FOODPOLIS

4th International Food Cluster Forum

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Korea National Food Cluster

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Contents

4th International Food Cluster Forum

Program Summary

TIME	TOPIC
14:00-14:05	**Opening Address** Agency of Korea National Food Cluster
14:05-14:10	**Congratulatory Address** Ministry of Food, Agriculture and Rural Affairs
14:10-14:20	**Photo Time**
14:20-14:30	**Promotional Video for FOODPOLIS**
14:30-15:00	**Time for the Change in Food Industry! Innovation and Creative Challenge**
15:00-15:30	**Creative Examples of Food R&D That Are Catching Worldwide Attention**
15:30-15:50	**Coffee Break**
15:50-16:20	**Global Marketing in Food Industry and Strategies of Brand Differentiation**
16:20-16:50	**Catch the Potential Food Consumers**
16:50-17:50	**Panel Discussion**
17:50-18:00	**Closing Ceremony**
18:30-20:00	**Networking Dinner**

FOODPOLIS HOSTS 4th INTERNATIONAL FOOD CLUSTER FORUM

TAKING ANOTHER BIG STEP TOWARD THE DEVELOPMENT OF A NORTHEAST ASIAN FOOD EXPORT POWERHOUSE

The Regency room at the Grand Hyatt Hotel in Seoul was packed with food industry leaders from Korea and around the world on November 14th, as FOODPOLIS hosted its fourth international food cluster forum and workshop. It was another big step toward a bright future for FOODPOLIS, as the plan to build the food cluster in Iksan, North Jeolla Province quickly gains momentum.

With more than 300 people in attendance, including representatives from food companies and food research institutes in Korea and around the world, the forum kicked off with an international press conference and 4 dynamic keynote addresses from industry experts. It wrapped up with a spirited panel discussion led by Seoul National University's Professor Lee Sam-ock.

Lee Ju-myeung, Director General at the Ministry of Agriculture, Food, and Rural Affairs, got the ball rolling at the press conference by outlining the FOODPOLIS vision and strategy, as well as the investment successes to-date. Director General Lee put the focus squarely on exports. "We know that growth in the food industry here in Asia and, indeed, around the world, is astronomical, and that fuels opportunity," he said.

"So we're building a national food cluster that is capable of serving as a strong export platform that can help our members reach the world with their products and services. Locating your business in FOODPOLIS is going to put you right in the middle of the action."

Mr. Lee was followed by Cha Ho-joon, Senior Investment Advisor from the Agency for Korea National Food Cluster, who leads investment promotion for FOODPOLIS. He gave a detailed presentation on the FOODPOLIS opportunity, including details on the investment activity to-date, and the work the government is doing to promote it via an exceptionally competitive set of incentives. The morning session was rounded out by a detailed look at the food industry and market opportunity in Northeast Asia by Professor Jung-hoon Moon from Seoul National University's Food Business Lab.

Investor interest in the cluster has been strong. In total, FOODPOLIS has garnered serious attention from over 100 companies and research institutes. Ninety-one companies and ten research institutes have signed investment

MOUs, coming from more than a dozen countries, making it a truly international endeavor. More than 2.2 million square meters of land has been earmarked for development and $538 million pledged for investment.

FOODPOLIS' Cha Ho-joon talked about why so many companies and research institutes have expressed such strong interest to-date. "Korea is faced with a tremendous opportunity for growth," he said. "Our proximity to massive markets puts us squarely in the middle of the most dynamic economic region in the world for the next century, and the Korean brand plays well in those countries. We are in the right place at the right time."

In the afternoon session, four international experts talked about this opportunity further and gave their professional insights as to what Korea and FOODPOLIS investors need to do to capitalize on it. Robert A. Peterson from the University of Texas at Austin, a highly regarded expert on the agrifood industry and well sought out speaker, talked about the importance of open innovation and creative challenges to the food industry. He called for change overall, and for industry players to think big to successfully grasp the opportunities facing them. His comments and suggestions were repeatedly referred to by other speakers and guests during the question and answer panel session that closed the forum.

Professor Peterson was followed by Dr. Ronald Visschers, from TNO Innovation for Life, a key food industry research institute based out of the Netherlands. He spoke about the importance of food and nutrition as trends in the global food industry. In particular, he gave a fascinating talk about the how we can tackle the sodium problem, while also highlighting alternative inputs that we might never think about, like algae, which just happens to be an incredible source of a variety of highly valued nutrients. TNO is currently at the forefront of global research aimed at harvesting algae's bounty.

The third speaker was Helen Chun, a well-known food and branding expert from the School of Hotel Administration at Cornell University. The focus of her speech was on the importance of packaging, and the need to recognize how consumers perceive food products.


trends in food & beverages
Mannion, Managing Director
FOODPOLIS


ood Cluster Forum

She gave many insights as to how companies can alter their food packaging and branding strategies to drive purchase intent.

Professor Chun was followed by the Managing Director and CEO of INNOVA Market Insights, Patrick Mannion, who spoke about the major trends his company has identified in the food and beverage market. In particular, he highlighted the fact that consumers are increasingly choosing foods that are both natural and healthy. He also pointed out the efforts being made to tap into that market by companies by reducing sugar content in their product ingredients.

The forum concluded with an active discussion with experts from both the academic and industrial fields. Led by Professor Lee, the panel comprised the four international experts, and Professor Lee Youn-suk from Yonsei University, Professor Kwon Oran from Ehwa Womans University, Professor Lee Jung-hee from Chung-Ang University, and Director Kim Yang-woo from Cheil Jedang.

The experts focused on what needs to be done to make FOODPOLIS a successful global food hub. There were many questions from the floor such as how to utilize open innovation in the cluster, and what fields should have further research. Professor Lee Youn-suk pointed out that the food packaging industry has the same potential to grow as the food industry. “Food packaging plays an important part in the food industry. Packaging itself is a source of marketing and can raise the product brand quality,” he said.

Mr. Mannion reiterated a key point from his talk that had resonated with the audience. “You need to look beyond Asia to be successful with a long-term vision,” he said, adding that “collaborating with research institutes around the world can make a big difference in how you succeed.” Professor Kwon Oran also emphasized the need to cooperate with other entities. “The food industry’s next big step is to work with technology, and to do that, we need to network on a global scale. FOODPOLIS needs to play an important role of building a strong network domestically and internationally to guarantee innovation in our food industry.”

Professor
Jung-hoon Moon

KOREA'S FOOD MARKET IS FULL OF POTENTIAL

The global food market is shifting towards the Asia-Pacific region, and Korea is located at the heart of it. Korea has the global competiveness to ensure companies have a solid business environment to operate in, and the Korean food industry has great potential for future growth. The time to invest is right now.

The morning session of the 4th International Food Cluster Forum brought many international media and officials together for a global press conference, where Seoul National University Professor Jung-hoon Moon provided many rich insights regarding the competitiveness and market potential of Korea. Attendees were keen to hear his presentation, which looked closely at the growing trends of Korea's dynamic food market.

Global food market is changing

He began with overall numbers for the global industry, pointing out that the global food market has come a long way since 2006. In the past, Europe and the Asia-Pacific region had the biggest food market share of 38.2% and 31.2% respectively. The Americas came in third with 20.1% and the Middle East & African region accounted for 10.5% of the global food market share. But now in 2014, according to Datamonitor, the Asia-Pacific region occupies 44.2% of market share, a staggering 13% increase compared to just eight years ago. While Europe and the Middle East & African region saw decreases, the Americas have also expanded their market share by 4.9%.

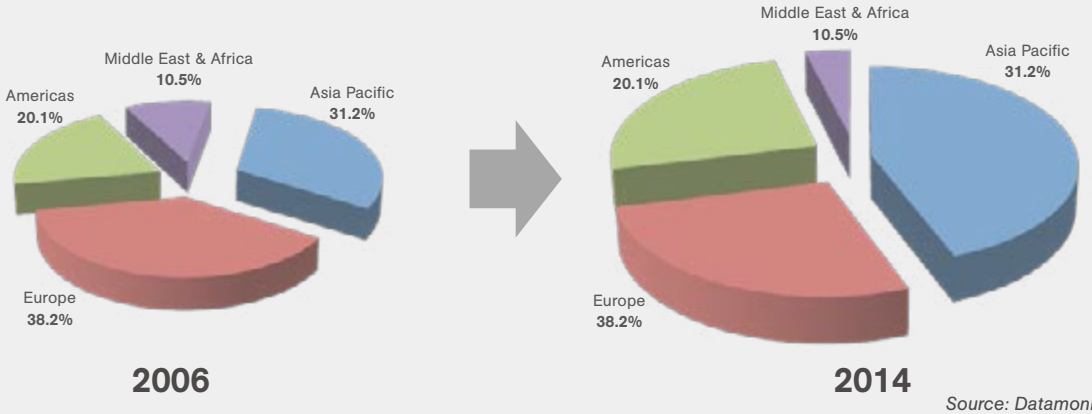
Professor Moon pointed out that the global food market is changing. Not only is the Asia-Pacific region now a front-runner, the Northeast Asian market has seen a steady growth in packaged/processed food between 2007 and 2012. During the same period of time, the European market and the global market has come to a standstill, while other parts of Asia saw a decrease in their share of the packaged/processed food market. According to market research results of 2011, Northeast Asia alone accounted for a whopping 25% of the global packaged food market.

Korea's business potential

Korea has global competitiveness when it comes to providing a good business environment. It ranked 26th among 144 countries in overall global competitiveness in 2014, and came in 22nd in corporate innovation and R&D. The World Bank even chose Korea as the 7th best country out of 189 countries for its "Ease of Doing Business" analysis.

