frozen food dossier
the magazine for the frozen food industry
ISSUE 1 - 2020

STATE OF THE FROZEN FOOD INDUSTRY 2020


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content

RETAILERS SELL MORE FROZEN FOOD

DAN OREHOV
managing editor

Since the debut of the COVID-19 pandemic, retail frozen food sales have surged. According to the American Frozen Food Institute, eight in ten consumers have increased their frozen food purchases.

The AFFI specialists say that since the onset of coronavirus in the United States, grocery retailing conditions have been unlike any ever experienced in recent history. Unprecedented pantry, fridge and freezer loading by consumers across the United States emptied stores for days and weeks on end, resulting in incredible sales surges and widespread out-of-stock conditions. Thus, frozen foods quickly emerged as a growth leader, with nearly double the typical sales during the top panic purchasing period of time.

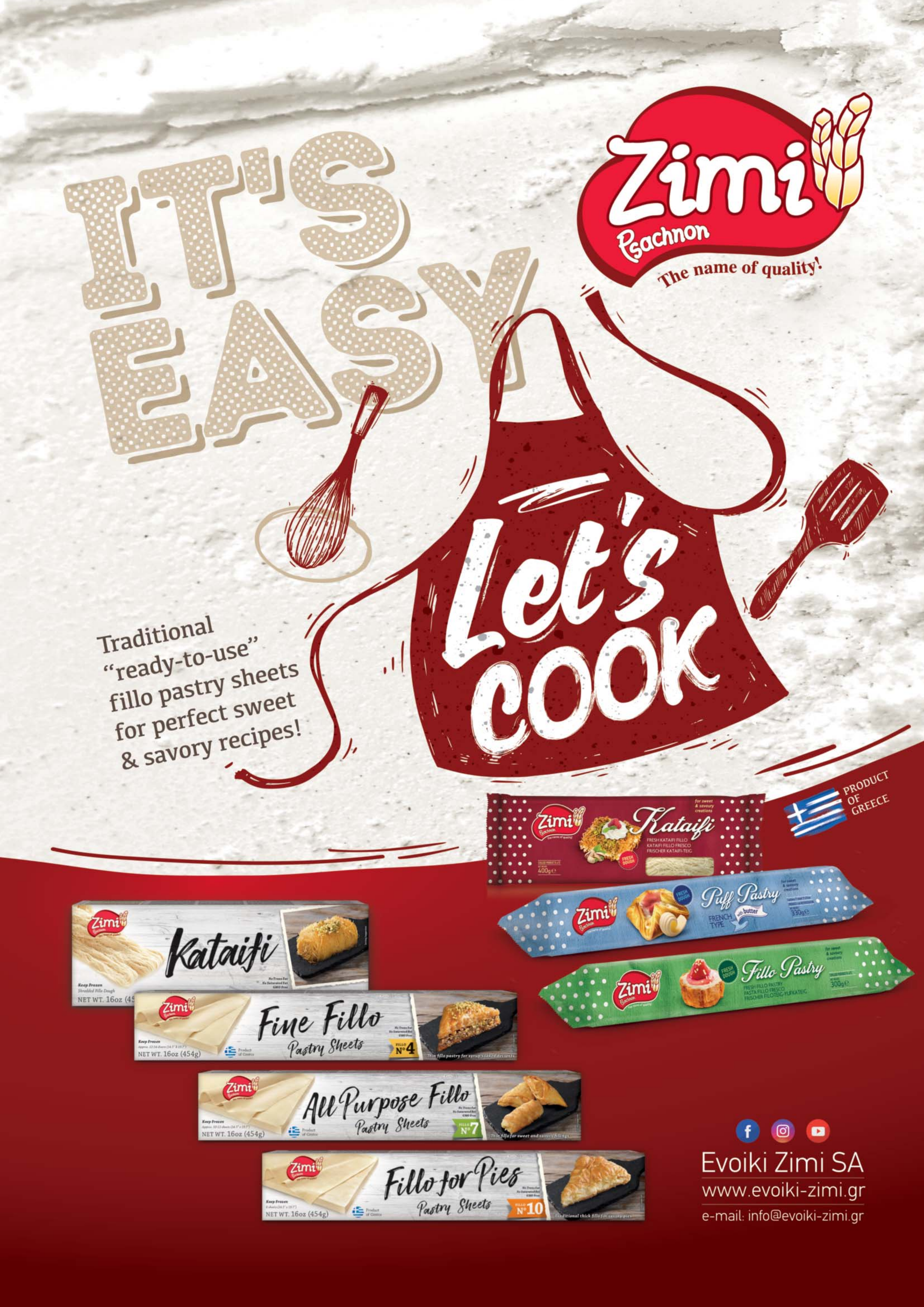
The situation is similar in most global retail outlets, from Europe to Asia, and mimics the North American consumer behavior towards frozen food categories. All of this comes down to reasoning and motivation for turning to frozen during a time of crisis. As the AFFI study shows, the top six reasons for purchasing more frozen food are the long shelf-life of frozen foods (60%), consumer desire to stock up in case of food shortages (58%), enabling consumers to limit the number of trips to the grocery store (51%), the ease of preparation (46%), saving time on preparation and cleanup (36%), and consumers' belief that frozen foods are safer than fresh items right now (33%).

Frozen foods quickly emerged as a growth leader, with nearly double the typical sales during the top panic purchasing period of time.

Moreover, in addition to increased footfall down the frozen food aisles, current frozen food consumers changed up their buying patterns: 70% bought more frozen food than usual, 68% agreed that their purchases included different items than usual and 72% picked up different brands than usual because of unavailability. In total, 73% of shoppers said they experienced out-of-stocks when shopping for frozen foods amid the pandemic.

In this edition of the Frozen Food Dossier – The State of the Frozen Food Industry – you can browse through some of the staple categories in the segment, to get a clearer picture of how each category has been faring up until the start of the pandemic and where it will head from now onwards. Feel free to share your thoughts by emailing me at dan.orehov@trade.media.

Stay safe!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FROM BAKE-OFF PRODUCTS TO SWEET PASTRIES

Frozen bakery products cover nearly 8% of the global frozen food market. Of these, frozen bread and frozen pastries will continue to witness a progressing scenario in coming years, according to the latest research.

By Dan Orehov

The concept of bake-off has been in picture since a while now, and it has been grasped excellently by the retail sector. According to Future Market Insights, bakeries within supermarkets, club stores, and mass merchandize - in-store-bakeries (ISBs) offer an extensive assortment of bakery products such as cakes, pastries, muffins, bread, pies, and others. As these ISBs often bake on-site, their popularity among consumers is likely to spike in future. Growing inclination towards consuming fresh baked foods will continue to trigger consumer interest in retail channels such as ISB, bake-off chains, and food service outlets. Bake-off products that are sold at ISBs, i.e. in-store bakeries are expected to account for a notable share of the total revenue generated through bakery products consumption throughout Europe. Adoption of bake-off in retail will persist, resulting in the launch of a growing number of retail shops with ISBs, capturing consumer attention. Artisanal bakers have been adopting the bake-off trend, to achieve maximum convenience in terms of production, and offer diverse products. This is the case especially for a complicated product range and those products that are prepared in lower volumes. Foodservice has also been using bake-off over the years, prominently targeting the consumer demands and preventing food wastage. While the future of bake-off in Europe is anticipated to be positive by industry experts, the long-term performance is still a concern, owing to the looming maturity in Europe's frozen bakery market. As indicated by industry experts, the bake-off category will continue to witness experiments in product appearance, indulgent taste experience, and salt content. Superior stability during and after freezing and defrosting, and product innovation are further expected to shape the future of frozen pizza and pastries in the bake-off division.

EUROPE GRABS THE PASTRY TRAY

Frozen pastries include an extensive range of pastry products, which must be baked or proofed before they are consumed. Future Market Insights says that among the basic types of frozen pastries, there are the viennoiserie and Danish products, the former including four different varieties, plain and filled croissants, pains au chocolat, pains aux raisins (raisin swirls), and savory items. The market for viennoiserie is currently thriving at a high pace, while indulgent chocolate pastries are leading the way. On the other hand, Danish products include maple pecans, Danish crowns, and cinnamon swirls. While convenience remains the key, prolonged 'consume by' dates, coupled with ingredients such as fructose, honey, and humectants, make frozen pastry products healthy and safe for consumption.

Europe is currently leading the market for frozen pastries, and it will continue to account for the maximum revenue share of over 60% in global frozen pastries market. Viennoiseries are expected to maintain dominating sales, over Danish products. Recent research indicates a possibility that the viennoiseries sales within Europe will exceed USD1bn very soon. Technological advances have been helping food processors of frozen bakery products identify the defects in frozen products. This and other such advances in technology highlight the significance of hygienic food processing for frozen pastries and other frozen products. The packaging technologies also play a vital role in shaping the outlook of the market in future.

> As the frozen bread industry strives to produce healthier products with clean or friendly labels, quest for healthy alternatives for chemical additives has risen.

CONSUMERS WANT IT ALL

Consumer perceptions based on the taste, convenience, value for money, health, and waste reduction, evidently impacts the performance of frozen pastries in the European market. Moreover, exotic flavors and aesthetically pleasing appearance will remain the key attributes popularizing frozen pastries within the continent. Clean label frozen pizza is expected to continue witnessing growing demand in near future. Among various types, including Croissants, Pies, Danishes, Macarons, Éclairs, Strudels, Cannoli, Pretzels, Tarts, and Profiteroles, Croissants are witnessed to be the most popular type of frozen pastries consumed in Europe. European retail chains and quick service restaurants are reaping the benefits of fostering sales of frozen pastry products. These frozen products can be stocked over a period of time, easily thawed and then used to serve fresh baked items. A majority of online stores include specific varieties in their offerings such as natural, organic, sugar-free, gluten-free, and clean-label, which are probably not available in offline stores or chain restaurants. Flourishing online retail sector and exploding penetration of ecommerce will collectively provide a push to the market for frozen pastries. Lantmannen Unibake Ltd., LBP UK Ltd., Le Bon Croissant, and La Danoiserie Inc. are some of the leading players in the frozen pastry industry. LBP is based in the UK, and targets Europe's retail as well as foodservice sectors to maximize frozen pastry products outreach. Enhancement of the product portfolio by launching new flavors in pastries and other baked items has been a key strategy of the company over the past few years. European players are largely focusing on customized product offerings in their product portfolio, which will boost the region's frozen pastries market over the next few years. Europe-based companies are also prioritizing strategic mergers and acquisitions to enhance offerings and improve market presence.

