



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

## Product development in the European and overseas food industry

Sándor Balogh<sup>1</sup>

### Abstract

In the present study various product development trends in the food industry are reviewed with the main focus on convenience, organic and functional foods. Also highlighted are differences between the U.S. and Europe in terms of consumer habits and food supply trends. Through exploring the reasons behind differences in the extent of product innovation, the author illustrates the different role convenience products have in the US and European markets. Also revealed is the relationship linking convenience products, gluttony, and obesity. In the USA a third generation of convenience products has already appeared with the dual aim of delivering convenience and health. Although in Europe consumption “philosophy” accepts the importance of convenience, greater emphasis is placed on natural origin, freshness and traditional recipes.

### Key words

Food industry, product innovation, convenience products, organic foods, functional foods

### Introduction

The present author has previously examined food industry innovation trends and the subsequent results of the innovation process. This paper will present the latest results of this research. The research partly endeavoured to explore new sources of information, and the current paper is mainly based on these new sources.

**Most of the new information comes from the Internet. The author’s work was greatly facilitated by the establishment of an accessible global product development data bank for the food industry.** In this system the wealth of information available can be considered *electronic innovation transfers*, meaning sources for company product development which don’t mesh with the Gutenberg galaxy’s traditional, paper-based products.<sup>2</sup>

<sup>1</sup> University of Szeged, H-6724 Szeged, Mars tér 7., E-mail: szebusi@invitel.hu

<sup>2</sup> In Europe ProductscanOnline, operated by Datamonitor, is the institution which transmits the greatest amount of product development information in the fastest time. From its homepage, information can be obtained about tens of thousands of food industry products spanning 41 product groups,. It is available both in English and in German. In the United States Mintel focuses mainly on food service innovations, which may have applications in manufacturing. There are other sources for Innovation information, such as e.g. Eureka! Ranch®, the magazine of professional inventors, or the Merwyn Technology service of the same organization. There are also other industrial publications like Welcome 2 Innovation put out by The National Starch Food Innovation. Internationally, Stagnito Communications Inc. is the major market player when it comes to innovation information. This particular field has experienced a high degree of concentration since May 2000 when Stagnito began a cooperation agreement with Marketing Intelligence Service and Medical World Communications Company, which unified their network information systems, creating an up-to-date, extensive data bank. This system also includes data from Industria Alimenticia, a South American communications source for product innovation. Since Stagnito started in 1980, approximately 190,000 new food industry products have been registered and evaluated. Earlier ProductscanOnline also began formal cooperation with Stagnito, resulting in the Japanscan Food Industry Bulletin information system, which was also associated with Productscan. Japanscan Food Industry Bulletin is a monthly journal, and in each issue 350-400 new foods are presented. Each issue contains a minimum of fifty pages of colour graphics. The bulletin also publishes food industry news, market reports, and company profiles. The author of this paper considers Stagnito Communications Inc.’s most important publication to be a monthly journal entitled Stagnito’s New Product Magazine. It can be downloaded from the company’s website’s archives. As an example of its scope, in its June 2006 issue 1,825 new foods were presented.

The main thrust of research methodology was qualifying and evaluating known innovation scales. In the second part of the 20<sup>th</sup> century the constantly increasing introduction of new products made it necessary to define, with the help of a certain scale, the differences manifested in novelty value. Basic theoretical literature offers a wide range of innovation scales, and novelty degree classifications, on the basis of which the studied products' or product groups' novelty value can be qualified.

Buzzel and Nourse (1967) , who were among the first to publish such categorizations, set up a three-degree scale.<sup>3</sup> Their system was simple, understandable and easily applicable to the food industry. Booz, Allen and Hamilton's system (1980) had 6 degrees and this system was also adopted by Kotler (1980).<sup>4, 5</sup>

In recent decades the novelty value and novelty degree of new foods have been defined in diverse and contradictory ways. The application of these definitions has led to greatly different and occasionally contradictory conclusions as to the number of product innovations, depending on whether the restrictive or extensive approach of product innovation was used.

During our practical observations of food industry product development, it was important whether a statistically documented figure was obtained from restrictive or extensive approaches in product innovation. In Europe one generally uses restrictive interpretation while in the United States one uses the extensive approach. This can even result in differences in order of magnitude, reflecting an alternative methodology rather than a differing pace of product development. Theoretically these methodological differences can be justified, but one knows of no attempts to do so.

Referring to Nielsen Early Intelligence System figures, Connor (1988) reports that in the 1970s 5,000-7,000 new products annually appeared on the food market. He also refers to Dancer-Fitzgerald-Sample agency data, which state that every year between 1964-1972 about 500-600 new products appeared. Furthermore Connor states that this figure was obtained on the basis of the strictest new product definition he knew.

Restrictive and extensive interpretations respectively represent manufacturers' and consumers' value judgements. According to the OECD (1979) "new products are goods pro-

<sup>3</sup> Buzzel and Nourse classified foods according to their novelty value as follows:

- a) Expressly new products, which basically differ from current market products in form, production technology, composition, and possible uses;
- b) Products widening the choice or new brands which add to the available choice in terms of packaging size, flavouring or form;
- c) Product improvement or introduction of new elements, meaning modification of existing products in terms of appearance, flavour, composition or packaging.

<sup>4</sup> Booz, Allen & Hamilton placed new products into 6 categories:

- a) Products new worldwide, creating a brand new market.
- b) New product families, meaning new products entering the established market for the first time.
- c) Supplementing existing product families. These are new products supplementing a product family which has been already introduced.
- d) Perfecting and modifying existing products. These are products replacing existing products, compared to which they are superior both in performance and in attributed value.
- e) Repositioned products. These are existing products targeted at new markets or market segments.
- f) Reduced-cost products: new products offering the same function only cheaper.