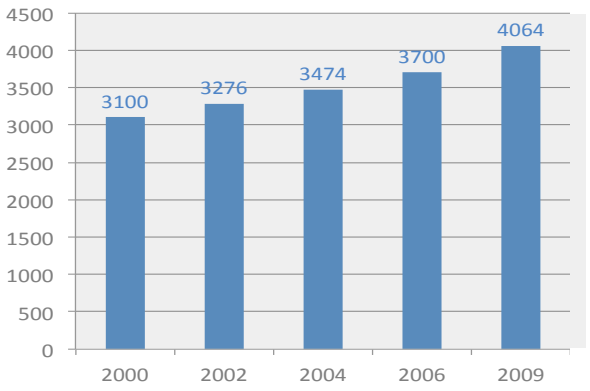
Professor Moon stressed that the time is now to invest in Korea's food market. The Korean food industry's strengths lie in traditional, healthy and functional food, which coincides with the major global food trends right now. Consumers worldwide are turning towards healthier and functional food due to the growing awareness of the aging population. He quoted Professor Jim Dator of Hawaii Research

Market Share Changes

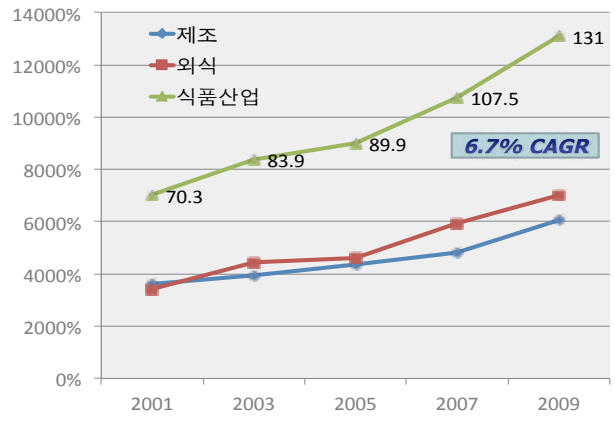


Source: Datamonitor(2014)

Global Food Market



Korea's Food Market



Korea has the world's 13th largest food market and has grown continuously(6.7% CAGR since 2001)

Center for Futures Studies, saying that "natural food, health food and slow food will all be settled into people's everyday lives."

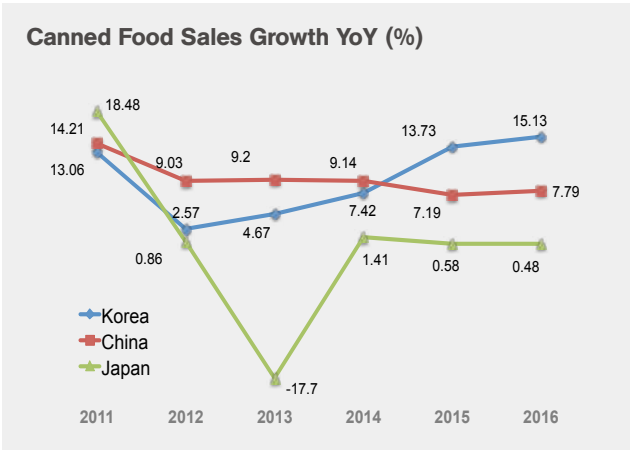
The changes in demographics such as the increasing number of elderly and single households are also playing major roles in the food industry. More companies are developing products that are convenient and easy to access.

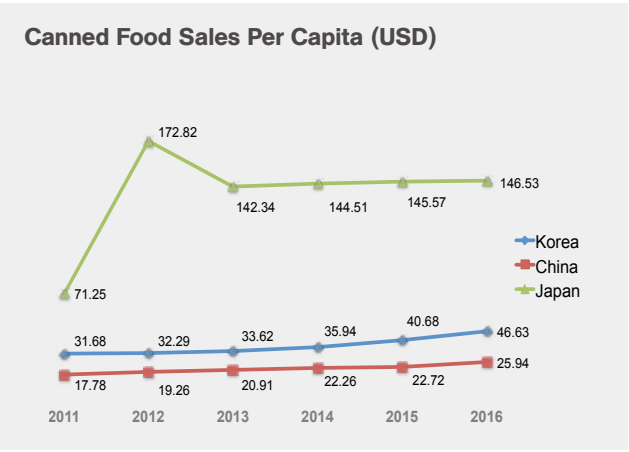
The global food market has seen an average 3.2% CAGR increase since 2000. Professor Moon pointed out that the Korean food market has future potential to grow. "Korea has the 13th largest food market in the world. It has been steadily growing by 6.7% CAGR since 2001," he said.

Food market trends in Korea

The low unemployment rate and rise in disposable incomes are leading to consumers buying more non-essential food and beverages. High value food products have also become a growing demand with the improved supply-chain and transport infrastructure. "Korean consumers have moved on from quantity to quality, and now, quality to variety," he said.

Korea has a very well developed online shopping industry that provides a rich variety of products and fast distribution. This is why more consumers are choosing to buy their food online rather than spend time in grocery stores. Compared to the 4.9% of UK consumers buying food products online, it is over double the number with 10.2% of Korean consumers purchasing online.





Source: Business Monitor International

A ready food market

The professor emphasized that Korea is a ready market, and that companies that are looking into investing won't have to spend development costs. "We have one of the most developed food markets in the Asia-Pacific area. Food companies can move in right now and gain access to what they need right away."

For comparison, the Category Development Index (CDI) of the dairy market in the Asia-Pacific region, excluding China and Japan, is 41.2, Korea's dairy market comes in at 597.1, which is over ten fold. The soft drink market in Korea has a CDI of 302.2, which again, significantly exceeds the Asia-Pacific region's 43.7.

Future growth in Korea

Food consumption growth in Korea has been steady since 2011, and experts expect a steady increase in the future. "Our food consumption per capita has been continuously rising since 2011. By 2016, we expect to see a bigger demand in the food industry," said Professor Moon. He talked of different food categories that are showing steady growth. For example, the canned food sales growth has gone from 2.57% in 2012 to 4.67% in 2013. It is expected to steadily increase up to 15.13% by 2016. Confectionary and coffee sales are also on the rise as Korean consumers are open to new and imported food products.

Northeast Asia is a popular market for global food companies, and Korea is located at the heart of it. Professor Moon strongly emphasized that Korea as a well-developed food market has great potential to grow as he concluded his presentation with the key message, "It is the right place and the right time to invest in Korea."

Biography

Jung-hoon Moon is an associate professor in the Department of Agricultural Economics & Rural Development at Seoul National University. He was awarded for best thesis of the year by AMCIS in 2006, and also has past experience at the Korea Advanced Institute of Science and Technology. Professor Moon has been quoted by major Korean media and has published many scholarly articles on food industry trends.

Food Business Lab

The Food Business Lab is a marketing and information management program within the Department of Agricultural Economics & Rural Development. It focuses on developing innovation and business research for the agrifood sector. The lab also researches the business aspects of the food industry.

Professor
Robert Peterson

OPEN INNOVATION THE KEY TO GLOBAL FOOD CHALLENGES

There are many global food challenges we have to meet, and two of the key ones are consumer preference diversity and feeding the planet's growing population. Peterson suggests open innovation as one of the critical solutions to developing the food industry in the right direction. He also argues that clusters like FOODPOLIS will need to work with entities outside the food value chain to co-innovate.

Professor Robert A. Peterson of UT Austin was one of the keynote speakers for 4th International Food Cluster Forum. His presentation "Time for Change in the Food Industry! Innovation and Creative Challenges" quickly garnered attention as it focused on the primary challenges our global food system faces, and how what he termed "open innovation" could help control them.

The traditional food value chain has become more and more complex as the supply chain continues to globalize. The traditional farm-to-fork value chain now goes through an intricate web of policies and regulations, manufacturing, processing, packaging, and distribution process.

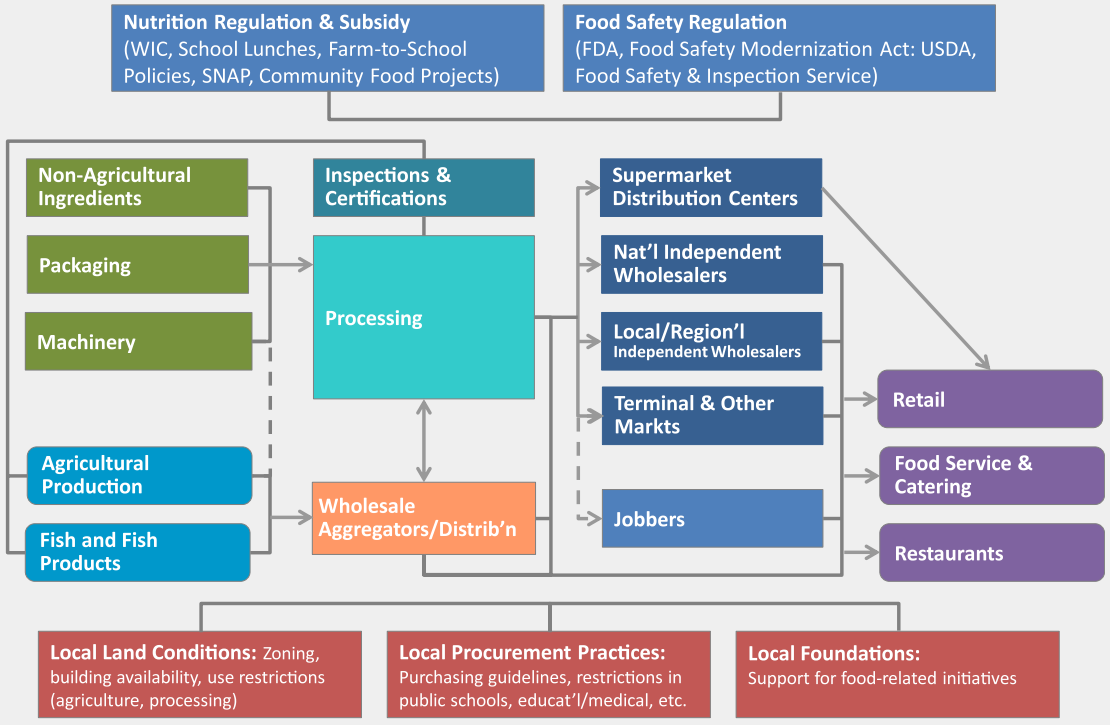
Professor Peterson spoke in particularly of the incredible complexity of the agrifood business, suggesting that it might be the most complex in the world. He acknowledged that establishing a food cluster is very challenging, time-consuming and expensive. The professor praised FOODPOLIS for planning and taking on the difficult task.

In his talk, he emphasized two major global food challenges. One is the increasing diversity of consumer preferences. The second is the pressing need to supply food to a global population that is estimated to swell to 9.6 billion by 2050. The two challenges show the different problems developing and developed countries face in food supply.

Fragmentation and Customization

The increasing diversity in consumer preferences is primarily focused on developed countries such as the U.S., Europe, and urbanized parts of Latin America and Asia. Consumers in developed countries tend to have more resources and a wider selection of choices to meet their needs. They also have different factors that lend to the increasing complexity, such as social

Food Value Chain



Source: Project Team "Designing an Inner City Food Cluster Strategy" (Next Street, ICIC, Karp Resources)

networking, anti-sugar, gluten-free foods, convenience, fusion meals, and more. These factors reflect the fragmentation and customization of the food market, and range in of offerings to market spaces and market sales.