Moreover, Future Market Insights says that specialty frozen pastries is an interesting segment, which is foreseen to create several opportunities in the near future. Rising demand for premium frozen pastry products has been elevating demand for specialty frozen pastries, which are handmade, using all the premium quality ingredients. Frozen pastry manufacturers are focusing on development of specialty flavors to cater to evolving consumer preferences. Europastry experienced a surge in specialty flavored pastry products a couple of years ago, post launch of a puff filled with cocoa cream sprinkled with chocolate chips and glaze - midi dark

60%

revenue share in global frozen pastries market is recorded in Europe.

croissant. The company also had introduced another specialty product in the range – an apple delight made with croissant dough filled with real apple slices and cream. More recently, Delifrance also witnessed growing sales of frozen pastries with the launch of various products in this range, including Fruity Viennoiserie, Multiseed Croissant, Chocolate & Hazelnut Little Gem, and Raspberry & Cranberry Little Gem.

WHAT MAKES FROZEN BREAD SO ATTRACTIVE AMONG THE U.S. CONSUMERS?

The advent of frozen bread has certainly made life easier and it is hard to imagine international gourmet without these products. Even though U.S. consumers prefer buying fresh bread, frozen bread has gradually gained traction since the last few years, according to GMInsights. With evolving consumer needs and changing regulatory landscape, there has also been a rise in lifestyle changes, urbanization, and the number of nuclear families. The U.S. is witnessing a change in the food processing industry, triggered by certain megatrends such as technological breakthroughs, empowered consumers, digitization of food supply chain, and integration of new information and communication technology (ICT) models in food bread industry. This has effectively impacted the demand for frozen food across the nation. It is worth stressing that fresh bread has a short life and its acceptability by consumers may decline on account of increasing time between baking and consumption. Further, a range of chemical and physical changes such as staling lead bread to lose its crispiness and freshness. Some of the forward-looking companies are bolstering their portfolios and producing large loaves and small rolls and buns. Frozen bread is being shipped to retail grocers and foodservice accounts and is being baked in-store. Therefore, frozen bread is increasingly being preferred in the U.S. for it tends to decrease logistics constraints in bakeries. Given that freezing propels the shelf-life, it has become a common phenomenon in the bakery industry, leading to a commendable rise in frozen bakery market share. It is worth noting that unfermented

> Frozen bread is being shipped to retail grocers and foodservice accounts and is being baked in-store. Therefore, it is increasingly being preferred in the U.S. as it decreases logistics constraints.

frozen bread has enabled baking on-sale, and offers fresh products with high textural and organoleptic properties.

With regards to additives, GMInsights research shows that there has also been the trend for usage of such inclusions in the food processing industry, amidst the call to reduce additives citing eco-friendly concern. Besides, xanthan gum is also used in this sector, which exhibits good efficiency at lower concentrations. Moreover, products with the gum have good mouthfeel, fluidity, and adhesion. The gum has become instrumental in boosting the stability in frozen bread processing and propels the freeze-thaw stability of frozen foods.

With demand shifting towards the processed food segment among the American consumers, increasing number of single-parent families and working women have begun to rely on processed foods such as frozen bread. This validates the soaring adoption of processed food as part of daily consumption and the Americans have been more concerned towards the quality and safety of the food products. Moreover, consumers are shifting towards bake-off technologies (BOT) as shoppers tend to perceive the freshness of bakery products as a sign for product quality and frozen bread products have soared in popularity in foodservice restaurants and retail stores.

"One of the most talked about trends in the U.S. is the vivid shift towards convenience in-store. It is also believed that traction towards pre-fermented frozen bread improver will enhance ready-to-bake bread and unfermented frozen bread improver will enhance ready-to-proof processes," according to GMInsight researchers. "It has also been speculated that the American food service operators, bakers and retailers may be inclined towards reducing the number of additives in their products to ensure cleaner labels and shorter ingredient lists," they add. With labor costs soaring to new high in the U.S. and several suppliers finding it tough to find skilled staff, inclination towards in-store production to make bake-off bread has surged. Notably, the bake-off solution is said to improve freshness, reduce waste and streamline production.

HOW ARE COMPANIES RESPONDING TO THIS DEMAND FOR FROZEN BREAD?

- ARYZTA North America rolled out a new frozen bread line extension in Canada, which will be able to produce large loaves, buns and small rolls. The company contemplates expanding supply throughout North America.
- According to the Georgia Department of Labor, Kellogg's would lay off 108 of its workers as it is shutting down its Atlanta facility to boost their frozen food business by bolstering productivity.

On the other hand, the company reported surge in its profit from frozen foods in October 2019.
- Meanwhile, Dawn Foods is slated to sell North America frozen business to Rise Baking company. As things pan out, the deal will help Rise Baking Company expand its manufacturing footprint and baked goods product portfolio in North America.

WHAT DOES 2020 HAVE IN STORE FOR FROZEN BREAD MARKET?

As the frozen bread industry strives to produce healthier products with clean or friendly labels, quest for healthy alternatives for chemical additives has risen. Prominently, future trends indicate palpable traction towards Bake-off Technologies (BOT) and bake-off bread. While the industry has received a minor setback on account of the ongoing coronavirus crisis, the growth is likely to be steady as things get back on track once the world is free of the COVID-19 pandemic.

8% of the global frozen food market is covered by frozen bakery products.


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STRONG COMPETITION COULD DISRUPT GROWTH

Photo: Arabatzis

As eating habits amongst European consumers continue to evolve, many of the region's leading manufacturers of frozen foods have been adjusting their product portfolios to take account of the growing demand for appetizers and snacks. However, because of the multitude of companies and start-ups present in this segment, growth is becoming harder to achieve, especially for smaller players.

By Dan Orehov

In recent years, much of the NPD activity which has occurred has focused upon the development of smaller, more convenient formats, as well as frozen foods which can be shared during social occasions. Frozen snacks and appetizers are also supplied to European foodservice operators, where the trend towards more informal dining occasions is also apparent.

According to Dr Sabine Eichner, managing director at the German Frozen Foods Institute (dti), "when frozen food manufacturers develop new products and concepts they always try to cater to the latest food and out-of-home trends. 'Snackification' is a trend that is transforming the traditional three-meals-a-day dining culture. People are adapting their eating habits to today's faster, flexible and on-the-go lifestyles, which is driving demand for healthy and delicious snack foods. Organic products and healthy eating concepts, as well as regional origin and sustainability, are becoming increasingly important, and the range of convenience products is gaining in diversity and depth. Commercial kitchens are going digital and we are seeing an increasing number of smart appliances that have simple settings and are easy to operate for the fast and uncomplicated preparation of frozen snacks, meal components or entire meals."

MARKET PLAYERS AND NPD

Although Nomad Foods' greatest strength arguably lies in sectors such as frozen meals, meal centers and meal accompaniments, some of its products could be considered suitable as appetizers or snacks. As Analyst Jonathan Thomas explains, "late in 2018, the company's Birds Eye brand in the UK was extended with a variety of takeaway-style chicken bites, which cater towards the demand for smaller, bite-sized products during informal eating occasions. Named Chicken Shop, the new range included Buttermilk Strips, Southern Fried Wings, Maple & BBQ Wings and Hot & Fiery Chunks. Since all can be cooked within 25 minutes, they are also marketed on a convenience platform." Other products within the company's Birds Eye and Iglo ranges which could potentially be served as snacks include chicken nuggets, chicken dippers, chicken fingers, chicken strips and Southern Fried Chicken Popstars.

One of Europe's leading suppliers of frozen appetizers and snack-style products to foodservice industry customers is McCain Foods. Its range includes Menu Signatures, a variety of foods supplied to pubs, restaurants and hotels – these include French fries and other potato-based products, as well as appetizers and side dishes. Appetizers in the range include Breaded Mozzarella Sticks, Beer Battered Onion Rings and Chilli Cheese Pepper & Cheese Nuggets. In the retail sector, McCain has increasingly been positioning some of its potato-based products (e.g. chips and wedges) as suitable for sharing with family and friends during social occasions at home, especially during these times, when social distancing and staying indoors is highly recommended globally.

One company specialized in frozen appetizers, snacks and finger food is Froskrone, which a year ago acquired US-based Rite Stuff Foods Inc., a company specializing in the production of potato specialty products including baked potatoes, filled potato, potato wedges, potato pancakes and more. Headquartered in Rietberg, North Rhine-Westphalia, the Frostkrone Group is a manufacturer and seller of deep-frozen and snack products for the food retail trade, as well as the food service sector. The company operates several modern production facilities in Germany and France and distributes its product range Europe-wide to countries like the Netherlands, France, Spain Portugal, UK, Czech Republic, Poland, Estonia, Latvia and others. Since 2017, the firm also started exporting to the US. The acquired entity, Rite Stuff Foods is based in Jerome, Idaho and was founded in 1989. The company currently employs 230 people and is considered one

> Shoppers are looking for quality products at a competitive price and our offer serves both. We are well-known for our experience on producing private label, frozen dough products, including snacks.
>
> Sakis Ignatidis, Arabatzis SA "Hellenic Dough"

95%

of US consumers are snacking at least once daily.