<sup>5</sup> Without examining sectoral or product specificities, Kotler nonetheless observed the food market over five years and made several observations. In accordance with the above categorizations, he found the following proportions regarding novelty degrees: Products new worldwide: 10%; New product families: 20%; Supplementing existing product families: 26%; Perfecting and changing existing products: 26%; Repositioned products: 7%; Reduced-cost products: 11%.

duced with new technology”. Clearly this is the manufacturers’ approach, whereas Wasson (1960), for example, indicated that consumers will consider every recent utility value as new, irrespective of its technological novelty. Porter (1976), whom Galizzi and Venturini quoted in 1996, provides the key to the problem as he indicated a difference in innovation between convenience and non-convenience products. The innovation of convenience products usually does not entail substantially modifying the product and in the U.S. there are a lot of convenience products. If one accepts the US extensive interpretation of innovation, one sees why the number of new products is higher than in Europe, occasionally with orders of magnitude. The extensive notion is theoretically outlined by McCorkle (1988), who analysed product development in the US food industry. He felt that new packaging, new manufacturer’s guarantees, new design, new material composition, new taste or any other new “consumer benefit” represented product development. Food safety, associated with natural foods, is also considered a consumer benefit. However, McCorkle emphasises the decisive role of so-called pioneering brands, which provide a certain quality standard for the manufacturers.

Paradoxically, the present system of classification used in US product development practice is closer to the approach taken by Joseph Schumpeter (1949), the European Father of innovation theory. In his book entitled “The Theory of Economic Development”, the concepts of “production” and “innovation” are defined as follows: “Production means the combination of existing things and forces... To produce something different or the same thing in a different manner means the combination of these forces in a different way.” These new combinations are innovations, five basic cases of which were indicated by Schumpeter.<sup>6</sup> Noteworthy is the similarity between the novelty value definition for FMCG products, published regularly by the Marketing Intelligence Service (MIS), and Schumpeter’s definition for the innovation criteria as such.<sup>7</sup>

### **Environment of innovations: pulling and pushing effects**

The traditional industrial processing of raw materials entails several well-known consumer benefits:

- the shelf-life of foods improves;
- the time period which food is fit for consumption becomes more uniform;
- due to industrial processing and packaging technology, they are easily transportable and are available over a greater geographical area;
- Potential production of new types and combinations;
- increased processing gives added value;
- in terms of convenience, packaging facilitates preparation and consumption as well.

---

<sup>6</sup> Schumpeter classifies innovation in the following manner:

- a) A previously unknown Generation of new products or a generation of improved products.
- b) Introduction of new production processes in the given industry, which are not necessarily based on a new scientific discovery and which may also be a novel commercial procedure associated with a certain product.
- c) New market potential, meaning creation of a national market in a country where the newly created market may have previously existed elsewhere.
- d) Creating new supply markets for raw materials or semi-finished goods, regardless whether this supply source previously existed. In some cases the supply source may have been disregarded or considered inappropriate, or perhaps it is a newly established source.
- e) Establishing a new organization. For example, creating a monopoly position by making or terminating a trust.

<sup>7</sup> Marketing Intelligence Service Ltd. Of Naples, New York operates a system called Innovation Ratings to analyze FMCG (Fast Moving Consumer Goods) novelties.

Internationally, the joint WHO and FAO nutrition policy is regarded to be the main governing principle for New Product Development (NPD). Defined in the early 1980s, it held governments responsible for supplying adequate, healthy and safe food. It is also stated that this responsibility would be backed by statutory guarantees (Balogh, 1993).

It is clear from this definition that the three aims of nutrition policy are fulfilled by consumers, manufacturers and traders or by the government in power which also has certain responsibilities in the matter. Governments have to provide strategic direction, establish norms for food industry players, and provide the statutory framework for minimal conditions (for instance safety of nutrition). Manufacturers and traders may (or may not) choose to contribute to this strategy (for example in the case of healthy nutrition), but ultimately the consumers' lifestyle choices determine what is adequate and desirable food consumption. Obviously such lifestyle choices are subject to influence.

Innovation – and thus market reaction toward new products – results from the effect of two “forces”. One is “demand pull”, meaning the consumers' demand for new products, and the other is “technology push”, meaning the pressure from manufacturers and traders on consumers. However, this does not simply entail factors influencing an individual's food consumption, which food economics have already adequately explored. For example, through investigating consumer reaction toward innovative products new information could surface. However, this particular field of theoretical research has not been adequately explored.

It can be stated that although consumers influence the demand pull effect in different ways and with varying degrees of intensity, the impact of technology push can be considered universal. When it comes to food, current theories do not adequately explain demand pull's influence when it comes to consumer needs. Obviously, enhanced consumer purchasing power bolsters the potential influence of demand pull. However, it is easy to see that effective demand's various levels can both curb or stimulate technology push's effect.

It was Traill (1997) who described demand pull's effect as being a consumer driven force that brings about innovation. Traill's explanation includes the following:

- economic factors (already described above);
- personal consumer considerations (for example the demand for healthy food), which have been, in the food industry, a major force behind new product development;
- demographic factors (which are going to be discussed in more detail below);
- the relegation of local factors into the background; and
- a gradual uniformization of consumer habits.

Although these factors' effect mechanism is manifested in a complex manner, the last three should be considered in detail. Demographic factors are above all are responsible for the spread of convenience foods. During the last century, the mass employment of women was the first factor to cause a consumer demand for food which could be prepared easily at home. This, in turn, led to a trend toward snacking as compared to family meals. Later a large number of snack foods appeared, mainly popular among the younger generation. Emphasis shifted from health to convenience. This entailed a lifestyle choice where convenience was no longer linked to preparing food but to easy consumption in any situation.