Functional food is a prime example. It represents a very interesting collaboration happening worldwide between food companies and pharmaceutical companies. This has led to the development of food that not only solves a nutritional problem, but also a medicinal one. Functional foods have the ability to pull these two types of companies together to collaborate on meeting increasingly idiosyncratic consumer needs. And the first challenge relates to how we research and develop customized options to satisfy the diverse market needs. Different industries will need to work together to fulfill the demands of the different market spaces.

Productivity, Effectiveness, Efficiency

Regarding the second global food challenge, the professor mentioned that this mainly affects 3rd world countries such as a significant portion of Asia, sub-Saharan Africa, and the rural regions of Latin America. Unlike the fragmentation and customization issue of developed countries, this challenge is based on productivity, effectiveness and efficiency.

He named seven factors (increasing population, absence of distribution systems, climate change,

DIVERSITY IN CONSUMER PREFERENCES

- Sustainability
- Social networking
- Gluten-free foods
- Fusion meals
- Modern food trucks

emphasized the importance of governments and universities as the key elements to work within the cluster. He said the triple helix comprised of private companies, the government, and universities is essential in making FOODPOLIS a success.

He referred to clusters in Mexico that his institute works with as an example. Those clusters have universities, private industry, and government R&D labs that work very closely and successfully.

"You need to be global. Look at the market 30 years from today."

FOODPOLIS also needs to look beyond Asia. Professor Peterson suggests that doing otherwise limits growth potential. A truly global cluster has to be truly global in scale. He also emphasized that FOODPOLIS should network and collaborate with other food clusters around the world such as Food Valley in the Netherlands, looking at the food market

agricultural productivity flattening, reduction in arable land, environmental concerns, capital requirements) that relate to feeding the anticipated population of 2050. Climate change is becoming a major problem for the population. According to recent research, a 1 degree increase in temperature can reduce wheat production by 5.5%. That 1 degree difference would affect staples such as wheat, grains, and rice all over the world. Environmental concerns and capital requirements that 3rd world countries face are different from the problems being faced in 1st world countries but all the challenges need to be faced.

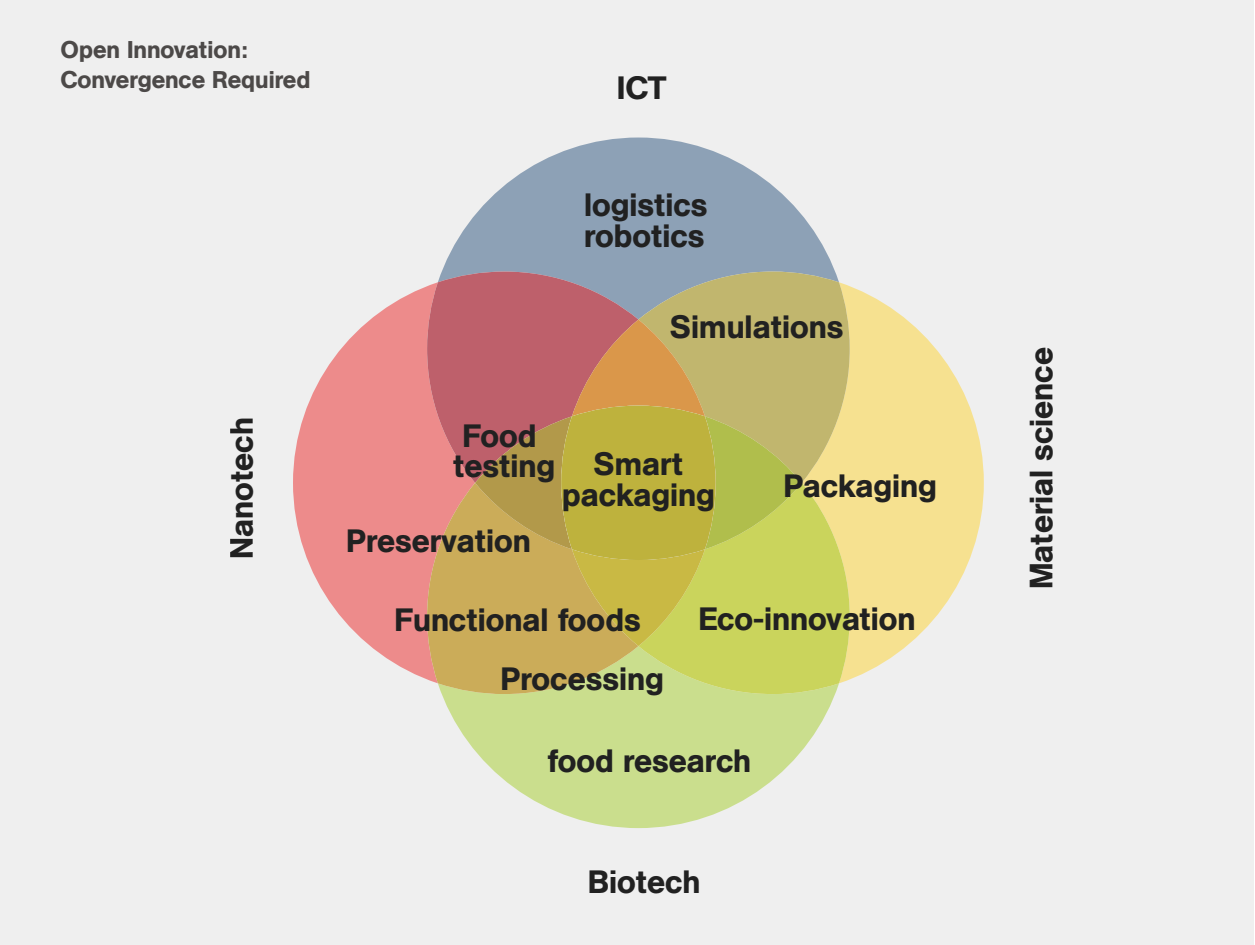
"Think differently. Think out of the box. Think open innovation."

One of the themes taken up during the forum was open innovation. Professor Peterson spoke strongly about it, arguing that it is a meaningful long-term way of solving the two challenges. Many other speakers agreed, and much discussion about the point ensued. Professor Oran Kwon from Ewha Womans University agreed, suggesting further that opening innovation had to be matched with convergence so as to capitalize on the increasingly important role of technology in the food industry.

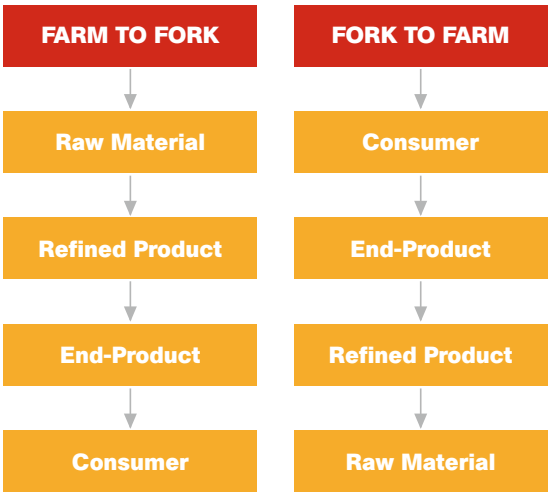
So what is open innovation? Open innovation requires collaboration and networking, both within and outside the food value chain. The professor

FACTORS TO FEEDING 9.6 BILLION PEOPLE

- Increasing population
- Absence of distribution systems
- Climate change
- Agricultural productivity flattening
- Reduction in arable land
- Environmental concerns
- Capital requirements



Open Innovation: Value Chain Approaches



with a long-term vision of 30 years, not the 2 years that the cluster is currently focused on. “In order to be successful, you need to be global,” said the professor.

“You can’t innovate by yourself.”

Professor Peterson’s message was straightforward—FOODPOLIS needs co-innovation to succeed. To innovate, FOODPOLIS has to work together with entities outside the food value chain collectively and collaboratively. This is the key to a successful open innovation. And to be successful in the long term, it will require the fusion of a range of technologies .

As FOODPOLIS continues with its future plans, it needs to look beyond food related companies, and expand its vision outside the region. The message in particular focused on technology, with a call for technological eclecticism irrespective geography.

Open innovations for the changing food value chain

The traditional farm-to-fork value chain is going through cultural changes. The latest approach to the food value chain is fork-to-farm. This is the opposite of the traditional method, and goes from consumer to end product, refined product, and back to the raw materials.

An example, from the talk was food trucks in Austin, Texas, which show open innovation that is responding to the increasing diversity in consumer preferences. The city has more restaurants per capita than any city in the U.S., he said, and yet there are over 1,500 food trailers. That would equal one food trailer per 456 people, and they are definitely changing the city's food culture. Food trailers have the advantage because they can go where consumers are, and they are relatively inexpensive with a diversity of offerings. They also tend to cluster in a way that can complement each other's business. Another interesting factor is that many restaurants in the city actually work with food trailers to pilot test new menus and products, rather than test it at their restaurants.

Regarding the second challenge of open innovation, Professor Peterson pointed to a unique example: the ancient Incan civilization. The Incan agricultural terraces were so high that there was a temperature difference between the top and bottom. They took advantages of the varied soil, temperature, produce, and even the types of rocks. The complex design for plants allowed the civilization to grow a variety of plants, including 300 kinds of potatoes, on each level. Professor Peterson indicated that we would need to learn to experiment more in the agricultural field in order to find solutions to feed the rapidly growing population.

As he mentioned in his talk, Open Innovation may not benefit all and that, in fact, it may lead to consequences up and down the line of industry and agriculture, as new sectors emerge and old ones collapse. But change can be positive and innovation should be embraced.

Biography

Robert A. Peterson is the Associate Dean for Research, and the John T. Stuart III Centennial Chair in Business Administration at the University of Texas at Austin. He is also Charles Hurwitz Fellow at the IC^2 Institute. Professor Peterson is widely known for his expertise in marketing strategy and research methodology. He has authored nearly 150 books and articles and has articles published in over three dozen journals.

IC^2 Institute

The IC^2 Institute is a prestigious interdisciplinary research unit of The University of Texas at Austin. It strives for the advancement of theory and practice of entrepreneurial wealth creation. The institute is a business incubator and accelerator that has a global presence in many countries such as Brazil, Chile, Singapore, and Korea to help start-ups and SMEs build innovation.