Photo: Frostkrone

of the most important American producers of potato specialties. But acquisitions for the company do not stop here, as just at the beginning of this year, Frostkrone integrated Innovate Foods in its portfolio. The company, based in Scotland, was founded by Tony Dumbreck and is still being run by him today. Innovate Foods is one of the leading producers of finger food in Great Britain. Current product innovations to come out of the company's ateliers include the Portobello Mushroom Burge, a vegetarian burger with natural ingredients such as beetroot, chickpeas, kidney beans, bulgur wheat and handpicked portobello mushrooms and the Nacho Bites, Green jalapeño filled with a nacho cheese sauce and wrapped in a crispy tortilla parcel.

Moving on to Greece, Arabatzis S.A "Hellenic dough", whose Head of Exports, Sakis Ignatidis, says that in Europe, consumers are looking for products made with Greek – Mediterranean recipes, with Feta cheese (P.D.O.) and spinach in a crispy traditional dough. Among the company's portfolio of over 700 products, the best-sellers include filo dough products, bougatsa with cream, traditional country pies with spinach and Feta cheese (P.D.O.) and various puff pastries.

"As the retailers promote this category, we see the bake-off corners asking for our products. Almost every bake-off area in some countries bake one of our products every day and offers it to consumers. It started to become a trend that continuously grows. Shoppers are looking for quality products at a competitive price and our offer serves both. Arabatzis SA "Hellenic Dough" is well known for its experience on producing private label, frozen dough products, and from our establishment we focus on that," adds Ignatidis.

Another brand which is expected to make a greater impact within the market during the coming years is Quorn, which is present in the UK and further afield in Europe. Growth is expected to be underpinned by increasing demand for vegetarian and/or vegan options across many parts of the region, with consumers more inclined to seek out meat-free foods for a range of eating occasions. The Quorn range currently includes several frozen products which straddle the increasingly blurred divide between main meals and snacks – examples include Crispy Fillets, Southern Fried Bites, Crispy Nuggets, Delicious Dippers and Smoky Strips.

Other suppliers of frozen snacks and appetizers include pizza manufacturers and frozen vegetable producers. The former category includes Oetker of Germany, leader of the frozen pizza market in many European countries via brands such as Ristorante and Chicago Town, which has been positioning some of its products at snacking occasions. The Chicago Town brand in the UK, for example, features the Pizza Toastie, which can be prepared in a toaster.

THE TAKE ON INGREDIENTS

Plant-based food is a consumer trend that is currently experiencing steep upward growth. More and more consumers want sustainable, healthy and yet easy to prepare frozen products. There's high demand not only from vegans and vegetarians, but also consumers who want to reduce or replace their meat consumption for health, ethical or environmental reasons and this includes the frozen appetizers and snacks segment. More so, climate protection, sustainability and food waste are enduring topics that have grabbed the headlines in recent times, and will continue to influence consumer demand in the future. The need for environmentally friendly and high-quality food will continue to rise. Manufacturers are being asked to respond to this challenge, and offer new solutions that demonstrate expertise, research and innovation. According to Henrik Hetzer, managing director of ingredients manufacturer Loryma GmbH, wheat-based ingredients are an ideal partner, thanks to their ecological balance and nutritional value. They are also very easy to process and can be used in a huge range of products.

"Our wheat-based ingredients offer a number of advantages. First, there is the biodynamic value of the original agricultural product. Wheat is a local and sustainable raw material, and multifunctional too. This also holds true when it comes to satisfying the steadily growing demand for food, as the result of an ever-increasing global population. The new food concepts, vegan and veggie products that can be created with our range of ingredients, such as starches and textures, offer high sustainability, yet without compromising on taste. They also address the aims of the Planetary Health Diet for more vegetable-based products on people's plates. Additionally, texturized wheat proteins optimize the nutritional value of finished products, while wheat starches can extend shelf life in industrially produced foods, thus helping to prevent food waste," Hetzer explains. The company's Lory® Tex wheat proteins are a good base for vegan, vegetarian and hybrid products, and meet demand for both traditional and modern dishes. The wheat textures can be produced in numerous shapes and colors, and the extrudates are suitable for use in a multitude of popular frozen products, such as vegan burger patties, meatballs, chicken nuggets, fish fingers or kebabs, sausages and bratwursts.

As for the future, all companies contacted for this article admit that although the "post-coronavirus" era is difficult to predict, workgroups have already been organized, in order to try to anticipate and strategize according to the "new normal" that all consumers, processors and vendors need to adapt to.

"Manufacturers offer a wide variety of products, from basic snacks to in-store and company restaurant foods, and even high-end cuisine solutions. Freshness and convenience are two strong arguments in favor of frozen foods, that are supported by the growth statistics for high-convenience products," concludes Dr. Eichner, dti.


Photo: Loryma

One company specialized in frozen appetizers, snacks and finger food is Froskrone Group, which has made several acquisitions recently, to diversify its product portfolio.

CUTTING, PEELING AND SORTING WITH STATE-OF-THE-ART EQUIPMENT

Whether cutting technology innovation, peeling equipment or digital sorters, frozen food manufacturers require NPD and equipment designed in such a way, that emphasizes better performance, less maintenance and food waste, as well as an increase in yields. The following contributed to this article:

Mike Jacko, VP of Applications & New Product Innovation, Urschel; Mark Roedl, area sales manager at Key Technology and Tomra Food's Area Sales Manager, Alain De Puydt

Because the frozen food sector is so diverse, there are a number of challenges, including the fact that different products need to be processed at different temperatures to obtain the best results. With that, the customer may need to refine the tempering process he has in place. This may require substantial investment in freezers, coolers, and dwell time.

MORE YIELDS WITH INNOVATIVE URSCHEL CUTTING EQUIPMENT

According to Urschel's Mike Jacko, there are very few machines and manufacturers out there that can truly cut, peel, slice foodstuffs when fully frozen. Most frozen foodstuffs are processed, size reduced first, and then frozen. Urschel machines fit the job with the DiversaCut 2110A® Dicer (DCA) for veggies, fruits, and certain meats as the favorite/best-selling for dicing. The Sprint 2® Dicer (SPR2), Urschel's lower capacity version of the DCA, offers cutting solutions for smaller processors. The E TranSlicer® Cutter (ETRS) is the answer when slicing carrots, celery, leek, or green beans at frozen vegetable processors. For frozen tempered meats, bacon, or cheese, processors rely on the Affinity® Dicer (AFF) the premium USDA Dairy accepted machine, or the smaller Affinity Integra® Dicer (Integra) in lower capacity applications. For fresh and frozen-tempered chicken breast, pork skin, or leafy green products, a popular choice for many is the Urschel® Model M6 belt-fed dicer which produces two-dimensional cuts. Customers the world overturn to Urschel to tap into the vast knowledge and experience in this area. For example, in vegetable cutting applications in Belgium, Jacko says that Urschel outsells the nearest competitor virtually 9 to 1. He adds that frozen foods, a large, well established sector, covers many products; some with very large capacities where efficiencies and yields become important. Customers look for higher capacity machines, better yields, and less scrap, while maintaining perfect cuts.

"The above Urschel machines provide all of this. Some customers are always looking for something new/different and with the wide array of machines offered, customers rely on Urschel, and know we will work with them to identify the right machine and cut setup, or will work with the customer to develop new cutting methods – whatever is needed to meet their goal," says Jacko.

Urschel Engineers work directly with customers. Having the entire manufacturing process under one roof, from CAD drawings, to foundries, knife development, large and small components, quality checks. Being responsive to customer needs before and after the sale includes the largest direct support network, so Urschel technicians can be dispatched anywhere in the world where foods are commercially processed.

"Urschel remains the global leader in food cutting technology. As a person walks through the frozen grocery store aisles, there are almost endless choices: carrots, beans, broccoli, French fries, frozen meals, pizzas, ice cream, desserts, etc. The vast majority of all of these products employ some type of reduction accomplished on an Urschel machine; such as the slicing of carrots, pepperoni for pizzas on the ETRS. The DCA or SPR2 dices/strips the carrots, broccoli, French fries, peppers, onions for pizza, bits and pieces in ice cream, apples in pies, etc.," says Jacko. Other examples include beef and poultry pieces in pot pies and TV dinners are made on the M6. Cheese shreds or dices, bacon bits on pizzas are made on the CC Shredder or Affinity Dicer. Every ingredient is reduced in order to feed the world we live in, and Jacko says Urschel is proud to be the leader in the cutting industry in every continent, including Europe. Moreover, on top of customers looking for high capacity, higher yields, less scrap, and perfect cuts, many look for machines that are easier and less

> With over 200 machines in operation, Urschel has strong relationships in this region built on dependability and partnering with these companies to discover the best cutting solutions to support their efforts.
>
> Mike Jacko, Urschel

expensive to maintain, and more sanitary, easier to clean machines. Urschel has designed the DCA, SPR2, ETRS, Affinity, Integra, CCX-D, and CC-DL to meet the highest sanitary standards, while being cost-effective to operate, in order to maximize customer profitability.

"When I think of companies that have made great strides in the area of frozen vegetables, I think of the production in Belgium, West Vlaanderen, as examples of companies that have made strong advancements in processing. Within this area, Urschel cutting machinery dominates with approximately 90% market share. We are proud to be the leading supplier of frozen vegetable reduction equipment in Europe, and in Belgium especially. Belgium is the European market leader and the largest exporter of frozen vegetables in the world. 100% of the vegetables are cut fresh, then frozen. 90% of frozen vegetables produced are exported to feed the world. Quality of their product is unsurpassed. The commitment these companies have to delivering the best, and developing the most innovative methods of processing, and implementing superb quality control is truly amazing. With over 200 machines in operation, Urschel has strong relationships in this region built on dependability and partnering with these companies to discover the best cutting solutions to support their efforts. The market growth is strong, on average 10% per year," Jacko ends.