A century ago supply was still determined by local factors. First of all locally produced goods were the mainstay of supply, but this changed when transport technology and increased trade put an end to this limitation. This meant the beginning of the slow but unstoppable process toward uniformization of consumer habits. Traill (1997) observed this process using data obtained from the mathematical food consumption analysis in 29 European countries, which indicated that geographical differences were decreasing. This prompted him to ask if we were witnessing the emergence of a “European diet”.

However, gradual uniformization in consumer habits is accompanied by a mostly European trend, which can be described as *consumer patriotism*. Here consumers demand food from their birthplace or place of residence, goods which reflect local taste and which are locally produced. However, this trend is hard to quantify.

Obviously, the effect of supply side technology push can reach the consumers only through three kinds of *filters*. The first is the economic filter, the second the consumers’ social and cultural determination filter, while the third represents the consumers’ subjective value hierarchy. (For example, whether consumers consider time or health as most significant, or to what extent they accept the preparation of food to be a creative, value-enhancing activity.)

In developed countries the food industry offers a rich and increasing variety of products. A typical figure, for example, is that approximately 15 thousand new foods and drinks enter the US market every year (Table 1).

Table 1

**Number and distribution of product innovations on the US market\*  
(FMCG products)**

Year	New products, total	Foods	Drinks	Toiletries**	Household goods	Mixed***	Animal food
1992	15,886	8,159	1,611	4,625	786	254	451
1993	17,363	8,077	2,243	5,327	790	462	464
1994	21,986	10,854	2,597	7,161	704	293	377
1995	20,808	10,816	2,581	5,861	829	406	315
1996	24,496	11,072	3,524	8,204	785	467	444
1997	25,261	10,416	3,424	9,371	1,177	291	582
1998	25,181	10,838	2,985	9,556	1,002	361	439
1999	25,928	11,628	3,069	9,519	872	296	546
2000	31,432	13,373	3,541	11,747	1,695	349	727
2001	32,025	13,200	3,777	11,597	2,088	569	794
2002	31,785	13,452	3,584	10,979	2,091	814	865
2003	33,678	14,812	3,984	11,139	1,546	739	1,458

\* together with figures from Canada;

\*\* health care goods and cosmetics;

\*\*\* tobacco goods, car care goods, photo goods, etc

Source: Productscan Online (2006)

On the larger European market, the number of new food industry products is in fact about one-third lower than in the United States.<sup>8,9</sup> However, as previously pointed out, this difference is not realistic. The difference can be explained by two factors:

1. The US figures are almost full-scale, while the European data are obtained with occasional and representative data collection;
2. In the USA<sup>10</sup>, following Schumpeter's original definition, the „new product” concept encompasses a larger range of product innovations, whereas in Europe a more restrictive interpretation for new products is adopted.<sup>11</sup>

### **Principal product development trends in the food industry, consumer benefits and risks**

If we disregard the fact that the novelty value of new products marketed by manufacturers varies considerably, the wealth of new products may be misleading. In the early 20<sup>th</sup> century, after extensive R & D input, came the first generation of convenience products which represented original (worldwide) novelty and facilitated home preparation of food. As for the second generation of convenience food, the innovation process is accomplished with significantly less R & D input than before. Above all it combines portability and innovative packaging.

Internationally, it is well established that, compared to other processing industries, the potential for food industry innovation remains limited. Following Christensen and Kristensen's lead (1994), Traill (1997) examined the extent of processing industries' innovativeness using the following criteria:

- the proportion of product-innovative companies,
- the proportion of new products to turnover value and
- the extent of R & D intensity

After completing his examination, Traill concluded that the food industry was dead last.

Traill's evaluation matches OECD findings (Eurostat, 1998). The food industry spends the least on research and development, and it has the lowest R & D rate among all industries. When R & D is calculated proportionately and in terms of added value, in five European countries an average of 1.9 % is spent and in Japan 2.0%, but proportionately the electronics industry spends 10 times as much and the pharmaceutical industry 15-20 times as much.

---

<sup>8</sup> New product information is in the archives on the homepage of just-food.com, which claims to provide "authoritative and timely global business information" about the European food industry. On a monthly average 20-25 new products can be retrieved from previous issues, usually from information about food industry companies which were published for some other purpose. According to this source, 3,945 new products were launched annually by European manufacturers.

<sup>9</sup> Other information sources on European product innovations seem of lesser importance. As an example, Paris-based SIAA's homepage indicated which 510 products were awarded prizes at a 2004 industry fair. Products hailed from 40 countries and in all 1850 products were in competition. Unfortunately, SIAA (Société d' Industries Agro-Alimentaire) also publishes figures of dubious value, gleaned from other information sources.

<sup>10</sup> Marketing Intelligence Service Limited of Naples, New York operates a system called Ratings that decides whether products are new depending on whether they represent a breakthrough or an improvement following 6 criteria: composition; positioning; packaging; technology; creating a new market; merchandising.

<sup>11</sup> Such a simple approach is equally evident in the EU's innovation statistics. The EU's analysis specifies three categories for issued products. These categories stem from an analysis of 15 food industry products, classifying them as unchanged, modified or novel products. Unfortunately, the EU's classification methodology is perhaps too simple as "novel" products" are considered an integral whole. On the other hand, US product development policy shows how diverse and also how relative food industry products' novelty may be.

