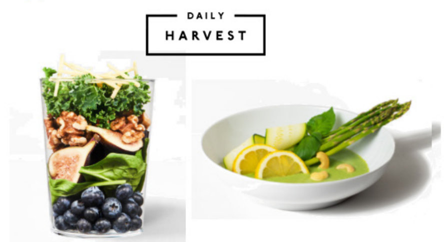
Many food companies continue to display their products on e-commerce sites in the same way they did in brick-and-mortar stores: inside packages. But brands can make their products more appealing by showing them unwrapped, or by using photos to show shoppers a products' natural ingredients or other unique features.

Startups like Daily Harvest and incumbents like Lean Cuisine have begun to experiment with new ways to highlight their products online. As food sales continue to shift online, food brands should prepare to get more creative about how they present products in 2019.

Transparency: it's time to take packaging out of online product listings

So far, CPG companies have tended to show products online as they would in stores — by putting up photos of packages.

Online, brands have more freedom to highlight the products within the packages, using photos to make their products more appealing to new shoppers.

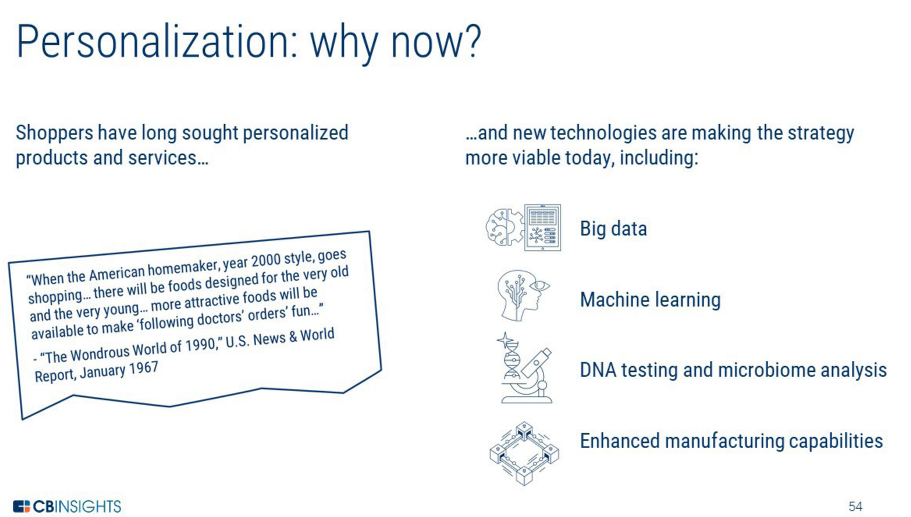


PERSONALIZED FOOD PRODUCTS

Personalization has been a much-discussed topic for years. But now, we're seeing the emergence of technology to actually support it.

True personalization is a tall order. To offer effective, personalized food products, companies must first understand shoppers' needs and the products that address those problems. They must also produce these personalized products at scale in a profitable manner, despite higher manufacturing costs (especially tricky in the lower-margin food space).

Today, new tools like online surveys, big data, at-home DNA testing, and machine vision can help companies better understand shopper needs. Machine learning can help select the products best suited to each shopper, while 3D printing and automated factories can support production.



To avoid having to invest in all this new technology, many food companies are trying to make their products feel more personalized without actually personalizing them. They're branding products based on specific lifestyles, or offering online quizzes that direct users toward specific products.

One of the early players in truly personalized foods — Habit, a DNA-based meal delivery service backed by Campbell's — has struggled.

However, Nestle recently grabbed headlines by launching a DNA-based personalized meal service in Japan. Between Nestle's initiative and the emergence of new, early-stage personalized food startups, we'll likely see more activity here in 2019.

Transitory

ENVIRONMENTAL SUSTAINABILITY

Initiatives to support environmental sustainability are catching on, but industry leaders need to figure out ways for these initiatives to help their bottom lines.

In August 2018, beer giant AB InBev launched the 100 Accelerator, a $1M startup accelerator program focused on sustainability. The announcement, following AB InBev's layout of its 2025 Sustainability Goals earlier in the year, highlights the increased attention food giants are paying to environmental impact.