Dr.
Ronald W. Visschers

THE LATEST IN FOOD INNOVATIONS AND FOOD TECHNOLOGY

Consumers are becoming increasingly health-conscious, and food researchers have started to take notice. Dr. Visschers' research team is leading the food industry with its innovative work on salt reduction technology. His team has also developed exciting cutting-edge capabilities to extract valuable ingredients from alternative resources such as algae.

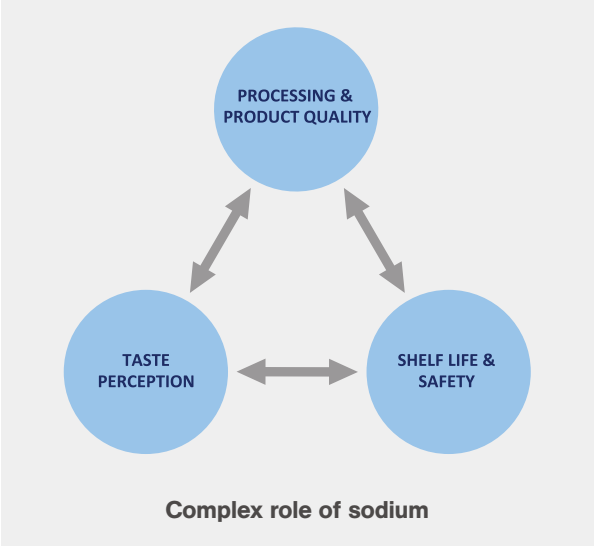
Dr. Ronald Visschers of TNO was our second speaker at the 4th International Food Cluster Forum. His presentation focused on the three latest food innovations and technologies he has been working on at TNO.

He said that his team has been targeting the development of a "toolbox to accelerate industrial product development, product introduction and product acceptation in order to make food production in 2020 healthy, appetizing, safe and robust."

28% Less Sodium Intake

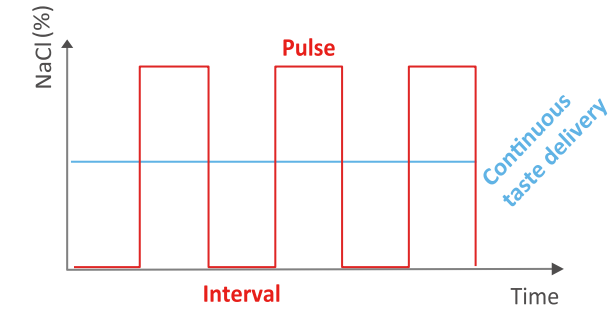
One of the similarities between Korea and the Netherlands is the growing elderly population, and the focus on food and health. With many recent studies suggesting that the average person is consuming excessive amounts of sodium, particularly from processed foods, sodium intake has become a major health concern.

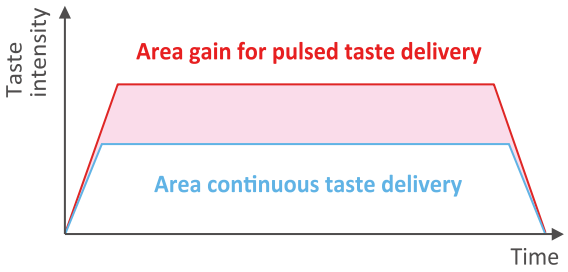
One of the new pieces of technology that TNO has developed is something called Sensory Contrast Technology. The challenge in developing it is to maintain the function of salt with less sodium, which has a complex role in the food industry, impacting everything from processing to shelf life. Sodium gives more than just a salty taste, it regulates the processing and product quality in food. For example, it affects the physical properties of proteins, and strengthens gluten. It also influences



Complex role of sodium

Principle of sensory contrast





the processability of dough, which results in better bread quality. As a preservative that lengthens shelf life, sodium is essential in regulating fermentation and chemical leavening.

Dr. Visschers explained that the solution to this challenge was to understand the process of taste, or in this case, salt contrast. Human perception is more alert to contrast than continuously steady levels. Put simply, if you eat salt regularly, you taste it less as we adapt to it. Past research shows that pulsed delivery of salt solutions enhance the taste intensity. Dr. Visschers' research further developed that theory and found that the bigger the contrast ratio of layers in high and low sodium, the more people would experience saltiness enhancement.

Experimenting with their findings in salt contrast, Dr. Visschers' team developed a way to reduce up to 28% of salt intake in bread. Dr. Visscher explained that TNO is currently working on product specific solutions. Initially the technology was to make layers of dough with different salt content, but now it is developing "salty spots" to build more contrast and boost saltiness perception.

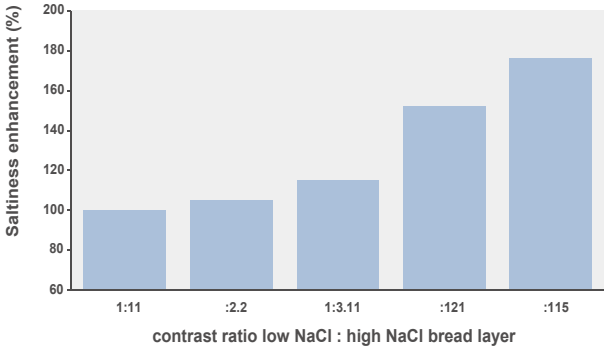
Algae as an alternative resource

Dr. Visschers also emphasized the importance of sustainability of our food and resources, especially with the expected population surge to 9.6 billion by 2050. Looking for a sustainable alternative for resources, his team at TNO turned to algae for innovation.

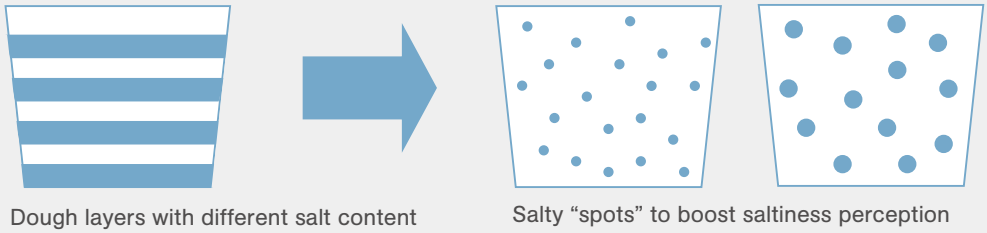
Not only is algae producible in both water and land, Dr. Visschers said that the common algae is high in protein and valuable ingredients. Currently many companies and research institutes are focusing on algae innovation and production systems, and universities in the Netherlands have developed an incubating technology that significantly increases algae production. All algae production becomes biomass, but without the proper technology the biomass wouldn't be used to its full potential. He pointed out that to make algae production sustainable, we would need to get maximal value from all the ingredients in algae.

Algae contains bulk chemicals such as lipids, proteins, and carbohydrates. It also has high-value chemicals like sterols, phycobiliproteins, astaxanthin, omega-3, and omega-6. If broken down properly, algae could be used for various purposes such as

Saltiness enhancement increases with increasing contrast

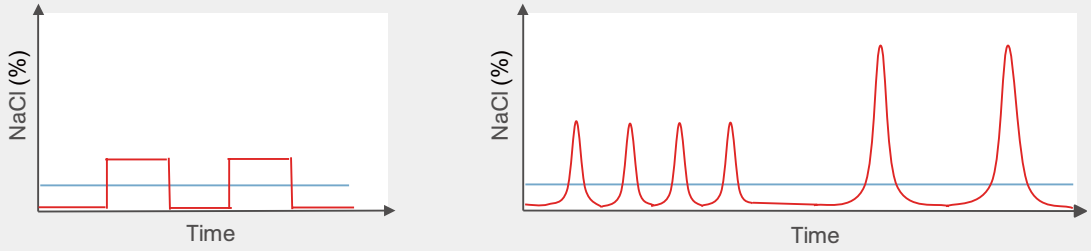


Current TNO contract research activities:product specific solutions (in progress)