This low rate of innovativeness partially explains the scarcity of novelties at the top of the scale (basic new research-intensive products appearing worldwide) while the introduction of convenience products requiring “only” development has become the general trend in product innovation. However, this situation may stop due to the production of functional products.

However, let us continue analyzing the present situation. High income levels, a low proportion of consumer food expenditures, and easy access to such processed foods have the following consequences:

1. consumers accept food industry convenience products,
2. thus food preparation occurs mainly outside the household,
3. therefore, during the food preparation phase, there is almost a complete absence of control over nutrition destined for household members.
4. The general population (albeit mainly young people) become gluttonous consumers of convenience products,
5. In developed countries the sedentary lifestyle – coupled with gluttonous consumption of convenience food – results in endemic obesity.

One can see from Knutson, Penn, and Boehm’s (1983) figures that growth in obesity coincides with the spread of convenience products. According to their data, during the years 1960-1980 each US citizen consumed an annual food surplus of 1,408 pounds, and thus the average daily nutrient intake per person increased from 3,150 Kcal to 3,520 Kcal.

In both Europe and the United States<sup>12</sup> the growth of obesity is a common social problem. As we will see, society’s “response” to this problem differs greatly in Western Europe and in the USA, as does consumers’, traders’ and industry’s reaction. Comparing European and overseas data immediately reveals that the proportion of overweight and obese consumers is much higher in the United States than in the European countries. It is true, however, that the trend shows that European countries are beginning to “catch up with” the US when it comes to obesity (Table 2).

Table 2

**Growth of the proportion of obese and overweight population in seven countries in one decade**

Name of the country	Proportion of obese and overweight people		Change between 1993 and 2003, %
	in 1993	in 2003	
Japan	2.4	3.2	33.3
France	6.6	9.4	42.4
Italy	7.0	8.5	21.4
Spain	8.8	13.1	48.9
Germany	no data	12.9	no data
United Kingdom	15.0	23.0	53.3
USA	23.3	30.6	31.3

Source: Business Insight, (2006/b)

<sup>12</sup> Obesity can be quantified using the body mass index (BMI). It uses a relative number placing the body weight (in kg) in the numerator and the body height (in m) in the denominator. The resulting quotient is the body weight index. Thinness is when the value is under 20, normal weight between 20.1-24.9, fat between 25.0-29.9 and obesity over the value of 30. The BMI evaluation does not distinguish between adult men and women. In Hungary 48.2% of adult women and 57.5% of adult men are overweight or obese. (HVG, 14th October, 2006; p. 135)



Paradoxically, the rate of the US population on a diet essentially exceeds that in the European countries (Table 3). However, this is largely due to the uncontrolled consumption of convenience foods.

Table 3

**Proportion of adult population on diet and not on diet in the USA and in Europe in 2004**

Region	On diet, %	Not on diet, %
USA	44	56
Europe	29	71

Source: Business Insight (2006/b)

Both on the demand and on the supply sides there are several possible solutions to obesity as an endemic social disease. These solutions may also reveal typical differences depending on whether they originate in Europe or the USA. For instance, the consumer may try the following:

1. to purchase organic products instead of buying food products processed from traditionally produced agricultural raw material;
2. choosing so-called functional foods for environmental or genetic reasons;
3. consuming dietary food with calibrated content and packaged products containing a smaller amount of food reflecting the consumer’s desire to lose excess weight ;
4. however, like most US and European consumers, the consumer may decide to simply accept the choice offered by the food industry.

**Consumer decisions**

Consumer behaviour may range from complete conformity (mere acceptance of the choice offered by the food industry) to complete refusal (a switch to organic products), and the following two types of behaviour fall between these extremes:

- lowering daily nutrient intake, omitting or reducing certain food components and a change to so-called “healthy” nutrition;
- on the other hand, opting for functional food endowed with beneficial supplements.

The previously listed consumer choices merit a short explanation.

In the US and European consumer markets *Organic (bio) products*<sup>13</sup> differ in terms of importance. For 2005 major differences were predicted, stating that such products would be in greater demand in the US than in Europe (Table 4). However, available data do not confirm this. The other principal prediction was that increased consumption of meat products and ready-to-eat foods would eclipse the consumption of fruit, vegetables, fruit juices, tea and coffee, of which the growth was expected to fall below average.

<sup>13</sup> Hungarians and German speakers use the term “bio” whereas anglophones and EU official nomenclature use the term “organic”. In Hungary there are other popular expressions to describe such products. However, these technical terms also apply to the production of food or fodder in an exceptionally clean environment.

Table 4

**Per capita consumption of organic products on major national markets, 1995-2005 (forecast)**

unit of measurement: USD/capita/year

Year	F	D	NL	S	UK	EU average	US
1995	10.5	18.7	18.2	8.7	3.9	12.0	10.7
1996	11.6	22.0	17.8	10.9	5.3	13.5	13.4
1997	12.0	21.9	17.9	11.1	7.2	14.0	16.6
1998	13.9	25.6	20.8	11.1	9.3	16.1	20.0
1999	15.9	28.3	21.7	12.4	11.4	17.9	23.7
2000	16.7	30.1	22.3	13.1	13.0	19.0	28.2
2005	28.8	66.5	29.1	19.7	69.5	42.7	62.9

Source: Datamonitor (2001)

**Functional foods.** There are several definitions for functional foods. The Japanese were the first to use this term for foods endowed with more than run-of-the-mill content. In the US the term is used both for food and for certain ingredients it contains. According to the Japanese Health and Welfare Ministry's official definition, these are "...processed foods, containing ingredients, that aid specific bodily functions in addition to being nutritious." (Ichikawa, 1996).