Here are some sustainability strategies players in the food world are exploring.

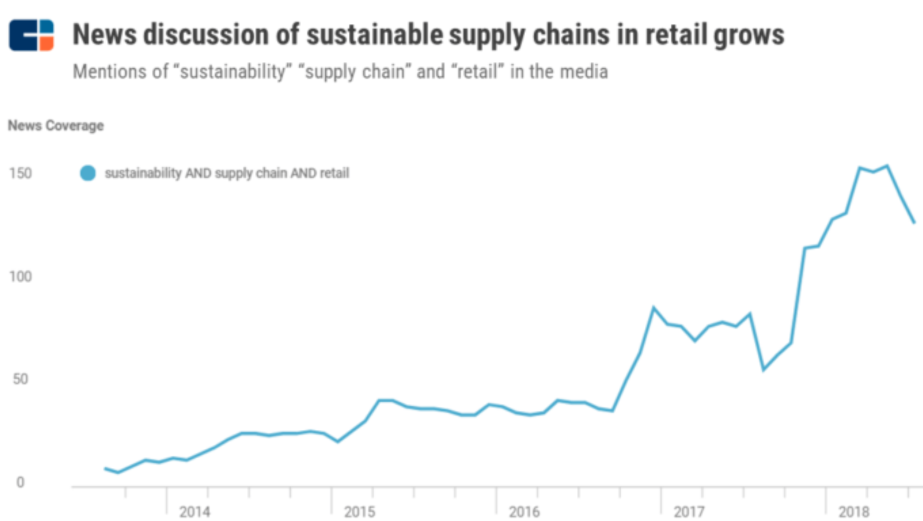
Companies are turning food waste into "upcycled" products. This gives companies the chance to create engaging origin stories for their products, attract environmentally-conscious shoppers, and potentially lower their production costs.

Condiment brand Sir Kensington's, which was acquired by Unilever in 2017, was somewhat of an early leader here: it offers egg-free mayonnaise made with aquafaba, or waste from cooking chickpeas.

In 2018, Tyson launched Yappah, a line of protein crisps made with upcycled ingredients, and AB InBev helped launch Canvas, a startup using upcycled grain to make protein shakes. We've also seen continued growth from Barnana, a startup selling snacks made with upcycled bananas that's now selling nationwide.

Protective coatings are reducing food spoilage. Costco recently partnered with Apeel, a biotech startup that offers an organic coating to extend the shelf life of produce. So far, Apeel focuses on avocados and citrus fruit, with the goal of reducing waste within grocery stores and in shoppers' kitchens. Apeel's pilot program with grocery chain Harps brought a 10% sales lift in avocados, and we expect Apeel's technology, and food waste reduction solutions overall, to spread throughout 2019.

Retailers are creating sustainable supply chains. News discussion of sustainable retail supply chains has grown considerably (see chart below). We've seen a range of initiatives: Walmart, for example, recently announced its plans to eliminate all waste to landfills for its operations in the US, Canada, Japan, and the UK by 2025, while waste reduction startup Spoiler Alert has received investment from Maersk and Campbell Soup.



WELLNESS-FOCUSED BRANDING

Food brands can take advantage of the wellness trend by emphasizing transparency, natural ingredients, and the mental and physical benefits of their products.

Modern-day "wellness" refers to holistic healthy living characterized by physical, mental, social, and spiritual well-being — and the buzzy trend is gaining traction across multiple industries.

Several factors have driven growth in wellness.

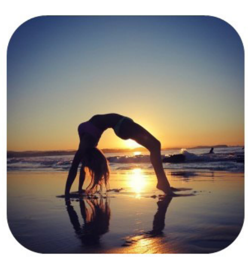
Healthy lifestyles and intensive fitness routines became the new status symbols following the 2008 recession.

People are also trying to take more control over their own health. US healthcare costs are high, and many people doubt the efficacy of the system or feel that the healthcare system encourages an over-reliance on pharmaceuticals.