Photo: Urschel

THE IMPORTANT ROLE OF TOMRA'S PEELING EQUIPMENT

Peeling can be done with mechanical peelers or steam peelers, depending on the volumes. Small volume lines often employ mechanical solutions, whereas the IQF industry mainly uses steam peeling, which is superior. Further down the line, the cut product is inspected in its fresh condition so that quality defects can be removed. The final quality and safety checks are made just prior to packing the product in frozen condition.

One important player in the peeling process is Tomra Food, whose Area Sales Manager, Alain De Puydt, says that "for peeling vegetables, there are different techniques. Many are peeled mechanically, for example with knife peelers. But for root vegetables and the large volumes handled by IQF processors, steam peeling is more efficient. Some other types of produce can also be handled easily by steam peeling. One example is pumpkins (although large pumpkins need to be pre-cut). Tomra Food designs and manufactures sensor-based sorting machines and integrated post-harvest solutions using the world's most advanced grading, sorting, peeling and analytical technology. Tomra Food is well-known for its steam peelers, and for the vegetable segment we

offer the Odyssey and Orbit peelers." He adds that the Odyssey's robust build makes it the perfect peeler for products that are difficult to handle. "Everything, starting with its door opening, is designed to handle high volumes of large product. If we take carrots as an example, there is a high probability that those carrots not selected for the fresh market will be used for the IQF industry. So, the Odyssey is able to handle very large carrots, up to 100mm in diameter and 40cm in length – and these objects must be handled correctly so that every one of them is reached by steam throughout the entire steam cycle. When this is completed, any remaining loose peel is gently removed by the dry-running Tomra Brusher and then the Tomra Washer takes away the remaining peel residue. The end result is a smooth- surfaced, peeled product," De Puydt concludes.

According to Tomra representatives, through having better levels of communication across the supply chain, the amount of food waste produced can be reduced. Each aspect of the supply chain must be in constant contact with one another to ensure our resources are managed efficiently. This is where the Internet of Things (IoT) can support and improve supply chain efficiency. Based on having interconnected and interrelated systems and processes, IoT allows each aspects of the food industry to have access to key data around the supply, production and management of produce, which can help reduce the amount of waste created. Without the wider adoption of IoT in the food supply chain, the levels of food waste could increase by 50-90% as a result of several combined factors, such as the increase in food demand due to the ever-growing population. By allowing all stakeholders within the supply chain access to key data shared across integrated systems, processes can be optimized further along in the chain to maximize how the produce is handled. For example, a bad batch of apples with a high percentage of internal browning would require a specific equipment set up and would need to be fine-tuned to ensure the maximum value can be extracted from the apples. It is believed having this connectivity could save the supply chain up to USD60bn in waste. Through having this pre-warning of any information regarding a batch of produce, farmers can not only optimize their yields by reducing the risk of waste, but the other stakeholders can also plan accordingly to try and prevent the cause of waste. Having this ability to share data through IoT can also help reduce waste from a consumer standpoint. Retailers could use the real-time data in stores to showcase when the

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> Alain De Puydt, Tomra Food

Photo: Tomra

produce was harvested or picked and offer insights into the projected "sell by date". This can educate consumers further on how long they have to eat the produce, thus helping reduce food waste through the implementation of technology.

Tomra representatives also believe that as well as utilizing IoT, the supply chain can also use digitalization to help improve the infrastructure it currently has in place. Cold chain plays a huge role in the food industry creating waste, mainly due to poor infrastructure – in India, for example, USD14bn is lost every year through poor cold chain facilities. However, implementing innovative and efficient systems can go a long way in addressing the food waste issue – particularly in developing markets. By deploying more advanced cold chain solutions within the emerging markets, which share the data across the supply chain through IoT, it could prevent large-scale food loss and waste. The conditions can also change in cold storage, and temperature affects many sorting technologies, so the ability to link cold storage sensors to packing equipment can enhance performance. But this is nonexistent in many emerging markets, creating poor food storage and transportation conditions early in the value chain that lead to large-scale food loss. Deploying more-advanced supply chain solutions — including cold chain in developing markets — could reduce the problem by USD150 billion annually. Investing in efficient sorting and grading systems is a key approach in helping the supply chain reduce the food waste created earlier in the supply chain.

"We want to know everything about the produce. Everything from the weight and size through to the external properties and defects, and even the internal chemical composition to predict ripeness and longevity. But there are only two points when you can gather information on individual pieces of fruit: when it's picked and when it is sorted. These are the critical data acquisition points. KPIs need to be based around understanding the types of defect types and classes/grades per batch, to help create a complete map and total view of the produce. This, in turn can help build up big data, meaning every batch gives you new insights and allows you build a bigger picture, creating the ability to make even more informed data-driven decisions. Where appropriate, data can be shared and augmented to 'context', such as weather data or geo-tagging," Tomra reps say.

The final step is to layer artificial intelligence to start to understand previously unseen patters and even more efficient ways of working. Although these KPIs tend not to be designed to help limit the amount of waste produce, utilizing sorting and grading technology can automatically support a waste sensitive environment by recovering any produce and reusing it for another purpose, such as cattle feed or pet food. This means that rather than creating food waste, an alternative, more suitable use is found. Lower quality fruits can be used for juices or pulped to become products such as guacamole or apple source, whilst starches can be used for medical purposes. All of these help us reduce waste and put the lower quality produce to better use.

Photo: Tomra

THE KEY TECHNOLOGY SORTERS ARE DESIGNED TO REDUCE COSTS

Key Technology, a member of the Duravant family of operating companies, has introduced a new concept for sorting green beans prior to snipping. This innovative solution removes foreign material (FM) and separates easy-to-snip green beans from hard-to-snip green beans to improve snipping efficiency. Specifically designed for this new insertion point, Key's integrated sorting system for pre-snipped green beans improves case recovery to reduce the processor's cost per ton, while also producing more consistent product quality with less equipment in the downstream process.

"Processors of frozen and canned green beans have razor-thin margins. They want to lower costs while maintaining their product quality. That's the challenge we set out to solve here," said Mark Roedl, area sales manager at Key. "We applied our expertise in green bean processing and came up with a new idea – a different way to process green beans. This integrated sorting system is installed upstream of where digital sorters have always been on these lines, and it's a game changer. Early adopters are achieving impressive results that warrant the investment."

The integrated system combines Key's Iso-Flo® shakers, a Rotary Size Grader (RSG) and a Veryx® digital sorter to separate incoming product into four streams. Two streams go to waste and two 'accept' streams lead to further processing. One 'accept' stream is dedicated to green beans that are difficult to snip, which go to downstream equipment that is optimized to snip this type of product. The other 'accept' stream takes field-snipped and easy-to-snip green beans and leads to downstream systems designed specifically to handle these green beans.

Prior to this development, green bean processors have not separated incoming product into streams – instead, everything has been sent in one mass flow to the rotary snippers after upstream pre-cleaning equipment. When hard-to-snip green beans are

Photo: Key Technology

> This integrated sorting system is installed upstream of where digital sorters have always been on these lines, and it's a game changer. Early adopters are achieving impressive results that warrant the investment.
>
> Mark Roedl, Key Technology

comingled with easy-to-snip green beans, downstream systems are set to handle the hard-to-snip beans. When easy-to-snip green beans are aggressively snipped, good product is lost. Also, when snippers get FM, it's cut into smaller pieces, which exacerbates contamination. Now, with Key's new Veryx integrated sorting system, processors are separating hard-to-snip green beans from easy-to-snip green beans to improve snipping efficiency, which increases case recovery and reduces the cost per case. Also, by removing FM and other plant waste before the snippers, product quality improves. All this is done with less equipment than has traditionally been required, which simplifies processes and frees up floor space.

First, an Iso-Flo shaker evenly feeds the RSG, which sizes by length and diameter to remove short and thin green beans as well as other small objects such as insects, corn cob pieces and seeds. Next, an Iso-Flo shaker feeds Veryx, spreading product for presentation to the inspection system to maximize sort accuracy. This Veryx is equipped with top-mounted Pixel Fusion™ cameras and laser sensors to detect the color, size, shape and structural property of objects. It features three-way sorting, with the 'reject' stream ejecting FM such as corn cob, corn root, frogs, mice and plant stem material as well as color defects and other waste. Hard-to-snip and easy-to-snip green beans are separated to optimize snipping downstream. After Veryx, Iso-Flo collection shakers begin conveying each stream to its next step. The integrated system is available in various widths to satisfy a range of capacity requirements. Viewing product entirely in-air, Veryx is ideal for products with challenging shapes, such as green beans. LED lighting all around the line of sight minimizes shadows. Positioning the sorter's sensors and background away from product splatter sustains accurate inspection throughout long production cycles without operator intervention. Key's mechanical product handling systems also enhance sanitation with open designs, fully-welded frames, stainless steel bed surfaces, oil-free drives and more. Veryx features recipe-driven operation to ease use and achieve consistence performance day in and day out, regardless of personnel changes and across multiple lines and locations. Next-generation 4-channel cameras and high-resolution laser scanners offer twice the resolution of previous sensor technology to find smaller FM and defects. Key's Pixel Fusion technology combines pixel-level input from multiple cameras and laser sensors, producing higher contrasts to find the most difficult-to-detect FM and defects. Object-based recognition facilitates advanced shape sorting algorithms as well as intelligent ejection to maximize sort accuracy and minimize false rejects. Veryx is equipped with Key's Information Analytics software, which allows users to analyze and share data across their enterprise via an OPCUA-compliant infrastructure. Key manufactures Veryx in both the U.S. and Europe and supports customers worldwide through its global sales and service network. ●

Photo: Key Technology

WILL THE CATEGORY REMAIN AS POPULAR?