Generally people know about the nutritional and sensory functions. However, the physiological aspect (the third aspect) is less known. It entails the neutralization of harmful substrates, control over the bodily and physical condition, enhancement of good health, and the prevention of diseases.

As published by Jónás (2006), functional foods have assumed a leading role in US food production. Riva (2002) predicted that the 2002 annual functional food revenue of about 2 billion dollars could rise, in annual market turnover, to 20 billion dollars in the US, 3.5 billion in Japan, and 2 billion in Europe. However, Business Insight (2006/d) reported that the combined US and European functional food turnover had reached USD 26.4 billion, this according to 2005 figures.

These figures confirm the AC Nielsen (2006) market research company's observation that some European consumers have never bought or even heard of such foods or drinks. However, a majority of Irish, Finns, Dutch and Swedish consumers regularly buy products made from whole grain or with high fibre content. In Europe, yoghurt enriched with probiotic or acidophilus cultures is the most popular in Poland, Ireland and Russia<sup>14</sup>. In Hungary research into functional foods and ingredients is also centre stage.<sup>15</sup>

<sup>14</sup> Information derived AC Nielsen was published on [www.freeweb.hu/welnesstipp](http://www.freeweb.hu/welnesstipp) and it was based on Below The Line magazine, which was Downloaded on 19th October, 2006

<sup>15</sup> In January 2005 Alltech Inc., a major international animal health company, held an international conference in Budapest. In 2006, following the conference, two prominent Hungarian institutions of higher education published their observations. During the conference, which was organized by the University of Kaposvár, there was one central message: today 59 per cent of the total world death rate is due to diseases brought on by economic/sociak problems. Moreover, 25-70 per cent of these diseases could be prevented through optimal food intake. In October, 2006 the Food Industry Faculty at the University of Szeged organized a conference with 11 lectures focused on reviewing research into individual functional foods and their components.

Functional foods have a major role in preventing cardiovascular diseases, high blood pressure, tumours, digestive system diseases, and osteopathies. Among the foods originating from plants, oats, soybean, linseed, tomato, garlic, broccoli, citrus fruits, cranberry, tea leaf, wine and grapes contain functional ingredients. Regarding foods of animal origin, fish and dairy products (especially fermented dairy products) contain certain useful ingredients.

Business Insight (2006/a) did a comparative product development analysis regarding EU, Japanese and US functional foods with the goal of detecting similarities. In the three markets antioxidants, calcium, glucosamine, omega-3 fatty acid and whey were studied. The increased use of functional ingredients was found to depend primarily on the producers. Business Insight considered as most innovative the use of the herb *Cimicifuga racemosa*, followed by the use of lycopenes and ginkgo.

During the course of the study, Business Insight also pointed out the rigidity of the European regulatory system.

**'Healthy' foods.** One could say that "healthy nutrition" has a European character. In the late 1980s the European branch of FAO-WHO made nutritional recommendations focusing on a healthy nutritional structure and more specifically on methods to fight obesity (Balogh, 1993). One group of the recommendations dealt with the so-called "Mediterranean diet", of which the essential elements can also be identified on the basis of the above information. They are the following:

- to decrease total daily energy intake;
- to rebalance the intake, increasing the proportion of food from plants and lowering food from animals;
- to focus on the problem of fat, salt and sugar consumption and to promote plant oils over animal fat and to reduce salt and sugar consumption.

According to a Eurostat (2002) representative survey covering 11 EU Member States, approximately half of 15-year-old girls were on a diet, meaning they watched what they ate. However, only 16-22% of teenage boys did the same, but the boys were more willing to drink low-fat milk. Boys were also the main consumers of chocolate and, in Ireland, 80% of boys daily ate chocolate. Similarly, the majority of young people consumed soft drinks on a daily basis, with boys being the principal consumers. According to the same survey, in each Member State young people daily ate chips, various snacks or French fries, although the consumption rate varied. Regarding fruit consumption, the study's findings were surprisingly high: among Belgian young people 39% of boys and 53% of girls ate fruit daily, and this was the lowest proportion in the survey. Portugal was at the top end where 91% of boys and 95% of girls ate fruit on a daily basis.

A 1996 survey, designed to determine how consumers had changed their dietary habits in the previous six months, was carried out in the then Member States. The survey revealed how much movement there was toward healthy nutrition; According to these data:

- 18-37% of consumers decreased fat consumption (great differences were observed between Member States);
- 13-34% started to consume more fruit and vegetables;
- 15-32% consumed less sugar;
- 5-19% switched to buying whole grain flour;
- 7-22% decided to avoid additives;
- 6-35% consumed less salt and 5-15% drank less alcohol in the six months before the survey (Eurostat, 2002).

In Europe – and even more so overseas – there is a great variety of nutritional and lifestyle recipes to help people control their weight. Here we will not endeavour to evaluate them. Unfortunately, healthy food combined with a *wellness* lifestyle could merely turn into a temporary fad.

As for the US situation, the key to healthy nutrition is considered to be what the food industry supplies. (Business Insight, 2006/b) According to the 5 leading food industry companies, 58.1% felt reducing salt, fat and sugar content to be decisive in guiding consumers towards healthy nutrition. 43.8% considered clearly labelling nutritional value as important and 81% of the top company managers questioned held the view that in the following 5 years “indulging” consumers would continue. However, the essential difference was the belief that in the future the consumption of functional foods would increase significantly, and this fact is considered the key consumer “response” toward the issue of healthier nutrition. A slightly smaller importance is attributed toward consuming healthier foods as main meals and even less importance is given to eating fewer snacks.