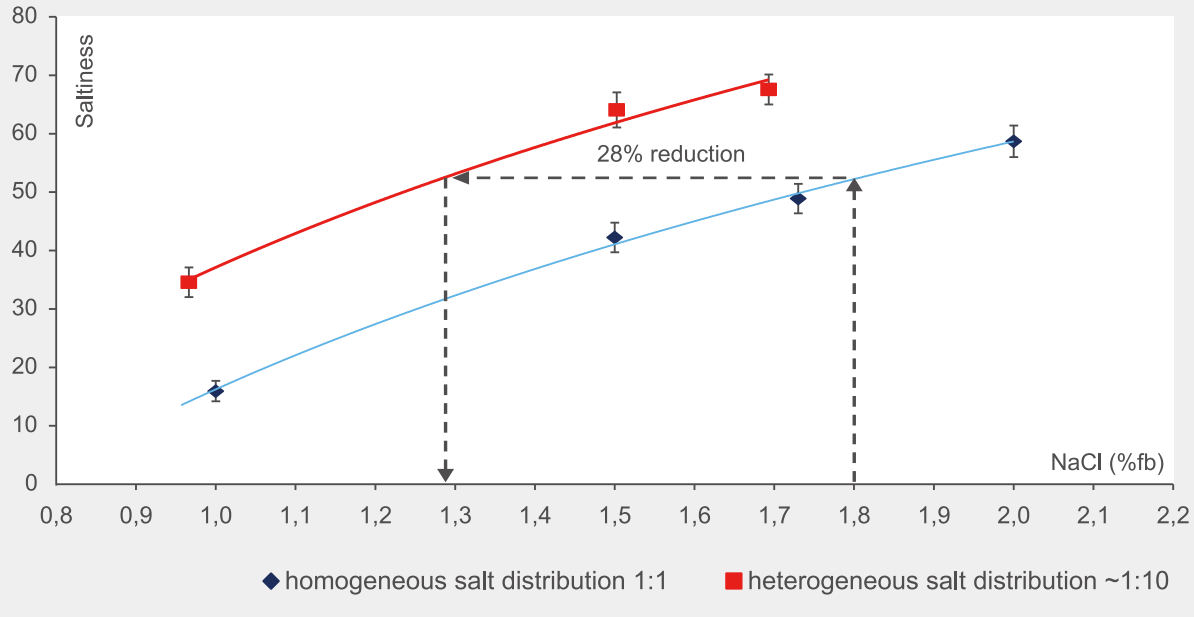


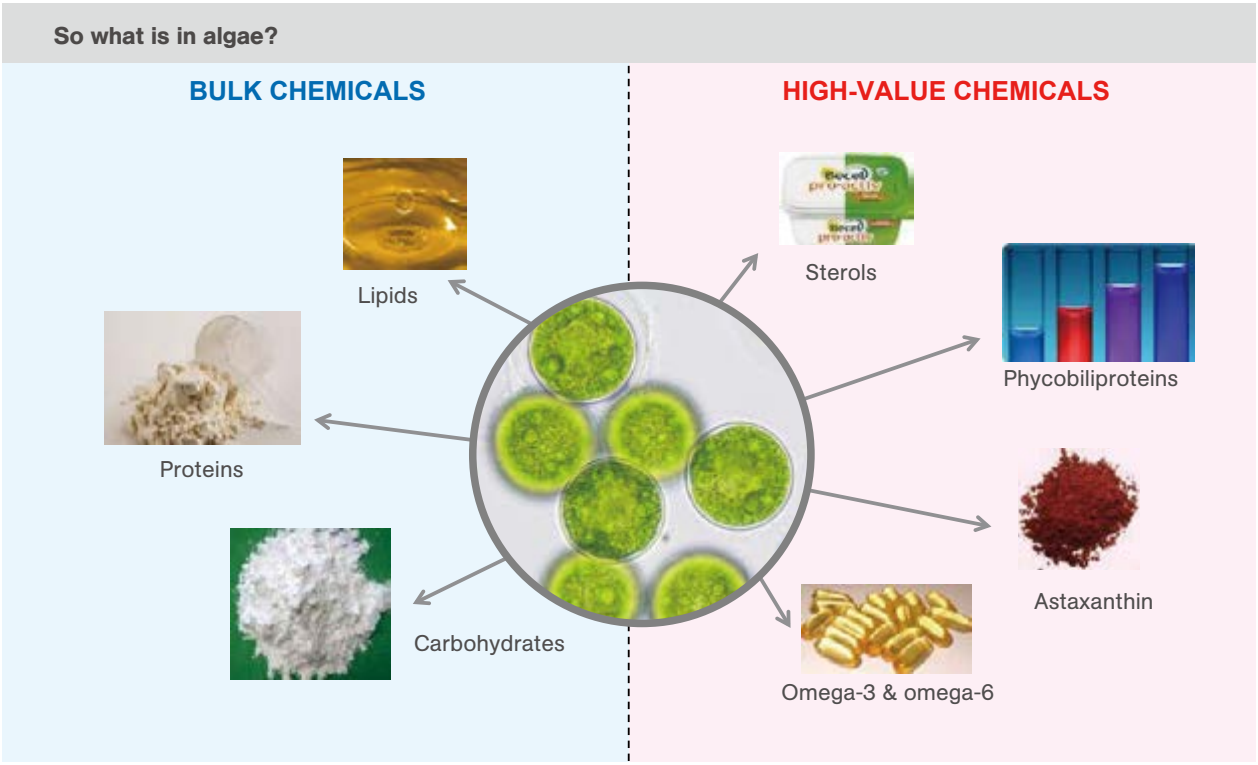
Dough layers with different salt content

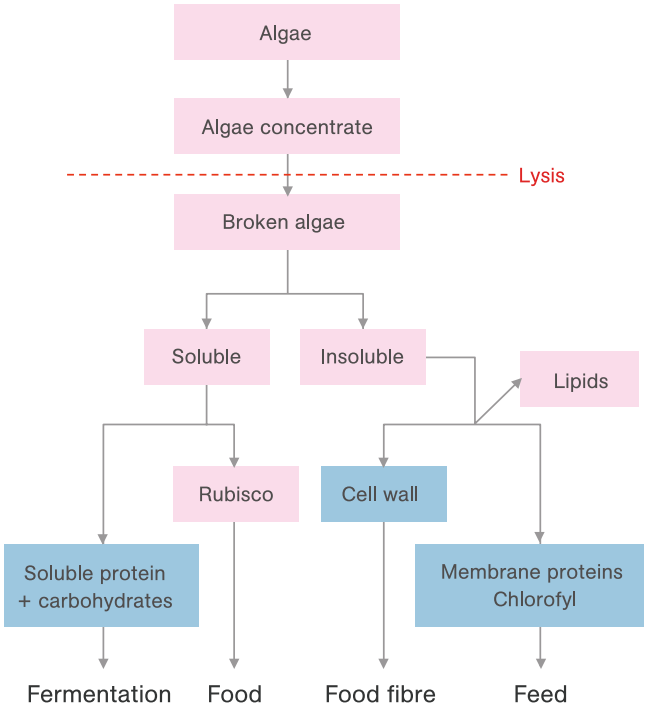
Salty “spots” to boost saltiness perception



Salt reduction in bread without loss of taste







fermentation, food, food fibers, and even livestock feed. This technology could help ease the demanding supply of staples such as grain and rice, which are sensitive to climate change.

Dr. Visschers explained that algae has small cell walls that are tough and difficult to break without damaging the ingredients. Based on the numerous methods his team tested, they began to focus on mild technologies such as dyno mill, homogenizer and small scale ultrasonic sound waves to develop the technology. By reducing the energy used to break the algae, the research team managed to find a way to break down the algae at a marketable price and reducing the electric cost by tenfold to €0.06/kg dw.

TNO has set up a pilot mobile refinery facility that can be taken anywhere algae is found. The facility takes the algae and processes it to improve ingredients. These ingredients are then made into various forms from powder to liquid and oils to be used for application tests. According to the results of these tests, researchers can take improved specifications to refine a new test using the pilot mobile refinery. This cycle would be the beginning of

further development in algae innovation.

Dr. Visschers agreed with Professor Peterson's comment about the need of open innovation to cope with the changing value chain. Algae biomass and technology would be meaningless without companies and industries that need them. This is why TNO works with a consortium of companies to build a new value chain. It has built a network between companies that grow algae, companies that produce the ingredients from algae, and companies that use the ingredients in their products. This is a form of open innovation by bringing industries and research centers together to create an emerging value chain. VALORIE, the mobile bio-refinery pilot plant, was built to help increase the scale of algae processing in industries.

3D Printing of Food

In the past decade, 3D printers have introduced a range of technological innovation and there are now several 3D food printers available on the market. Since 2007, many universities and food companies alike have been taking part in developing 3D food printing.

The food material must be sticky enough to stay intact with more and more layers being added on top. For example, the layer of powder would need a solvent, such as oil, to fuse the ingredients together. Food printers also allow the users to write letters or put in logos using the laser technology.

Dr. Visschers said one of the biggest advantages of 3D food printing is that you can cook and design the food at the same time. The printer can use different temperatures to cook for different parts of the printed food. Like the algae innovation, there are many new opportunities in the 3D food printing market. You could design and sell interesting shapes, or even create a digital cookbook. And 3D food printing was not done alone. Food companies, technology companies, and research institutes worked collaboratively to create the technology. Soon, more diverse technology will be merging with the food industry.

As Dr. Visschers and Professor Peterson pointed out, Korea is a front-runner in technology. With the collaboration between food companies and technology research institutes, FOODPOLIS could develop the next big thing in food.

Biography

Dr. Ronald Visschers is a research manager at TNO. He has dedicated his research in the food industry and has past experience working with the NIZO research center. Dr. Visschers has been focusing on developing new healthy innovation for the food industry, including his latest research projects on salt reduction and algae bio-processing.

TNO

TNO is an independent research organization whose expertise and research make an important contribution to the competitiveness of companies and organizations, to the economy and to the quality of society as a whole. The organization has a strong global network consisting of universities, research centers, and private companies.

Professor
Helen Chun

FOOD PACKAGING AND BRANDING STRATEGIES

Why do we choose the products that we choose? According to the University of Cornell's Hellen Chun, our personalities subconsciously influence us in making even the simplest decisions. With deep insights into our most fundamental behaviors, we can develop strategic branding that can attract different consumer personalities and drive purchase intent. It can also explain how sustainable packaging can be a key element in branding strategy.

Many people may not realize that when they pick up a product for the first time, they've done so because of the packaging more than the product itself. Product packaging could be the make-or-break point for food companies. It can play a critically important role in marketing the product and driving purchase intent, especially for a product that is new to the marketplace. According to a survey by an American packaging company, 41% of respondents said that packaging is an important product attribute. Over a third answered that they would try out a new product if the packaging intrigued them.

This puts many things into perspective. A great package design builds brand loyalty because it impacts shopping behavior and influences product satisfaction. It has become a vehicle that has the power to connect brands and consumers, which is why many innovative trends such as edible and sustainable packaging have started to gain popularity. People want something new, something different, something that piques their curiosity. All of this can make the actual product inside something of an afterthought.

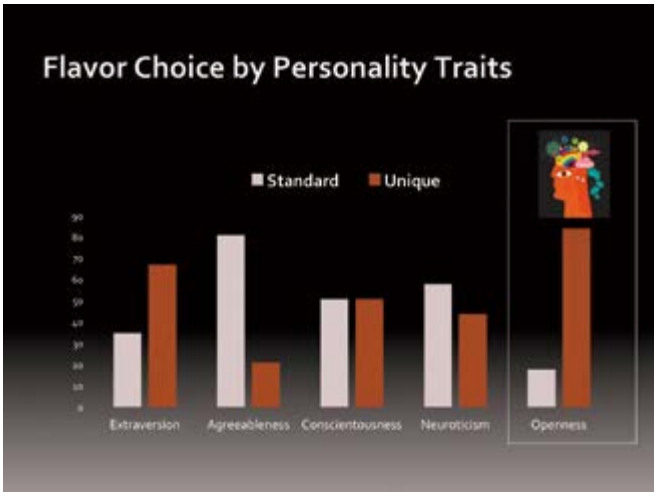
Professor Helen Chun from Cornell University gave her keynote address on this very topic, bringing to light many of the different ways that consumers perceive products through the packaging, and how carefully developed strategic branding can influence consumer behavior. Her presentation "Consumers' Unconscious Responses to Food Packaging and Branding Strategies" focused on two points. The first dealt with how personalities impact consumer perceptions and choice. The second was on green packaging and how it affects consumption.