And through social media, brands and influencers can also turn "wellness" into aspirational lifestyles.

Wellness: why now?

Post-recession, healthy lifestyles and fitness routines became the new luxury status symbols



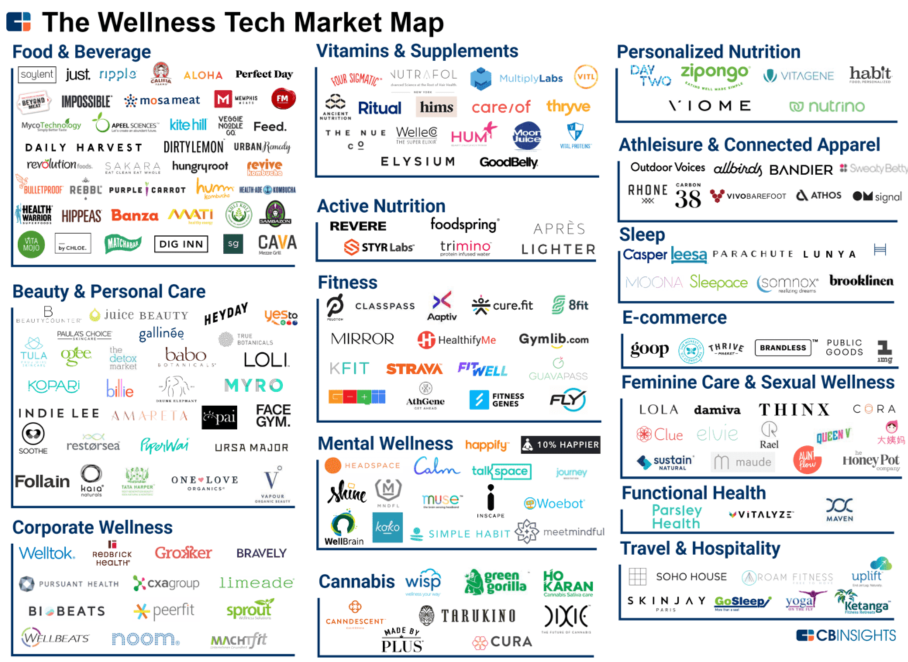
Social media creates "always on" pressure for users and turns wellness into aspirational lifestyle

*"In 1966, more than three-fourths of Americans had great confidence in medical leaders; today, **only 34 percent** do."*

- New York Times, Jan. 23, 2018

People are seeking alterative strategies for controlling their own health

Many of the other trends in this report relate to wellness, including plant protein, sugar reduction, probiotics, sustainability, and more. Our Wellness Tech Market Map lays out the trends and sectors in the overall wellness category.



To embrace the wellness trend, companies can do everything from changing their products' ingredients (including following other trends on this list, like reducing sugar, using plant protein, or removing gluten) to emphasizing mental health benefits.

For example, Kellogg's just launched a new wellness-focused cereal brand, called Hi! Happy Inside. The cereal includes prebiotics, probiotics, non-GMO fruit, and fiber. On its website, Kellogg says the brand came out of "two years researching the microbiome," a strong focus of many wellness companies.

Other companies are moving into new, healthier product lines through acquisitions — like PepsiCo's acquisitions of Health Warrior and SodaStream in 2018 — or through equity investments, such as General Mills' plant protein-focused 301 Inc. fund.

We also see retailers hopping on the wellness trend, opening new distribution channels for wellness-focused food brands. Most notably, Urban Outfitters has rolled out wellness centers in its Anthropologie and Urban Outfitters stores, selling products from Hum Nutrition and other serum and supplement brands.

For more about the growing wellness trend, check out our report on wellness trends to watch in 2019 here, and 10 industries disrupted by wellness here.