Following ice cream, the segment of frozen vegetables and fruit is the most popular category among consumers, both for its convenience attributes and for the fresh guarantee that individually quick-frozen produce provide. However, since the start of the COVID-19 pandemic, sales of frozen vegetables, especially French fries, have dramatically decreased in foodservice all over the world.

By Dan Orehov

Vegetables account for about 90% share of the global frozen fruits & vegetables segment and have an advantage over frozen fruits, as most of them, except leafy greens, do not require thawing. This saves time, as the previously cooked vegetables can be directly eaten a few minutes after taking them out of the freezer. According to research company MarketsandMarkets, best-selling frozen vegetables include broccoli, legumes, spinach, sweet corn, peas, and beans. Globally, Europe is the largest consumer as well as the exporter of frozen vegetables. In order to increase the market share, companies are focusing on multinational campaigns and promotional strategies to increase awareness and consumption of processed frozen vegetables. This effort is anticipated to increase the market share of the frozen vegetables market. However, growth in the frozen food vegetable market is stagnating in countries such as the UK, Germany, and the Scandinavia due to the maturity of the markets. Additionally, countries such as Italy and Spain provide ample opportunities for market penetration of these products.

"Nowadays, mushrooms are becoming popular in this category, owing to its tremendous functional applications and thus these can be now found on eight out of ten menus. They are becoming most popular ingredients for pizza, pasta, hamburgers, soups, mixes, sauces, ready meals, and sandwiches," explain researchers from MarketsandMarkets. "Hence, the freezing of mushrooms to retain their nutritional value is increasingly important for processors and companies are adopting individually quick freezing techniques (IQF) for increasing the shelf life of mushrooms without the use of preservatives. For instance, Netherlands-based Scelta Mushrooms BV is one of the major suppliers of the IQF-based mushrooms to different end users in the food industry across the globe," they add.

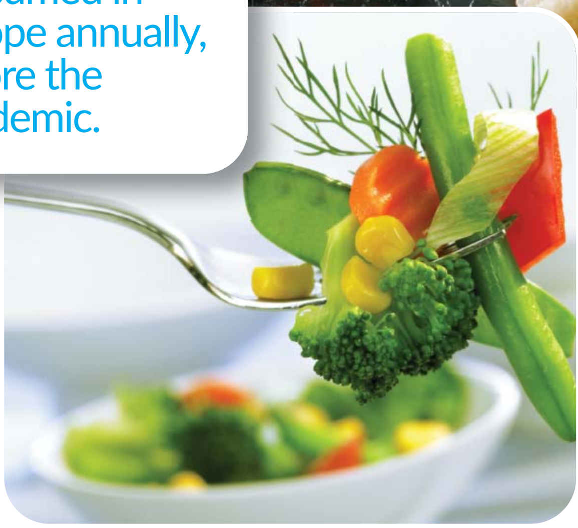
Another category gaining traction is IQF herbs. Traditionally, to maintain the freshness and quality of the herbs, drying methods were used, but nowadays IQF techniques have been gaining momentum to achieve better quality herbs. In the recent years, the growing demand for organically grown herbs such as mint, coriander, sage, oregano, basil, parsley, lemon grass, and rosemary has gained traction as a real trend on the frozen food market as well.

> Most of Europe's leading providers of frozen vegetables have a wide customer base, which includes companies in both the retail and foodservice industries.

WILL POTATOES CONTINUE TO GROW?

Global sales of French fries are worth more than USD20bn at present, with the market growing by around 4% per annum. However, in the context of the current pandemic, and taking into account the fact that over 80% of frozen potato products are used in foodservice (currently closed in most geographies), the sales of this sub-category of vegetables will most likely decline. There are numerous reports of processors and foodservice outlets trying to shift frozen French fries, for instance, to the retail segment, although several factors impede this, among which the innate characteristics of foodservice French fries (which come in much larger, industrial-sized bags, as opposed to the retail packaging), but also the increasing difficulties faced by the cold chain and logistics sector, which feel the growing pressure inherent after the debut of the COVID-19 pandemic. According to Analyst Jonathan Thomas, although it remains highly mature, the global market for French fries continues to experience high levels of innovation. In recent years, much of this has been due to increasing consumer health concerns, as well as greater competition from other meal accompaniments (e.g. rice and noodles), driven by rising penetration of ethnic cuisine. Furthermore, younger age groups are actively seeking out new and exciting ways to eat fries, as has been evidenced by the trend towards 'loaded' products. On the other hand, research company Food for Thought (FFT) said that before the pandemic, the European landscape for frozen potatoes by value

3.3bn
tons of frozen potatoes were consumed in Europe annually, before the pandemic.



was encouraging. The UK, France and Germany had 53% of the total market of EUR6.66bn. On a consumption per capita basis, Ireland was the leading market with over 11kg per capita, in front of the UK with a little over 10kg and France with 8.8kg. Overall, Europe was consuming some 3.3bn tons of frozen potatoes annually, before 2020. "The biggest players in term of frozen potato markets by value are McCain (33%), Cosun (7%) and ConAgra (4.7%). Stoever with AgrarFrost have 4.3% of the market and are very present in Germany. Farm Frites are also very popular with a market share of 4.2% and a significant presence in 16 countries. Own label with a market share of 22% may have chances to grow, but only if retailers diversify their assortment and improve quality. Discounters are investing in this profitable product and target affordability and the economy range," said Aland Deane, FFT.

ARE ORGANIC AND BIO FOODS WORTH THE INVESTMENT?

While the organic market is rapidly moving away from the niche tag that it had until recently, the price tag attached with some food products still remain a top consideration. Researchers from Future Markets Insights say that the nutritional profile in organic fruits and vegetables is often contested, with variations in climate, soil, and processing techniques also influencing the nutritional quality of frozen vegetables and fruit. "Apart from pricing related concerns, growth in the popularity and demand for organic food also brings along several supply chain challenges, including risks and threat of pests, processing, transportation, and distribution of frozen organic produce, seasonality of certain organic crops, and insufficient cultivation to meet consumer demands. While industry experts remain bullish on the future growth of the European organic and bio frozen foods sector, consumers choosing frozen organic food solely depend on their belief that organic food production is more sustainable than conventional agricultural practices," said Analyst Sandali Tiwari, Future Market Insights. She added that growing consumer demand for clean label and natural products have certainly sparked a movement in the global food sector. Retailers dealing in organic and specialty products are on the rise and mainstream retailers are making efforts to put their organic and bio offerings on the shelf, including the frozen variants.

"The new EU regulation on organic food production is expected to ensure superior produce quality and environmental protection along the entire supply chain, as more and more consumers buy organic frozen vegetables and fruit. This organic food movement is also creating a positive influence on conventional agriculture—gaining from techniques used by organic farming such as including beneficial insects and on-farm biodiversity, thereby reducing the necessity of artificial fertilizers, pesticides, and excessive tilling. Organic frozen vegetables and fruit no longer represent a niche market, although they only account for a minor share of the total agricultural production in the EU," she added.

HOW WILL THE VEGAN TREND HELP?

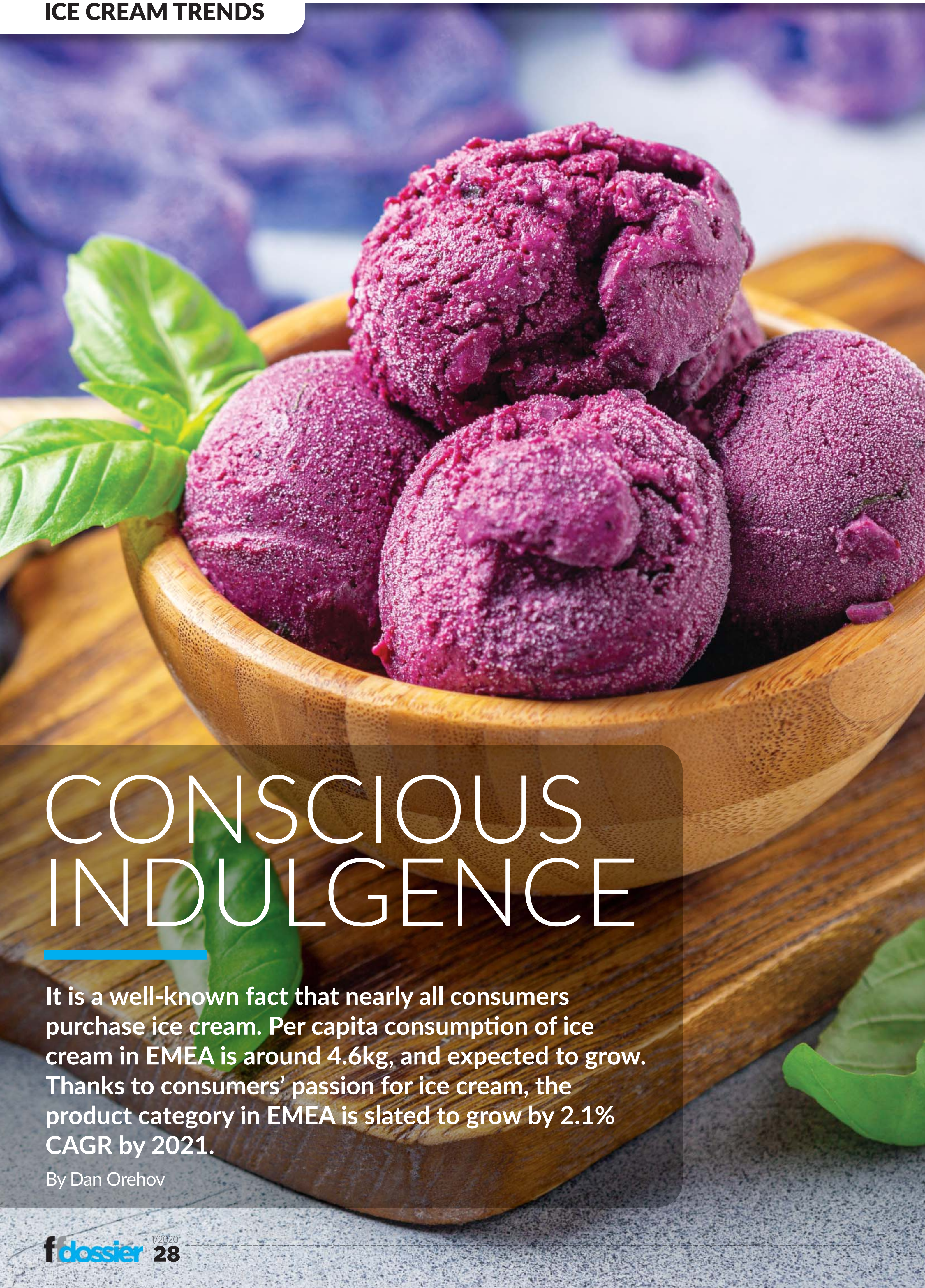
It remains highly possible that demand for frozen vegetables could benefit in future from the ongoing growth of meat-free eating. Although the market for vegetarian/vegan foods is witnessing a rapid expansion in the amount of processed foods (e.g. ready meals) targeted at these consumers, it seems likely that a significant percentage will continue to cook meat-free dishes from scratch, especially given that concern over additives and ingredients usually scores highly with this demographic. This trend is likely to create further opportunities for manufacturers of frozen vegetables. According to latest data from the European Vegetarian Union, approximately 6% of the region's population can be classed as either vegetarian or vegan, although some sources put this figure higher. Data from Mintel suggests that around half of European consumers are taking active steps to reduce their meat intake – furthermore, the percentage of the overall population having regular meatless days ranges from 57% in Germany to 55% in Poland and around 45% in both France and Italy.