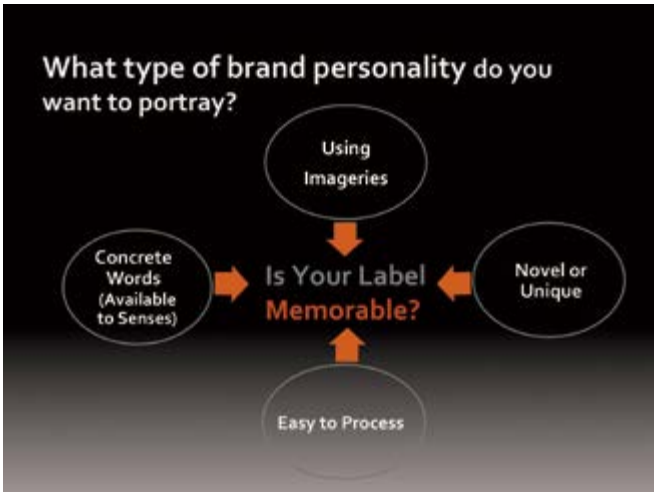
Personality and choice of flavor

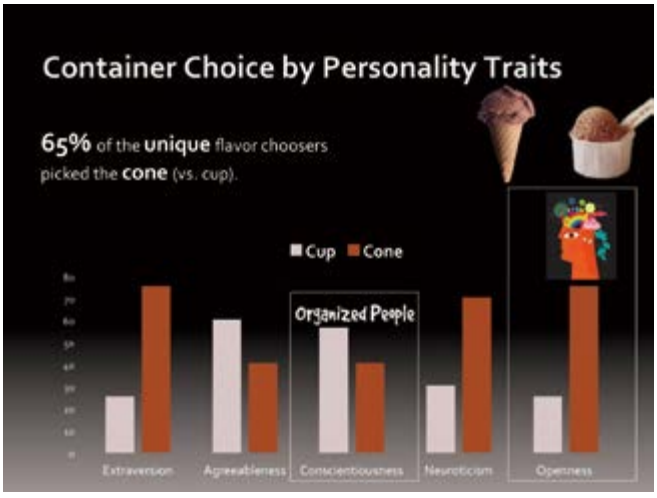
Our personalities subconsciously influence us even in those cases where we are making the simplest decisions about things are basic as what food we will buy and eat. Professor Chun pointed to five

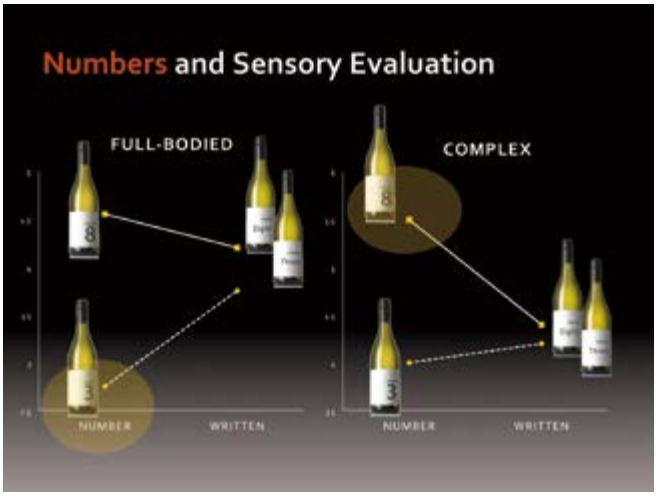

Big Five Personality Traits
Openness (Leonardo da Vinci): creative, imaginative, curious, inventive, value aesthetic experiences
Conscientiousness (Robocop): thorough, dependable, reliable, hardworking, task focused, efficient
Extraversion: talkative, energetic, enthusiastic, outgoing, sociable
Agreeableness: helpful, kind, trusting, considerate, cooperative
Neuroticism: anxious, easily ruffled or upset, worried, moody
Extroversion
Openness
Conscientiousness
Neuroticism

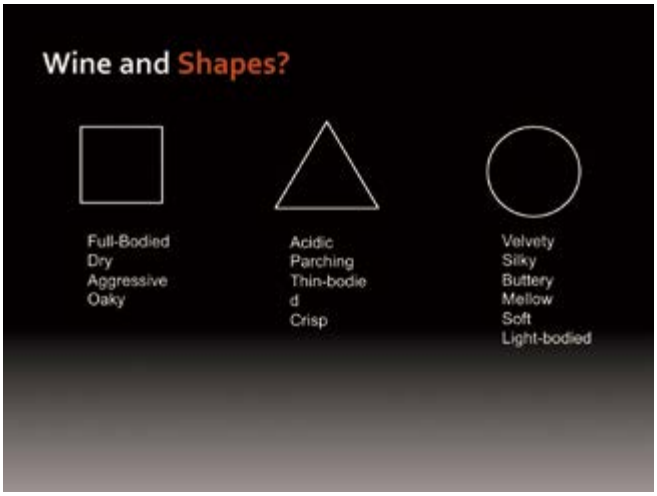

Excitement
Daring
Spirited
Imaginative
Up-to-date
ANOTHER @#% MERLOT!

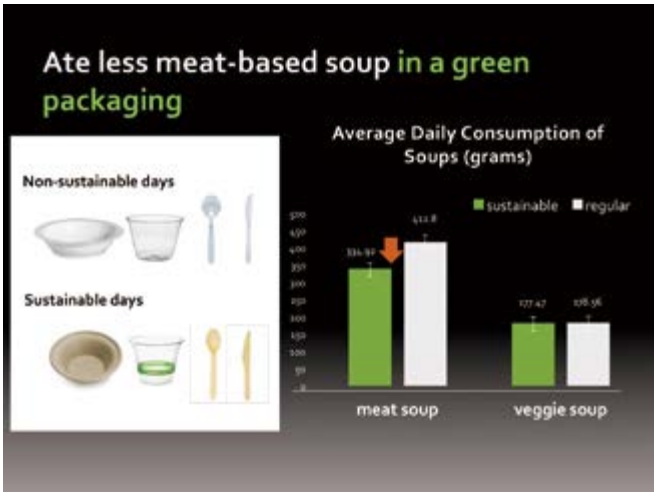

Flavor Choice by Personality Traits
Standard
Unique
Extraversion
Agreeableness
Conscientiousness
Neuroticism
Openness


What type of brand personality do you want to portray?
Using Imageries
Concrete Words (Available to Senses)
Is Your Label Memorable?
Novel or Unique
Easy to Process


Container Choice by Personality Traits
65% of the unique flavor choosers picked the cone (vs. cup).
Cup
Cone
Organized People
Extraversion
Agreeableness
Conscientiousness
Neuroticism
Openness


Numbers and Sensory Evaluation
FULL-BODIED
COMPLEX
NUMBER
WRITTEN
NUMBER
WRITTEN





personality traits that have an impact on our behavior in these situations: openness, conscientiousness, extraversion, agreeableness, and neuroticism.

Openness relates to being creative, imaginative, and curious. Conscientiousness is thorough, dependable, and hardworking. Extraversion, meanwhile, defines the talkative, energetic, and enthusiastic personality. Agreeableness is a trait describing the type of people who are helpful, kind, and considerate. On a different level, people who can be described as neurotic tend to be anxious, easily upset, and moody.

With that set as the background, Professor Chun referenced a survey that was taken at the Cornell Dairy Bar to see how ice cream flavor choices varied by personality traits. The survey categorized flavors like vanilla and chocolate as standard, and flavors such as coconut chip and black raspberry as unique. The results of the experiment were fascinating, showing that over 70% of consumers who could be described with openness as a personality trait chose the unique flavor category, while the majority of the people who could be described as agreeable were more apt to choose standard flavors.

Personality traits also differed when it came to choosing between having their ice cream in a cone or in a cup. The majority of the organized people, or the conscientiousness trait, chose the cup over cone. “Outgoing personalities like extraversion and openness chose the cone. Also, 65% of the unique flavor choosers picked the cone,” said Professor Chun.

Package designs to target certain personalities

One of the strongest themes from the presentation was the strategy behind targeting different personality traits with carefully designed packaging types. Using wine bottle designs as primary examples, she explained how the simplest of label designs can portray intended perceptions.

Unique shaped wine bottles, such as the ANOTHER !@#% MERLOT!, gives the perception of excitement, compared to the boring BIERZO wine bottle. The slanted bottle shape, label, and the shape of the cork seem out of place yet daring and imaginative. This gives us the impression that the wine is somehow different than wine in regular shaped bottles, suggesting that the wine will be unique. For some people, this can be an incredibly attractive selling point.

Another important aspect in package design is whether or not the label is memorable. In this context, there are four factors that designers should consider: Use of images, uniqueness, concrete wording, and how easy it is to process.

According to the professor, examples of wine labels that did not trigger memorable feelings were

lacking imagery to help their bottles stand out. In other cases, and some were in a foreign language that most people probably couldn't pronounce. The best examples for memorable packaging were labels for products such as Yellow Tail, The Little Penguin, and Barefoot. "The use of bright colors such as yellow and red, and familiar imagery leaves a memorable impact for consumers," she explained.

Numbers and shapes influence sensory expectations

In addition to so-called critter wines with funny animal pictures on the labels, you may also have seen wine bottle labels with big numbers. Have you ever paid attention to the shape of your favorite wine bottle label? Professor Chun conducted a study showing people two bottles of wine, one with the number 3, and the other with the number 8. When asked which bottle seemed more full-bodied, the majority answered number 8. "This is because the number 3 seems like an incomplete form of the number 8," she said. When both bottles of wine had the numbers written in word form, people typically did not feel a major difference between the two.

The shapes in the wine labels also affect what consumers expect from the taste of the wine. Square shapes give off the perception of full-bodied, dry and oaky taste. Triangular shapes predict a more acidic and crisp taste. Circles tend to leave the impression that the wine will be velvety, silky and soft.

Sustainable packaging for positive branding

Another aspect that Professor Chun spoke about is the increasing importance of eco-friendly and sustainable packaging. The growing trend is, perhaps, not surprising. According to a survey by Cone Communications, 67% of consumers in the United States consider sustainable packaging a priority issue when they are in the grocery store buying food.

Professor Chun pointed out that green packaging is now clearly being used as a brand element. "Green branding evokes responsibility in the mind of consumers," she explained, adding that when a consumer uses sustainable packaging, they unconsciously associate themselves with positive responsibility such as eating right, working hard, and exercising. In other words, choosing packaging that is sustainable gives them positive feelings about the choices they are making in life.

The professor also referenced a study that looked at how people eat when they are using utensils that are made with sustainable materials. When given sustainable kitchenware, the group of study participants tended to eat less meat-based soup. The study also found that the consumption of vegetable soup was the same for both kitchenware types. The behavior was explained from the perspective of responsibility. Professor Chun pointed out that consumers subconsciously feel a higher sense of responsibility to eat healthier options when the packages are sustainable.