### **Differences in the European and US “nutritional philosophies”**

Both in Europe and the US the popularity of convenience products seems an indisputable fact. In Europe convenience products are mainly supplied by multinational food companies. (In Hungary, for instance, Maggi products are in fact owned by Nestlé; Knorr products by Unilever, and portable pasta soups by several South Asian companies.

Although in Europe the convenience food industry seems at a standstill, or perhaps even in decline, in the USA the second generation of convenience products (so-called superfoods) has been followed by the third generation, which **attempts to combine aspects of convenience, health and functionality**.

When it comes to food, in Europe naturalness and freshness may actually regain first place in the hierarchy of values. (Eurostat, 2002) In this context two prominent initiatives should be mentioned. One is an attitude-forming book titled “A book about pure flavours, traditions and the enjoyment of food”. The book consists of 15 parts, and in the 69 chapters the European authors explore the following idea: “the worldwide spread of accelerating life can be resisted only by preserving the quiet enjoyment of things born out of Nature. The sheltering slow-down should start at the table with slow food” (Riva, 2002).

The basis for the other European initiative is reflected in Council Regulations No. 2081/92/EEC and No. 2082/92/EEC and subsequently the French initiated the EUROTERROIRS (Regions of Europe) program. This initiative established that, following a uniform criteria system, each EU Member State should list its traditional and local agricultural products. Such a system means that despite increased European integration, Member States can preserve their agro/culinary treasures yet enhance their competitiveness by making them known in Europe.

As a result of the EUROTERROIRS program, the number of products in the European Inventory reached 4,000 in 1997. Within this, the French national collection numbered 890, the Portuguese 330, the Spanish 532, the German 300 and the British 395 items. In 1998 Hungary joined this Community initiative and in 1999-2000 began its national collection. The Hungarian program was called “Traditions, Tastes, and Regions” (Hungarian abbreviation: HÍR)

and listed 300 products. Of the 300 products, 86 came from the Southern Great Plain, 58 from the Northern Great Plain, 46 from Central Hungary, and 130 of them were food industry products (Pallóné Kisérdi, I., 2003).

In the US the advent of “Better-for-you foods” symbolizes the fight against obesity, and constitutes a major consumer trend. However, there is a still stronger product development trend, meaning products you can eat “on the run”. This latter product development trend entails easy portability, and ready to eat foods. For this reason it is not geared toward household consumption; there is no need to collect or process ingredients at home and there is no need for creative food preparation.

Hence the second generation of convenience products of which the central trait is portability, meaning immediate consumption at home, or on the go. In professional terminology these products are called “superfoods”, “ultra-convenient food products”, “hand-held products”, “grab and goers”, “grab and go offerings”, “heat and serve”, “heat and eat” (the latter ones in the food service sector). In the US market the turnover for these products is on the increase (Table 5).

Table 5

**Turnover change of certain foods in the United States (2004/2005)\***

Product group	Turnover, billion USD	Increase in value, %	Volume increase, %
Deep-frozen ready-to-eat food	3.4	2.3	3.2
- within this: deep-frozen dinner	no data	1.0	5.4
Deep-frozen sandwiches	1.0	2.4	1.1
- within this: deep-frozen breakfast	0.513	23.5	10.0
Deep-frozen meat lunch	0.673	2.0	0.9
Deep-frozen poultry	2.2	7.8	4.3
Deep-frozen fruits of the sea	1.6	3.0	3.0
Deep-frozen vegetables	no data	no data	3.3
Deep-frozen potato	0.2	4.1	4.3

Remark: Without Wal-Mart data; \* 52-week figures calculated for the financial year closed on 17<sup>th</sup> April  
 Source: Based on the data of Chicago Information Resources Inc.: [www.stagnito.com](http://www.stagnito.com)

**Second-generation convenience foods in the USA.** Let us now view some randomly chosen examples of the consumer benefits offered by these “ultra convenience” new products:

There is, for example, **Yoplait Go-Gurt Yogurt** by General Mills (Minneapolis). This “child-friendly” yoghurt comes in an easy to open (even with the teeth) recloseable tube which can be stored in the refrigerator or placed in lunch boxes (1998).

Kellogg’s **Nutri-Grain Twists Cereal Bars** (1998) come in two flavors, which are placed one under the other in the same tube. Kellogg USA is based in Battle Creek, Minnesota.

Breakaway Foods of Columbus, Ohio came out with a macaroni/cheese/egg creation called **IncrEdibles Convenience Foods**. This dish was packaged in a microwavable plastic container referred to as “Push’n Eat” which can in fact be opened with a push (1999).

General Mills created **Colombo Yogurt with Spoon-in-a Snap**. There are two disposable plastic spoons located on the bottom of the yoghurt lid (1999).

**Create Crunch Cereal Mixing Kit** offers in a single box 4 morning cereals and 4 other products, from which children can create their own crunchy breakfast at home. The recommendations state that the 8 packages can be combined in 100 different ways (The manufacturer is not named in the source.) (1999).

Campbell Soup of Camden, NJ launched **Sip Microwaveable Soup**, a microwaveable mixture of tomato, mixed vegetables, and chicken cream soup. It comes in a cup which can be placed in a car's drink holder and be sipped with a straw (2001).

P. J. Squares of Glen Ellyn, Illinois marketed a sandwich filling called **Peanut Butter & Jelly Slices**. It has peanut butter on one side and jelly on the other, and is the same size as American cheese slices. It can be placed into the sandwiches immediately after opening. The jelly comes in grapefruit and strawberry flavours (2001).

Weston Bakeries of Toronto, Canada came up with **Country Harvest the Better Half Bread**. It is white and brown two sliced bread that comes in one package and is designed satisfy various family needs. The bread bag opens at both ends, and has a resealable zipper on one end and a plastic clip on the other (2002).