Jonathan Thomas says that the frozen fruits sector is also believed to have benefited from many of the healthy eating trends evident in Europe and elsewhere. As is the case with vegetables, most frozen fruits retain their nutrients after the freezing process, although some loss of vitamin C can occur. Frozen fruits are finding favor in applications such as home-made smoothies, where the popularity of various berry fruits (e.g. strawberries and blackberries) is believed to be increasing.

"Meanwhile, demand is also growing from sectors of the food industry such as bakery goods and dairy products for frozen foods such as berries. The incorporation of fruit into cakes, biscuits, etc. can often create additional appeal amongst health-conscious consumers – in these instances, fruits are often supplied to manufacturers in formats such as freeze-dried. Most of Europe's leading providers of frozen vegetables have a wide customer base, which includes companies in both the retail and foodservice industries. Some have been increasing their presence outside their Western European heartlands, targeting regions such as Eastern Europe and North America, where future opportunities are thought to lie. Many of the industry leaders also supply the own-label sector, which continues to account for a significant percentage of sales," Thomas concludes. ●

While industry experts remain bullish on the future growth of the European organic and bio frozen foods sector, consumers choosing frozen organic food solely depend on their belief that organic food production is more sustainable than conventional agricultural practices.

Photo: Ardo



CONSCIOUS INDULGENCE

It is a well-known fact that nearly all consumers purchase ice cream. Per capita consumption of ice cream in EMEA is around 4.6kg, and expected to grow. Thanks to consumers' passion for ice cream, the product category in EMEA is slated to grow by 2.1% CAGR by 2021.

By Dan Orehov

Some of the trendiest options available on the global market today include examples such as lactose-free ice cream, low-calorie options and small-batch craft products. In fact, Barry Callebaut believes there are several trends that are driving many new and innovative ice cream products into the marketplace:

- Calorie Conscious Options: consumers can feel less guilty when they indulge with low calorie ice cream options. Calorie counts on ice cream products riding this trend are appearing in large font on the front of the package. A great example of this trend is the successful brand Halo Top, which saw a 462% compound annual growth rate 2013- 2018.
- Ditch the Dairy: ice creams without dairy ingredients aren't just for the lactose intolerant anymore. 17% of adults in the UK said they avoid dairy; and 11% said they have eaten non-dairy ice cream in the last 3 months. For those looking for variety or following a special diet, there are more non-dairy ice creams and frozen treats available than ever before and they taste better, too! From small brands offering vegan options to larger brands offering non-dairy versions of their classic flavors, there is no shortage of dairy free options in the ice cream aisle. Some replacements for dairy bases include coconut milk, almond milk and oat milk.
- Added Functional Benefits: in today's market, it's not uncommon to see consumers turning to foods in many categories for functional benefits and added goodness. Added functional ingredients in ice cream can include: probiotics, protein, fiber, CBD. Now ice cream can offer indulgence and an added sense of well-being. One interesting example is Van Leeuwen Artisan Ice Cream's Vegan Couch Potato which contains approximately 5 milligrams of CBD in each scoop.
- Loaded Indulgences: for those who are only concerned with the indulgent side of ice cream, brands and operators are loading on the good stuff. Ice cream is meant to be a treat, after all, so added indulgence in the form of layers, textures, toppings and fillings is a welcome addition.
- Flavor Mix and Mash Ups: consumers are interested in flavor mashups in their ice creams and brands are offering options to meet their needs. Exciting new flavors can be achieved through cross category innovation (bringing confection or bakery into ice cream) or bringing multiple brands together like the Breyers 2in1 products.
- Sophisticated Flavor Profiles: ice cream makers have begun appealing to more mature palates with flavors that are unique, refined and complex. These flavors tend to appear more in small brands and include more premium ingredients. Some of these flavors might include ethnic flavors, alcohol, tea or spices. Pair these sophisticated ice cream flavors with the familiar favorites (like chocolate) for a premium flavor experience. The brand Humphry Slocombe does this well by offering Turmeric-infused Honey Milk ice cream with Chocolate Chip Gingerbread and Candied Ginger.
- Bring in Savory or Salty Flavors: look outside "sweet treats" for a unique flavor innovation that pushes boundaries for adventurous consumers. Potato chips, French fries, salty pretzels add unique texture and sensory experiences. For funkier flavors, add blue cheese, foie gras, avocado or corn. Betty Rae's Ice Cream in Kansas offered a limited-edition ice cream striped with a caramel made of Joe's Kansas City Bar-B-Que's original sauce and candied pieces of burnt ends brisket swirled in.
- Craft and Small Batch: as with other product categories, a product that is craft or small batch has an exclusive feel and positioning to entice consumers to try this special product while they can. These products can often be perceived as more premium. Limited Time Offers fit into this category too. Anything that might create a sense of FOMO (Fear of Missing Out) in consumers.
- A Snacking Revolution: consumers are snacking more than ever before and snacking can fit any category or day part. When it comes to ice cream, handheld snacks are no longer just ice cream bars; innovations in shape, size and portability are making snacking on ice cream easier than ever.
- Customization: 47% of regular ice cream consumers have a favorable perception of a product that is "customized/ personalized". Consumer interest in customized treats is being addressed at ice cream shops around the country as innovators are taking a new approach that differentiates themselves. The National Restaurant Association asked chefs what they thought would be the trending snacks and sweets in 2019 and Thai rolled ice cream was named the top sweet item. Gordo's Ice Cream in Chicago has found another way to customize with their personalized dipped and topped bars.

> Many artisanal ice cream brands are working to source their ingredients locally, and some are also using more environmentally friendly packaging.

AN ESTABLISHED SEGMENT

The ice cream and frozen dessert market is historically stable and mature. Therefore, according to Cargill, successful new product launches generally come at the expense of existing products, rather than adding sales to the overall category. The challenge for manufacturers looking to maintain or increase market share is producing products that align with consumer trends. In the U.S. ice cream and frozen dessert market, sales have hovered near USD27bn for the past several years. The foodservice market has a slightly larger share of the total U.S. ice cream and frozen dessert market, comprising more than 55%,

20bn
USD is the market value growth expected for ice cream by 2024.

according to Cargill. The category is expected to approach USD30bn this year, driven by the introduction of products aligned with consumer interest in "free-from" products. The company also predicts an increase in gelato and super-premium ice cream introductions and sales, while sales of frozen yogurt are expected to decrease. Shoppers may also be filling their freezers with reduced-sugar ice creams and frozen dairy desserts. Pam Stauffer, Cargill's global marketing programs manager explains: "Americans' growing awareness of sugar content is clearly playing out in their selection of many products, ice cream included. Innovative food manufacturers are capitalizing on those consumer desires by creating reduced-sugar frozen treats that still deliver a rich, decadent experience." More than three in four Americans now say they are trying to avoid or limit their sugar intake. Yet taste remains consumers' number one concern.

HOW TO CAPITALIZE ON TRENDS

As the demand for new and more sophisticated ice cream products continues to skyrocket, medium capacity producers need an extrusion line with the flexibility to handle a wide product range and changeovers on the fly. According to Tetra-Pak, their new best practice medium capacity extrusion line helps medium capacity producers capitalize on the growing trends – handling everything from cones and wafer cups with sophisticated swirls and fillings, to candy bars and enrobed bite-size products. Consumers are looking for cones and wafer cups with two flavors of ice cream swirled high together, ice cream filled with swirls of marmalade or caramel and products with different flavors such as coffee or caramel core-filled into a vanilla ice cream. They also crave tasty inclusions such as pieces of chocolate or candy, Tetra-Pak says, adding that their best practice medium capacity extrusion line is completely servo-driven, enabling these advanced swirling and filling techniques, inclusions of up to 10 mm in diameter and lets cones and wafer cups swirl up to new heights. "As the health trend continues to grow, we also see a huge demand on the market for smaller portion sizes such as candy bars and bite-sized products enrobed in chocolate. Our integrated system for handling chocolate enrobed products has the smallest footprint and is the best solution on the market, making it easy for producers to capitalize on this trend. The hardening tunnel in our best practice medium capacity extrusion line does double duty – first it hardens the ice cream, then after the product has been dipped in chocolate, it hardens the chocolate as well. This saves producers from having a separate stand-alone after-cooler that's takes up valuable space," Tetra-Pak representatives add.