Finishing up her presentation, Professor Chun suggested that sustainability has to be utilized as a key element in branding strategy. She emphasized that using eco-friendly packaging can be most beneficial when it is used for packaging healthy food as it would encourage people who are health-conscious to purchase it.

Biography

Helen Chun is an assistant professor in Services Marketing at the Cornell University School of Hotel Administration. She has developed expertise in the fields of consumer experience management in the service context, focusing on the role of consumer response and sensory marketing. She has received the Teacher of the Year Award, and Ted Teng '79 Dean's Teaching Excellence Award.

Cornell University School of Hotel Administration

Cornell University School of Hotel Administration was the first collegiate program in hospitality management in the U.S. The prestigious institute is now a global leader in its field. It also showcases its famous Statler Hotel and J. Willard Marriott Executive Education Center.

CEO
Patrick Mannion

HEALTHIER CHOICES ARE THE WAY OF THE FUTURE

Global food trends are becoming healthy. With the growing awareness of the aging population, the food industry is turning to healthier food trends. From natural flavors to Stevia, consumers are paying more attention to the food they eat. INNOVA Market Insight's Patrick Mannion stresses that food companies need to identify the next big consumer group.

"Sugar reduction is relevant for everyone."

That was the first key message delivered by Innova Market Insights CEO, Patrick Mannion. Facing the growing abundance of food selections, more and more people are making health conscious decisions, and one of the primary ways to eat healthier is to reduce sugar intake. That is critical for children, people who want to manage their weight, and the elderly for healthy aging.

Sugar is often linked to obesity and diabetes, a primary reason why food companies are racing to reduce it. Market research from Innova shows that in 2013, 22% of soft drinks launches tracked had reduced sugar content, while 12% of cereal launches also displayed sugar reduction. Even the confectionary industry, which is most dependent on sugar, was able to reduce sugar in 8.6% of its newly introduced products.

Sugar is not the only ingredient used to give sweet taste. Asian confectionaries are known to use sweeteners and, in 2013, the share of product launches in the confectionary market that depended on sweeteners was 40%. For example, candy and chewing gum are labeled as "sugar free," and some of these products may even have 50% sweetener.

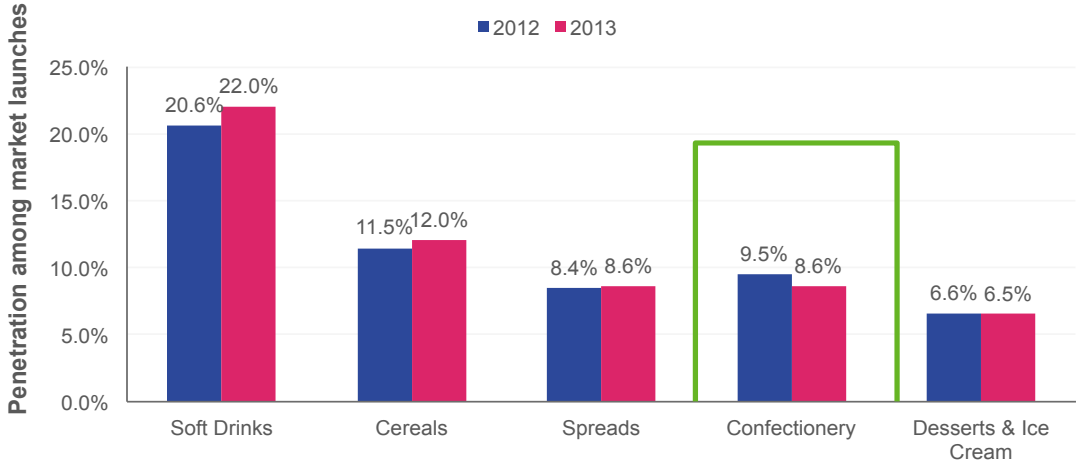
Sugar free is the most popular form of sugar reduction in the global confectionary market, but Mr. Mannion pointed out that the "no added sugar" category is showing impressive growth. Products with no added sugar refers to natural ingredients. For example, fruit flavored chewing gum with natural occurring sugar from actual fruit. These natural flavor products mostly feature no added sugar or sweeteners.

It is still an ongoing debate whether sugar or sweeteners are better for your health, and many consumers readily prefer products that advertise real sugar. This is because they feel that sugar is a natural ingredient, while sweeteners are considered an unnatural additive.

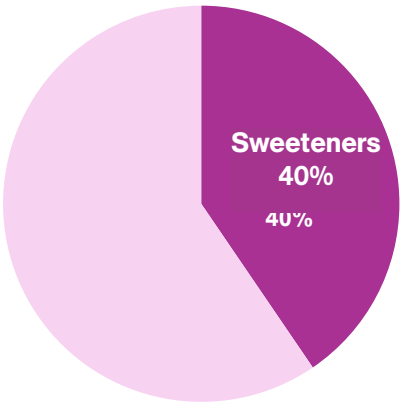
The rise of "natural" clean labels

Another trend pointed to in Mr. Mannion's keynote was that consumers are opting for natural alternatives and are willing to pay more for them. This is leading companies to provide clean labels for their products.

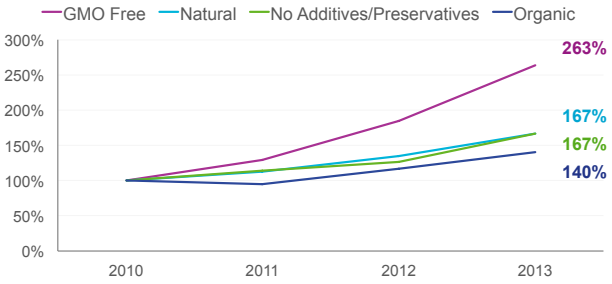
Soft drinks biggest category for reduced sugar claims



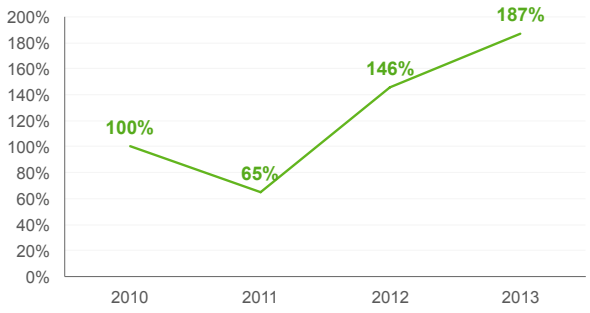
No slowing down of sweeteners in confectionery



Clean label claims still on trend



No-added-sugar gaining momentum



What does "natural" mean to US consumers? *Source: HFI*

(L) Patrick Mannion, CEO of Innova Market Insights
(R) Jeong-kwan Choi, General Manager of Innova Market Insights Korea

According to a survey of what US consumers think "natural" in food products means, the majority, or 49%, answered as not including any preservatives. Fully 47% answered "no artificial flavors," while 39% said "no artificial colors." A little over a third of the surveyors also said that natural means it is in its natural state, whether it is meat or vegetables.

Consumers are becoming more concerned and picky about what they eat. More and more people check food labels to understand what they are buying to feed families. This has brought along a trend among food companies to add in clean labels on their product labels. For example, "natural" and "no additives/ preservatives" labels have increased significantly between 2010 and 2013. Food companies choosing to use clean labels to attract health conscious consumers are also increasing in Asia. Compared to new product launches with clean label claims in 2010, "organic" labels increased by 252% in 2013.

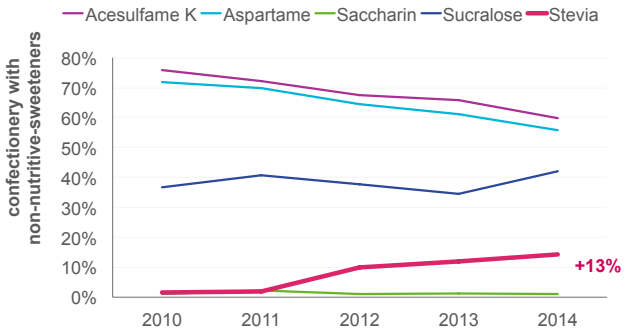
Australia ranks at the top with the highest amount of clean label claims in 2013 at 45%, with the U.S. coming in second with 31%. The addition of clean labels is still a growing trend in Asia, as 13% of products launched had clean labels. Mr. Mannion suggested that Asian food packaging companies could learn and be inspired from the more mature markets of Australia and the U.S.

Clear trend: consumers want more natural, less artificial

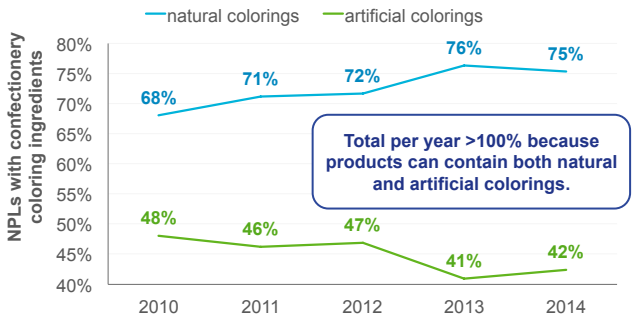
The more the consumers know about something, the more they are going to concentrate their focus on it. Consumers want to understand the ingredient list, and they don't like to see what Mr. Mannion referred to as e-numbers, which are codes for substances which can be used as food additives. They are clearly artificial, and food companies are finally understanding that consumers feel negative towards these because they appear non-transparent. More companies are choosing to avoid printing e-numbers on the ingredient list, and have started using the full ingredient names. In 2006, 18.9% share of new products launched had e-numbers in the ingredient list. But in 2013, there was a 4.9% decrease in products with printed e-numbers.