Uncle Ben's of Vernon, California invented **Uncle Ben's Frozen Breakfast Bowls**. The product is a plastic bowl containing a complete frozen breakfast (bacon, eggs, and potatoes). It is easy to carry and can be consumed outside the household at weekends (2002).

The Kellogg Company of Battle Creek created **Kellogg Drink'n Crunch Portable Cereals** (2003)<sup>16</sup>. It is a cereal product that is easy to carry and the package contains two cups: one for the milk, and the other for the cereal. The consumer mixes the cereal and milk in his/her mouth so no spoon is needed.

**Portion packaging.** The concept that food with specified food quantities or calories can be efficient in the fight against obesity is gaining ground in US and more recently in European product development. This led to products containing a definite quantity of calories, and is used by Kraft Foods, General Mills and Frito-Lay.

According to Brian Wonsink, Professor at Stanford University, (Business Insight, 2006/e) 65% of overweight Americans became fat because they were not aware of how much they were eating. Experimentally he established that a person receives and reacts to approximately 200 impulses a day related to eating. Professor Wonsink's recommendation "never to eat directly from a bag or from a box" runs contrary to a strong product development trend in the US food industry.

## Other trends of product development

**Nutraceuticals.** This term was created by combining the words "nutrition" and "pharmaceutical." A nutraceutical can be defined as any substance that may be considered a food, or part of a food that provides medical or health benefits. This includes prevention and treatment of disease (Bland and Medcalf, 1996). This innovation trend/product group's aims and

<sup>16</sup> Productscan Online publishes an annual summary entitled "Build a Better Mousetrap." In the annual summary they evaluate and rank the most noteworthy food industry product innovations.

effects are similar to those of functional foods. Accordingly, the previously quoted authors contend that all functional foods correspond to this definition. However, nutraceuticals differ in that they are produced not by the food industry but mainly by pharmaceutical companies. This fact determines potential differences in composition and differing technological procedures. Genomics, transcriptomics, metabolomics and nanotechnology may also be used to create them, a fact underlined by Business Insight (2006/c). It is hoped that using nutraceuticals will further personal nutritional recommendations.

**Third generation convenience products.** On the US market the third generation of convenience products is beginning to become popular. These products combine convenience and health plus functional food ingredients (Business Insight, 2006/d.). However, just categorizing a product as “healthy convenient” causes doubts as to how healthy these innovative products really are. For example, included among them are confectionary industry products and desserts.

In Europe a crisis is predicted in convenience food (Datamonitor, 2006/a). This is because convenience has dropped to third place in terms of consumers’ food priorities. It now stands at 12 per cent and comes behind tastiness (55%) and healthiness (33%). According to Business Insight (1966), “heart friendly” food is of critical importance for three consumer groups: pregnant and lactating women, sick people, and athletes

Also more emphasis is being placed on *satisfying the singles’ market*. (Datamonitor, 2006/b). In Western Europe one-third of households are single-person entities, and, when calculated per person, they spend approximately 13% more than two-person households, and thus singles constitute a lucrative market. Unmarried people between 35 and 49 yearly spend almost 4,000 Euros on food, drink, and personal care items, and in 2007 the singles’ market could reach Eur 900 billion. One of product innovation’s goals is to accommodate this lifestyle by offering singles variety and appropriate package sizes. Consumers between 25 and 60 could also be enticed by higher quality products.

In the USA and Europe *Home workers* as food consumers also present an intriguing market segment (Datamonitor, 2006/c). Among countries there are great differences in the proportion of people working at home. In Sweden and the Netherlands, the proportion of home workers is 22-23%, and in the USA approximately 16%. This means that there are about 20 million US home workers and 7 million British. This market segment is large enough to merit special attention regarding its food, drink, and personal care preferences.

**Innovations in the field of children’s foods and drinks.** Between 2001 and 2006 among 15 product groups cereals and bakery products had the slowest innovation rate (3.7 %), while the fastest rate (17.2%) was observed for sweetened and flavoured, spreadable foods (Business Insight, 2006/f). Confectionary industry functional products were the mainstay of this trend, and this was especially true when the product came with a toy. There was a marked difference in consumer habits between only children and children with siblings, and this fact will continue to impact on the food and beverage market for children.

**Innovations in the drink market.** Between 2002 and 2006 the top performer in terms of product development (225%) was ready to drink, hot beverages (Business Insight, 2006/g). Fizzy drinks are expected to maintain their dominant market share, but within the beverage group mineral water’s proportion is steadily increasing. The product portfolio of large drink manufacturers is undergoing a change. On the drink market, convenience, daily portion packaging, organic origin and functional character will also be key product characteristics.

*Certainly fads also play a role* in manufacturers' product development decisions. For example, fads can determine one's consumer choices. At present Asian products are fashionable (Business Insight, 2006/h). There could also be a fad for products associated with wellness, which are currently popular in Hungary. In the USA health and wellness products come under the same umbrella.

## **Conclusions**

Thanks to the electronic, global information system for product development in the food industry, it was possible to review international trends in this field. This system ensures a wide-ranging collection, systematization and evaluation of information, thereby enabling the participants in the innovation chain to promptly react to economic phenomena.