TOP ARTISANAL ICE CREAM TRENDS FOR 2020

There are a wide variety of options available in the ice cream industry these days, particularly artisanal ice cream varieties. According to research company

Technavio, supermarket shelves hold a trove of different products, and an increasing number of creative, independent ice cream shops are springing up in cities around the world. Amidst all of this competition, companies need to get creative in order to stand out, and they need to pay attention to the latest features that customers are demanding in their ice cream.

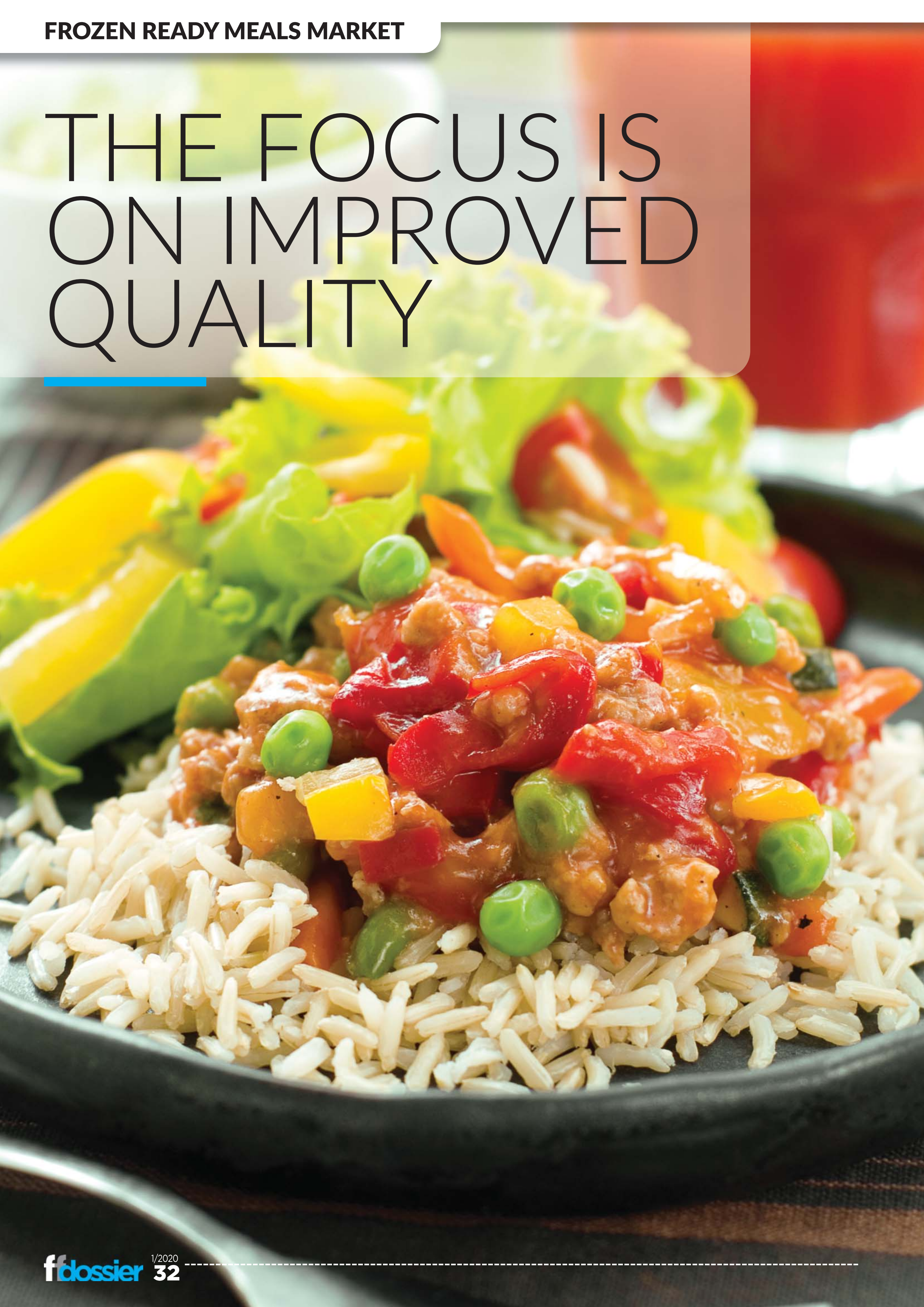
"The global ice cream market may only be growing at a CAGR of 5% over the next few years, but in an industry that's approaching the USD100bn mark, 5% is nothing to scoff at. Between now and 2024, the market's value is expected to increase by roughly USD20bn, with Europe and APAC leading the way in terms of growth. In a fragmented market, this leaves plenty of room for companies to develop new product lines and specialized vendors to enter in order to cater to underserved niches," Technavio researchers say. "In today's market, competition is getting fiercer, consumer tastes are becoming more sophisticated, and "low-calorie" alone isn't cutting it anymore," they add.

So, what are artisanal ice cream brands doing to make people excited about their products?

- Creative and sophisticated flavors: a growing number of ice cream shops are bringing in the crowds with flavors that reach far beyond the traditional favorites such as chocolate or butterscotch. These vendors bring in savory flavors and ingredients that aren't commonly seen in ice creams to create unique offerings that customers would have a hard time finding anywhere else. The US-based independent ice cream shop Salt & Straw, for example, offers flavors such as pear and blue cheese, honey lavender, and coffee and bourbon, along with their twist on more traditional options such as cookies and cream or mint chocolate chip. Salt & Straw is far from the only company getting creative with flavors, and as consumers get a taste for new and unique ice cream options, expect to see many more brands following suit this year. Supermarket shelves are also beginning to see more diverse ice cream flavor options, with premium brands offering more sophisticated products. Häagen-Dazs, for example, recently introduced a line of alcohol-based ice creams, including Irish Cream Brownie and Bourbon Vanilla Bean Truffle. As more consumers discover the complex flavor profiles possible in ice cream, more of these products will become available in grocery stores rather than staying in the realm of independent shops.
- Health is more than just calories: low-calorie options have been around for years, but customers are now looking for more in their ice cream than just a "light" version, and don't want to sacrifice flavor or quality. Portion control is one way to address this – some consumers are simply eating smaller amounts rather than seeking out low-calorie options specifically. But there are many other variations on "heathy" ice creams that are starting to take off.
- A fun way to get your protein: high-protein ice creams are becoming increasingly popular, particularly among younger demographics. These products reduce calories while boosting protein, and are being offered by brands such as Halo Top (one of the first to market this type of ice cream), Breyers, and Skinny Cow.
- Probiotics aren't just for yogurt: artisanal ice cream brands are beginning to offer probiotic products as another way for consumers to indulge while still being healthy. Culture Republick, for example, is a new ice cream brand that boasts of its probiotic content along with its low fat, sugar, and calorie content. Other companies are bringing their own probiotic offerings to the market as well.
- Ketogenic treats: as the keto diet continues to grow in popularity, brands are beginning to create keto-friendly ice creams: low-carb products that replace sugar with other sweeteners and use healthy fats in their recipes. Halo Top is again a popular brand in this category, but there are several other healthy ice cream brands with low-carb offerings.
- Non-traditional ice cream bases: ice cream manufacturers are becoming increasingly creative with their products, whether to cater to those with food allergies or just provide more healthy options. People with dairy allergies aren't the only ones with options anymore: companies are now using chickpeas, tahini, oat milk, and even avocado in their artisanal ice creams. While many of these ingredients are typically used in savory dishes, they can be adapted to desserts as well, and an increasing number of vendors are doing just that, resulting in vegan, gluten-free, and soy-free options on the market.
- Sustainability is in: concern for the environment and sustainable business practices continues to grow, and ice cream companies are getting on board. Many artisanal ice cream brands are working to source their ingredients locally, and some are also using more environmentally friendly packaging. Bigger brands are also looking to reduce waste, creating more recyclable and biodegradable packaging and reducing the amount of plastic used in their products. For example, Unilever brand Solero is testing a new box that uses 35% less plastic and has separate compartments for its ice cream bars as an alternative to wrapping each one in plastic. As packaging manufacturers continue to develop biodegradable and plastic-free solutions, more ice cream brands will begin creating innovative solutions to packaging their products.

> In today's market, competition is getting fiercer, consumer tastes are becoming more sophisticated, and "low-calorie" alone isn't cutting it anymore.

THE FOCUS IS ON IMPROVED QUALITY



Frozen ready meals are an instant, convenient, affordable, and healthy alternatives to fresh food.

By Reshma Raut – Jagtap & Amarnath Rajendran, research analysts, MarketsandMarkets Research Pvt. Ltd.

Ready meals consumption is influenced by the changing consumer lifestyles and new product launches by industry players. Given the shelf-life of products, their constant refrigeration keeps them free from microbial and fungal contamination.

FACTORS DRIVING THE GROWTH OF THE FROZEN MEALS MARKET

These can be attributed to the growing consumer preference for readymade foods, especially by the working population, supported by their income levels. Frozen ready meals can be stored for a longer duration, due to their shelf-life, without affecting the quality, based on the type of food. The availability of a wide variety of frozen ready meals on the global market has also contributed to the growth. However, as frozen ready meals are high in sodium and fat content, which can cause health risks, they become restraints to market growth. Currently, manufacturers are focusing on introducing ready meals with improved nutrition, quality, microbiological safety, and convenience of handling. Frozen ready meals, such as frozen appetizers and frozen breakfast products, also provide an added convenience to consumers. Moreover, frozen ready meal vendors offer products, such as frozen pizza with various toppings, which boost their demand among consumers looking for quality and taste along with convenience. In fact, this convenience factor, related to the usage of frozen ready meals, is one of the significant attributes driving the growth of this market. According to MarketsandMarkets, global convenience food & ready meals market was valued at approximately USD67bn in 2018, with projected growth rate between 5% to 6%, until 2023.