Making clean label claims utilizing what is familiar to the consumers, such as emphasizing the use of natural ingredients, will help give the product a positive brand image. Companies are coming up with new ways

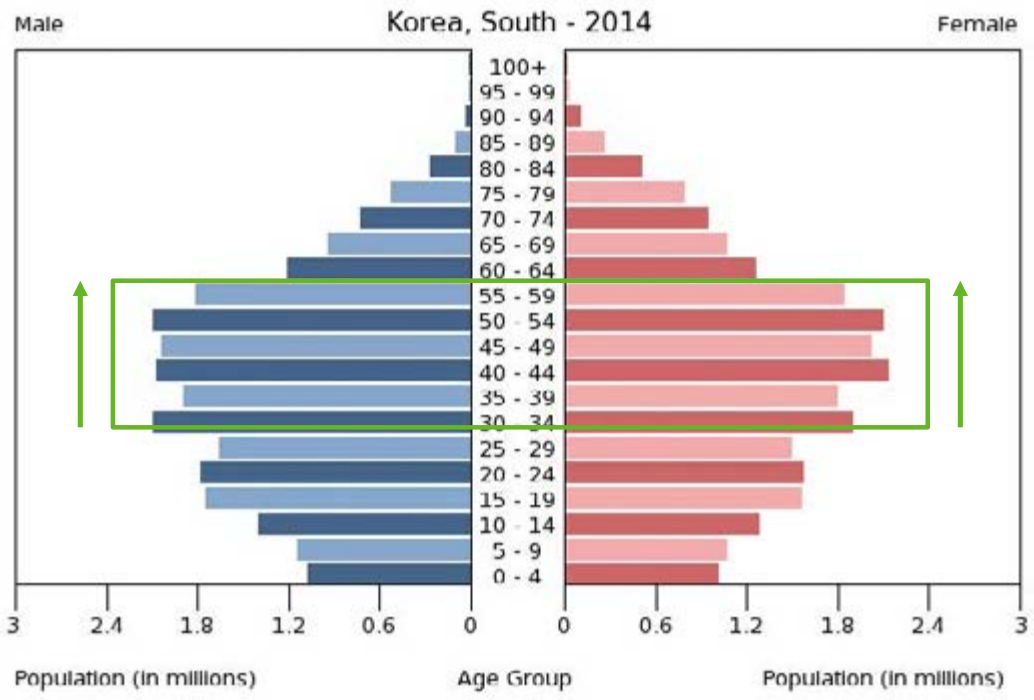
Success of Stevia



Natural preferred over artificial colorings



The ignored age group is significant and growing



of making clean label claims like “99% real fruit,” “100% cold pressed organic juice,” and “fruit, absolutely nothing else.”

Although sugar is a natural ingredient, many consumers still express health concerns. This is why Stevia, a natural low calorie sweetener, is booming in the confectionary industry compared to other artificial sweeteners. Stevia fits a niche market as a natural ingredient that also can play the role of an artificial sweetener. Stevia has steadily increased its share in the confectionary industry by 13% in the past four years. The use of other artificial sweeteners such as Acesulfame K, Aspartame, and Saccharin has been decreasing over the years. According to Innova’s market

research, 22% of new products launched with Stevia had a clean label positioning such as “fewer calories,” “no added sugar,” and “no sugars.”

Sweeteners are not the only factors consumers prefer natural. Natural color additives have been taking up to a 75% share in newly launched confectionary products worldwide. More companies are putting “no artificial colors or flavors” in their product labels to attract health conscious consumers.

Senior consumers form an increasingly important target market

An important factor Mr. Mannion pointed out is that the world’s growing populations of senior citizens is no longer a niche market. Rather, it is the next big consumer group. This is especially true in Asian countries such as Korea, Japan and China. And yet, the 40-59 age group is often underestimated as a target for new product development, with most companies choosing to focus on the younger generation as the major consumers of the future.

But Innova suggests the market research show different results. The senior population will exceed the younger population in the near future, meaning that the focus has to shift. This could be a big opportunity for companies if they develop products that meet the needs of this newly important group. Mr. Mannion explained that there are three key attributes that would appeal to the senior consumer group: convenience, health, and taste.

Food companies, pharmaceutical companies and the packaging industry must work together through open innovation to provide these attributes. Packaging companies need to develop lightweight and easy to open packages, and have easy to read labels. Pharmaceuticals should work with food companies to create strong flavored, easy to swallow food that is also beneficial for the senior consumers’ health.

Biography

Patrick Mannion is the CEO of Innova Market Insights. He has dedicated his working life to food industry intelligence and knowledge for professionals. He co-founded Innova Market Insights and The Innova Database to develop a professional network for international market intelligence. Mannion has published many articles on future food trends and regularly shares his expertise at major food forums worldwide.

Innova Market Insights

The Innova Database is the world’s largest food and beverage database. Led by a team of experts, the online database has product data from more than 70 countries. The company also offers solutions for food companies and researchers. Many global companies rely closely on the Innova Database to create new marketing strategies and to keep track of new technologies.

Panel Discussion

FOODPOLIS AND CHANGES IN THE FOOD INDUSTRY

Several academic leaders and representatives from business gathered to discuss the major changes being observed in the global food industry. The lively discussion ranged from the big trends to open innovation, and what FOODPOLIS needs to do to succeed. Experts showed high hopes for FOODPOLIS and strongly suggested the importance of the building a global network.

The panel discussion topic was about the changes in the food industry and the role FOODPOLIS plays in it. There was an active discussion on what needs to be done to make FOODPOLIS a successful Asian food hub. This is a summary article covering some of the important points that were discussed.

In addition to the four keynote speakers from the forum, Professor Robert A. Peterson, Dr. Ronaldo Visschers, Professor Helen Chun, and Mr. Patrick Mannion, the panel included several academic leaders and representatives from business. Honorary Professor Sam-ock Lee of Seoul National University hosted the panel discussion, with Professor Younsuk Lee from Yonsei University, Professor Oran Kwon from Ehwa Womans University, Professor Junghee Lee from Chung-Ang University, and Director Yangwoo Kim of CheilJedang participating.

THE BIGGEST TREND IN FOOD

"You need to give incentives for healthy trends," said Dr. Visschers. An increasing number of consumers are becoming more health conscious, and the food industry is shifting to meet the consumer demand. Many research institutes are working on finding healthier ways to make food, and even Dr. Visschers' research team has spent years working on the salt reduction technology to help food companies reduce the use of sodium in processed foods. Professor Peterson and Mr. Mannion strongly agreed, with Mr. Mannion pointing out that the biggest consumer group is the elderly population, and it will continue to grow.

IDENTIFY THE GROWING CONSUMER GROUP

"We need to identify the needs of the elderly consumers as a big opportunity," emphasized Mr. Mannion. One interesting aspect shared by Korea and the Netherlands is that both have quickly growing elderly populations. He added that packaging, food, and pharmaceutical industries could strongly benefit from this consumer group if they worked together. Professor Peterson also commented that people tend to lose their sense of taste with age, which means products need to be developed differently to take advantage.

OPEN INNOVATION AND CONVERGENCE

Professor Peterson came back to his theme of open innovation, suggesting that finding a solution that targets senior consumers could be a great chance for open innovation to be meaningful. Food companies need to find ways of making stronger flavors while keeping

it healthy. This is where they can work with pharmaceutical companies to make functional foods that would benefit the consumer with taste and health. Food packaging companies can tie everything together with easy-to-read labels and convenient packaging.

"Convergence is essential," said Professor Kwon, adding that "the two keywords we need to focus on are consumer and technology." She was specifically referring to the critical nexus of activity between industries and research institutes and how it needs to be aligned towards figuring out how to utilize technology to meet consumer needs. She opined that FOODPOLIS can play the important role of building a network that brings together companies, governments and universities.

THE $500 BILLION PACKAGING INDUSTRY

Professor Younsuk Lee argued that the great potential of the packaging industry could also benefit from open innovation in FOODPOLIS. "The food package is the silent salesman, with food packaging accounting for 70% of the $500 billion global packaging industry," he said.

Professor Junghee Lee added that food marketing that makes food packaging work in concert with social media has the power to open news doors to consumers. He also emphasized that in order to build our food industry's global competitiveness, more research must be done concerning the safety of food packaging.

Giving insight from the food industry, Director Kim said some of the biggest concerns food companies have are the possible social and food problems led by the aging population. He pointed out that international companies are constantly working on developing safer, more functional packaging technologies that can anticipate consumer demand in the future. He strongly believes that Korean food companies also need to understand that the senior consumer group is growing and that they should adjust their packaging strategies accordingly.

THE IMPORTANT FACTORS FOR FOOD PRODUCT PACKAGING

Of the many questions from the floor, there was one question that stood out: "As a food company, what is the first factor to consider in making a new food product packaging?"

"Packaging design needs experience with sensory expectations and functionality," replied Professor Chun. She also added that sustainability and functionality must work together to be

successful in giving a positive image to the consumer. A prime example given was how one company wanted to make an eco-friendly package and compromised on functionality, which resulted in the bag making a very loud popping sound when being opened. The professor says functional yet sustainable packaging could be the abstract goal to help people make healthier and environmentally friendly decisions.

What is the first step for FOODPOLIS?

The last question of the night was probably what most everyone in the floor was wondering: "In 2016, FOODPOLIS will begin operation. What is the first step for FOODPOLIS to succeed and foster open innovation?"

Professor Peterson started the answer with the comment that "you need a very specific and strategic plan for the food culture. Plan for the various kinds of entities and institutions. Make sure they supplement each other." He also emphasized that FOODPOLIS is currently focusing too much on Asia, and that it needs to look beyond to the global market to be successful with a long-term plan. "By limiting the vision to just Asia, FOODPOLIS could be missing everything."

Mr. Mannion strongly agreed with the professor, and pointed out that FOODPOLIS should work with other clusters such as Food Valley from the Netherlands to build networks and innovation. Other food clusters have grown organically and have the experience that could help the industrial food complex operate efficiently.

"You will need excellent professors and researchers. FOODPOLIS needs incentives for universities to come in and develop the industry," said Dr. Visschers. He also pointed out that Korea has a competitive advantage with traditional healthy food, and recommended it as one of the fields of further research.

On hearing Dr. Visschers' suggestions, Professor Peterson also encouraged FOODPOLIS to look into the strengths of the food and technology in the cluster, emphasizing the need of a strong community of scientists and researchers. "If you cannot get them here, network with institutes worldwide." The professor says the food industry keeps evolving, and that even the younger generation is setting their sights on the market. According to a survey on millennials nationwide in the U.S., the largest number of people who answered they want to be entrepreneurs said they would be in the food industry.

"Technology is the most important factor in the food industry," added Professor Oran. She implied that there are a variety of technologies that could be opportunities for FOODPOLIS if they build a strong network.

Wrapping up the panel discussion, the two main messages that stood out were open innovation and global networking. FOODPOLIS is to begin fully operating in 2016, and experts say the key to success is to build a strong global network beyond Asia to fully pursue open innovation. Rather than looking at a short-term goal of 2016, FOODPOLIS will need to look at 30 years as a long-term goal to establish itself as a global food hub.

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