GLUTEN-FREE

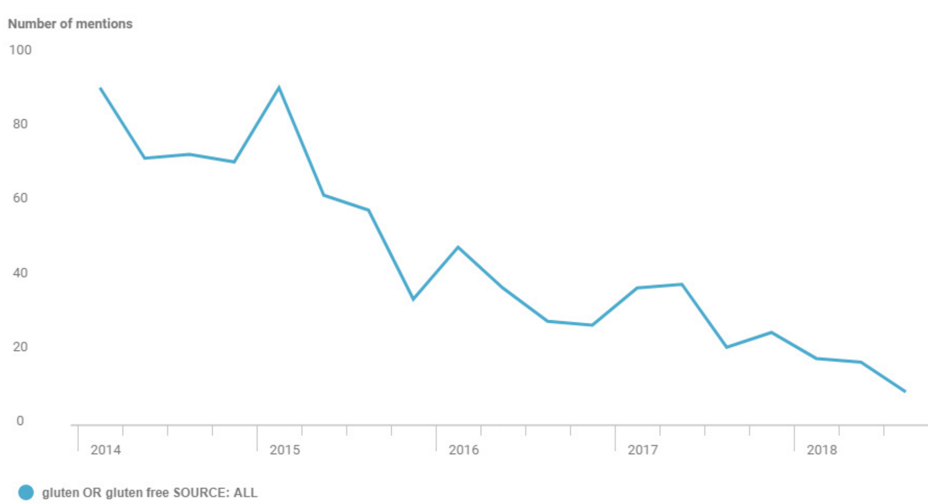
Gluten-free foods have become increasingly popular over the past several years, but the trend is no longer a needle-mover for big companies.

Consumer focus on gluten-free foods has grown over the past decade, and at least 20% of US consumers say they try to avoid or reduce how much gluten they eat.

Big food and beverage companies continue to release gluten-free versions of everything from beer to brownies.

But, these companies are no longer touting their gluten-free initiatives on earnings calls, as General Mills, Hain Celestial, McCormick, and other players frequently did in 2014 – 2015.

Mentions in Earnings Calls



(We included the phrases “gluten” and “gluten-free” in our search, since gluten is most commonly discussed in the context of gluten-free foods.)

General Mills, for example, brought up gluten-free efforts 22 times in Q3’15, when it launched a major marketing effort around gluten-free cheerios and discussed new gluten-free formulations for Lucky Charms, Nesquik, and Chex. But the term only came up twice on its most recent earnings call.

Why the drop-off?

New gluten-free product releases helped drive publicity a few years ago; but, as consumer resistance to gluten has grown, companies may have realized that in 2018 gluten-free offerings look more like table stakes than like major marketing wins.

Furthermore, the gluten-free market may not be as large as many food executives initially hoped.

According to the CB Insights database, the gluten-free market may hit $5B globally by 2021.

Markets	Analyst Consensus
— Gluten-Free Foods	$4.27B
— **Global** (7 est.)	**$4.27B**
Gluten-Free Foods - Global	
Gluten-Free Foods Analyst: Transparency Market Research News source: Prepared Foods	$5.00B by 2021
Gluten-Free Foods News source: GlobeNewswire - Basic Materials	$4.90B by 2021
Gluten-Free Foods Analyst: Transparency Market Research News source: Business Wire - Technology News	$4.89B by 2021
Gluten-Free Foods Analyst: Packaged Facts News source: NY Post	$2.30B by 2019

Even if Nestle, for example, captured this entire market, the gluten-free sector would still represent under 6% of the company's total sales.