Key players such as Ajinomoto (Japan), Kraft Heinz (US), and Nestle (Switzerland), among others, are introducing new products in the frozen ready meals segment. For instance, in July 2019, Kraft Heinz, in collaboration with Oprah Winfrey, launched a series of the new O, That's Good! Frozen Skillet meals that are available nationwide in the US, in six varieties, namely, Chicken Alfredo, Chicken Margherita, Southwest Style Chicken & Penne, Italian Sausage & Rigatoni, Garlic Chicken and Potatoes, and the vegetarian-friendly, Three Cheese Tortellini. These products are specifically targeted at price-conscious consumers. On a different part of the globe, Miratorg Zapad is one of the largest producers of frozen convenience food and ready meals in Russia. It has a production capacity of about 80,000 tons of products per year, depicting increased domestic demand for frozen ready meal products.

TRENDS & INNOVATIONS

The current economic conditions have made consumers thoughtful about the prices of the products they eat. Frozen food provides a cost-effective option and, thus, is preferred by consumers. Due to globalization, culinary traditions from other countries tend to be more widely accepted by consumers, thereby fueling the demand for ethnic and exotic food. Hence, the ethnic "frozen ready meals" category is gaining ground.

Trends such as digitalization and e-commerce are significantly driving the frozen ready meals market, as it is convenient for consumers to select their preferred products. Consumers are inclined toward online shopping, due to features of convenience and variety. According to Eurostat, in 2018, almost 25% of the population bought food and groceries from online retail channels. With the growing penetration of the internet and smartphone usage, retail grocery shopping is emerging as one of the go-to platforms for companies to showcase and increase the sales of their food products.

> The sales of frozen ready meals are positively impacted by the outbreak of COVID-19.

Another factor is the increasing demand for vegan, gluten-free, and organic frozen meals, fueled by increasing consumer health consciousness and the rising prevalence of lactose-intolerance and celiac disease. The increasing focus of vendors to get organic certifications and vegan labeling will further contribute to the rising popularity of vegan, gluten-free, and organic frozen ready meals. In 2019, vegetables were part of innovative efforts among various brands, such as Birds Eye (Conagra Brands, Inc., (US)) and Green Giant. For instance, Birds Eye single-serve bowls were launched in 2019: these products were made with riced cauliflower. The meals were offered in sesame chicken, chicken fried rice, and beef & broccoli varieties.

Similarly, Mealtime Stories, L.L.C., a joint venture between Kraft Heinz Co. based in Pittsburgh and Oprah Winfrey, added three new frozen thin-crust pizza options and frozen skillet meals to the O, That's Good! line-up. The pizza crust is partially made with cauliflower, used as an ingredient that is becoming

Growth Drivers And Value-added Opportunities In Frozen Ready Meals

Source: Secondary Research, Primary Interviews, Related Research Publications, Government Publications, Press Releases, Industry Journals, and MarketsandMarkets Analysis

more popular in packaged foods. It can be concluded therefore that frozen ready meals vendors are adopting fair practices, producing high-quality products with naturally sourced ingredients, and launching new products frequently, to gain a competitive edge in the market.

Considering the consumption trend of frozen meals, the cold chain plays a vital role in the market, as it is a combination of temperature-controlled surface transport and supply chain. It is pivotal to maintain the quality and shelf-life of products. Cold chain services are designed to provide ideal transportation and storage conditions for temperature-sensitive products. The rising demand for frozen ready meals and fast delivery requirements, associated with the e-commerce-based delivery, has had a positive impact on cold chain operations.

67bn USD is the estimated global market value for ready meals.

IMPACT OF COVID-19 ON THE FROZEN READY MEALS MARKET

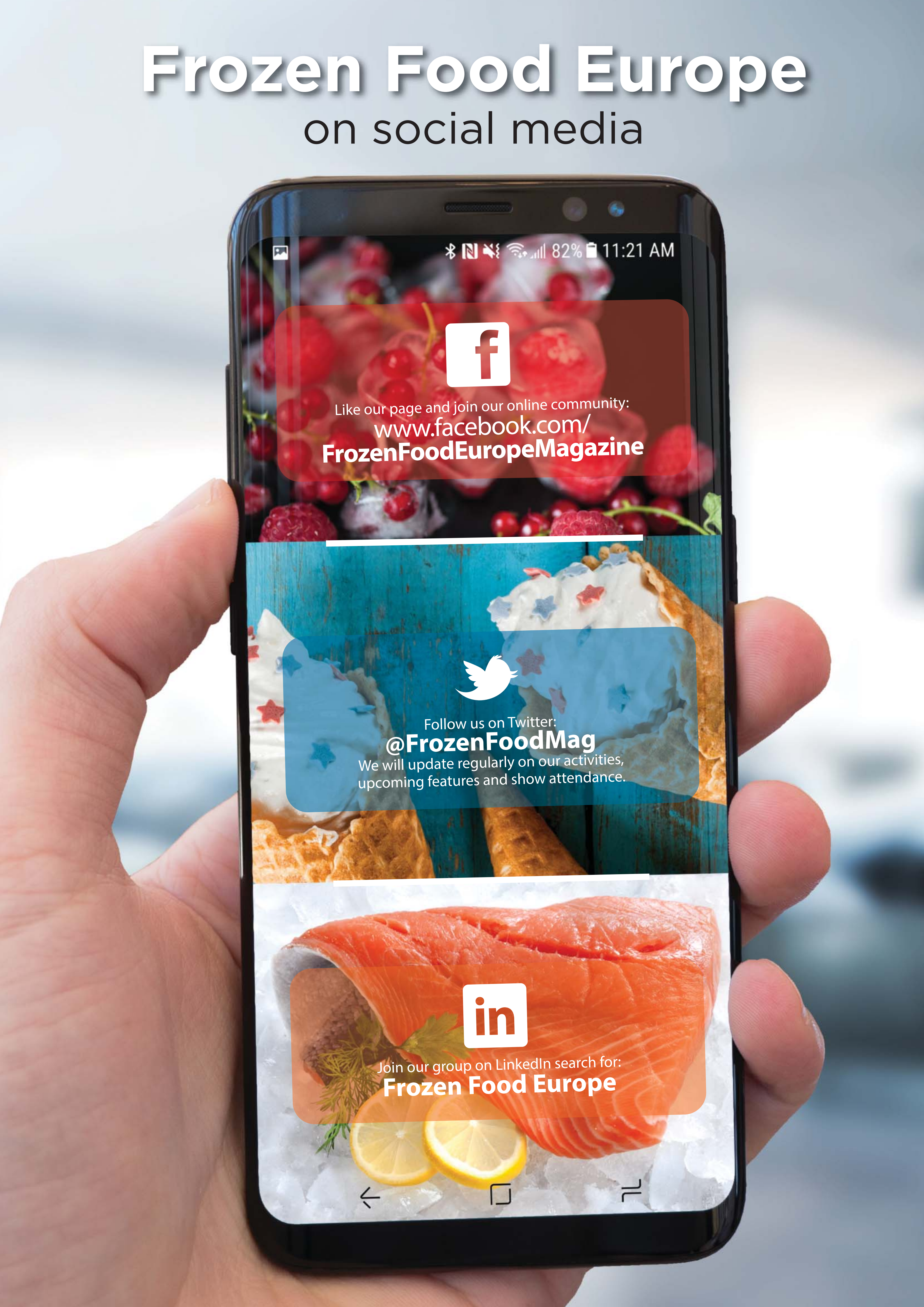
The COVID-19 pandemic has had a significant impact on businesses across industries in a very short time, including the frozen food and food supply chain. According to the VP of government and legal affairs at the Global Cold Chain Alliance (GCCA), “Companies across the food supply chain are working around the clock to produce, transport, store, and distribute food around the country. The biggest misconception about COVID-19 is that empty grocery shelves are an indicator that there is a shortage of food due to the recent runs on grocery stores; however, these have created short-term disruptions as the supply chain works to catch up and replenish.” Sales of frozen foods, especially frozen ready meals, have increased, as consumers are stockpiling food products. Thus, the sales of frozen ready meals are positively impacted by the outbreak of COVID-19.

GEOGRAPHICAL PROMINENCE

Europe accounts for the major share of the frozen ready meals market. Rapid urbanization is a major factor driving growth in the region. The increase in demand for convenience food, along with the incorporation of healthy ingredients in ready meals, innovative packaging, and regulations are factors affecting market growth. Consumers in the UK lead busy lifestyles and have considerably reduced their time taken for the preparation of food. This has made them switch to frozen foods, dried, and canned ready meals, as they are unable to strike a balance between the quality of food and the unavailability of time, which they could have utilized in cooking fresh meals.

IN CONCLUSION

Frozen ready meals are increasingly becoming an integral part of the daily diet globally, especially in European countries. Busy lifestyles have driven the food manufacturing industry to produce new goods that could meet the rising demand from consumers, which, in turn, fuels the overall frozen food market. Other trends, such as innovative packaging and shelf-life enhancement, present growth opportunities for the frozen ready meals market. As a result, companies in the food market are investing in technologies to get refrigerated dough, frozen vegetables and meat, partially cooked food, and fully cooked food, to store products for a longer duration. The shift of consumer preferences toward frozen ready meals drives the overall market, as it saves time and is convenient.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