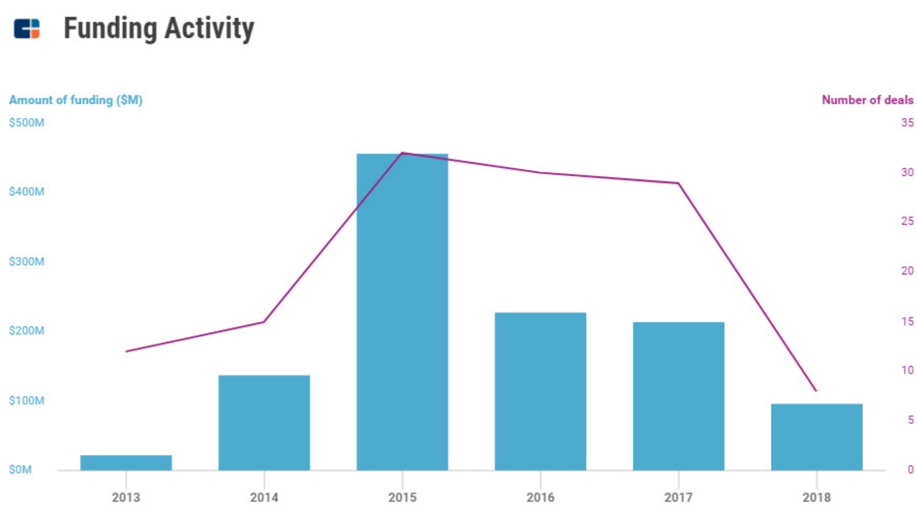
Gluten-free has become a subset of the overall global wellness trend that's impacting food along with hospitality, real estate, office management, and other industries. The opportunities in the wellness space are much broader than any single ingredient.

For major companies, it's important to have at least a few gluten-free options within the main product categories. However, these product launches no longer earn executives bragging rights in their boardrooms.

MEAL KITS

Many meal kit startups have struggled or gone out of business, but meal kits are finding new life as marketing tools for grocery chains.

The meal kit funding frenzy of 2017 has faded.

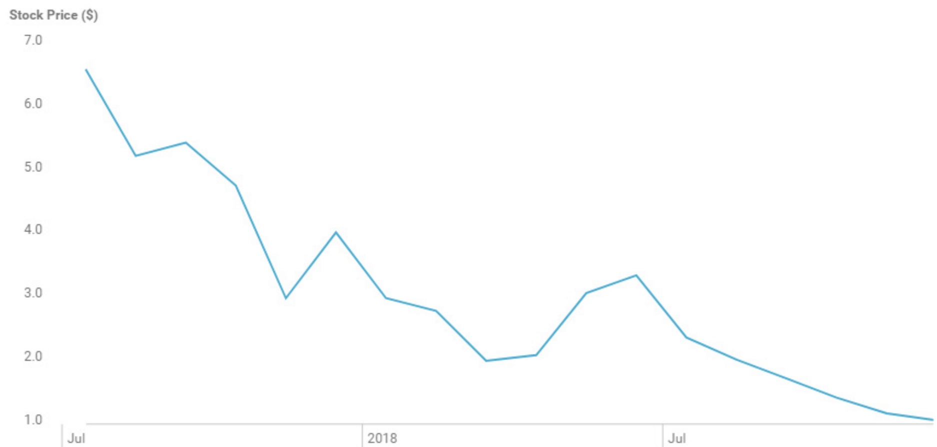


Meal kit startups pioneered the model of sending recipes and pre-portioned ingredients directly to consumers on a subscription basis. In 2015, investors poured nearly half a billion dollars into the category.

However, these startups faced the high costs of building perishable food supply chains, offering heavy discounts to new shoppers, packaging the ingredients individually, and more.

Since 2015, these startups have faltered after trying to grow too quickly. Many have struggled or gone out of business, including Chef'd, which had raised $40M from Campbell Soup and others, and which offered over 1,000 recipe choices. Blue Apron's stock has fallen continuously since IPO.

Blue Apron Stock Price



It's become increasingly clear that direct-to-consumer subscription meal kits aren't sustainable as a standalone business model (at least at VC scale).

Instead, meal kits have emerged as a promising marketing tactic for grocery retailers.

By stocking meal kits for different recipes at the front of the store, grocers can make shopping more convenient.

Several grocers have acquired meal kit startups, including Kroger acquiring Home Chef and Albertsons acquiring Plated. Others have partnered with startups to sell kits in stores, including Walmart with Gobble and Costco with Blue Apron (although Costco pulled Blue Apron's kits in advance of the 2018 holiday season). Some grocers, including Kroger, have also developed their own meal kit lines.

Going forward, we'll likely see meal kits integrated more deeply into grocery stores and grocery websites — as a feature, not a full business.

WHERE IS ALL THIS DATA FROM?

The CB Insights platform has the underlying data included in this report

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