From the information obtained from the system, the following conclusions were drawn regarding the current state of the product innovation process:

In Europe and the USA there are similarities and differences in food industry product development trends. In both markets there is expansion in the supply of convenience products. In Europe this is occurring more slowly and may even stagnant, while in the USA it is peaking. In Europe preserving traditional foods is considered to be an important Community task, but unfortunately it lacks support. The key word for present generation convenience products is portability, meaning the product can be consumed anywhere/anytime. The convenience food phenomenon may lead to gluttonous energy intake by consumers ignorant about healthy nutrition, thus causing mass obesity. In the US and European, the supply of functional foods is growing rapidly with the latter leading the way. For food industry companies the greatest scientific and business challenge on both sides of the Atlantic may be capturing the functional food market.

## **Acknowledgement**

The author would like to express his thanks to Dr. Antal Véha, Dean of the Faculty of Engineering at the University of Szeged, for reviewing the manuscript; to Tünde Baló, departmental engineer, for her assistance in editing; and to Mariann Halápy and Krisztina Seres, students, for their contribution to research.



## References

### Books

1. **Balogh, S.** (2006): Innováció az élelmiszer-szektorban. Lecture notes for students of the Faculty of Engineering of the University of Szeged. Sixth impression. Szeged.
2. **Bland, J. S.** and **Medcalf, D. G.** (1996): Future Prospects for Functional Foods. In: Goldberg, I. (ed.): Functional Foods, Designer Foods, Pharmafoods, Nutraceuticals. New York, p. 537
3. **Booz, A.** and **H.** (1982): New Products Management for the 1980s. New York. The authors' publication.
4. **Buzzel, R. D.** and **Nourse, R. E. M.** (1967): Product Innovation in Food Processing 1954-1964. Harvard Graduate School of Business Administration, Boston, p. 26
5. **Connor, J. M.** (1988): Food Processing. An Industrial Powerhouse in Transition. Lexington Books, Massachusetts, p. 63
6. **Christensen, L.** and **Kristensen, A.** (1994): Innovation i danske industrivirksomheder. Copenhagen, Erhvervsfremme Styrelsen, p. 59
7. **Galizzi, G.** and **Venturini, L.** (ed.) (1996): Economics of Innovation. The Case of Food Industry. Physica Verlag, Heidelberg, p. 133
8. **Greig Smith, W.** (1984): Product Competition and New Product Development. In: Economics and Management of Food Processing. (Ed.: Greig Smith, W.) AVI Publishing Company Inc., Westport, Connecticut, p. 185
9. **Ichikawa, T.** (1996): Functional Foods in Japan. In: Goldberg, I. (ed.): Functional Foods, Designer Foods, Pharmafoods, Nutraceuticals. New York, p. 453
10. **Knutson, D.;** **Penn, S. B.** and **Boehm, W. T.** (1983): Agricultural and Food Policy. Prentice-Hall Inc., Englewood Cliffs, 291
11. **Kotler, Ph.** (1991): Marketing Menedzsment. Műszaki Könyvkiadó, Budapest, p. 378
12. **McCorkle Jr., C. O.** (1988): Economic of Food Processing in the United States. Academic Press, Inc. p. 428
13. **Porter, M. E.** (1976): Interbrand Choice, Strategy and Bilateral Market Power. Harvard University Press, Cambridge.
14. **Riva, M.:** Gyógytáplálékok. In: Petrini, Carlo (ed.): A lassúság dicsérete. HVG Kiadó, Budapest, 2002, pp. 56-63
15. **Schumpeter, J. A.** (1949): The Theory of Economic Development. Harvard University Press, Cambridge, MA.
16. **Traill, B.** and **Grunert, K. G.** (1997): Product and Process Innovation in the Food Industry. Blackie Academic and Professional, London, p. 2

### Articles in periodicals

1. **Jónás, E.:** A funkcionális táplálékok szerepe a betegség-megelőzésben. <http://www.vitalitas.hu/olvasosarok>. Downloaded: on 10th October, 2006
2. **Pallóné Kisérdi, I.:** Hagyományos és tájjellegű termékeink perspektívái az Európai Unióban. *Konzervújság*, Issue 2003/3, pp. 88-91
3. **Panyor, Á. and Balogh, S.:** Különleges élelmiszereink és a niche-marketing. *Élelmezésipar*, Issue 2006/6-7, p. 44
4. **Wasson, C. R. (1960):** What's „new”, about a new food product. *Journal of Marketing*, 1960, pp. 52-56

### Electronic innovation transfers

1. **Business Insight (2006/a):** Innovation in Functional Food and Drinks. Growth opportunities from new nutraceutical ingredients. Published in January, 2006
2. **Business Insight (2006/b)** Targeting the Healthy Consumer. Fast growth markets and future trends. *New Food and Drinks Report*. Published in September, 2006
3. **Business Insight (2006/c):** Next Generation Nutraceuticals. Food and pharma convergence in disease prevention and personalized nutrition. Published in December, 2006
4. **Business Insight (2006/d):** Innovation in Healthy on-the-go Food and Drinks. *Food and Drinks Report*. Published in July, 2006
5. **Business Insight (2006/e):** Future Health Trends in Food and Drinks. Growth in daily dosing, GI, hearth health, right fats and phood.
6. **Business Insight (2006/f):** Innovation in Kids Food and Drinks. Next Generation products and key growth opportunities. *New Consumer Management Report*, April, 2006
7. **Business Insight (2006/g):** Innovation in Soft Drinks. New Growth Opportunities driving NPD in healthy, functional and indulgent drinks. *New Consumer Management Report*, May, 2006
8. **Business Insight (2006/h):** Future Food and Drink Flavors. Fusion, natural, functional and fast growth ingredients. *Special Offer*, 18th Oct., 2006
9. **Datamonitor (2001)** based on Food and Drink Database: Next Generation Organics, March, 2001, p. 31)
10. **Datamonitor (2006/a):** Food purchasing trends: convenience less crucial. Downloaded on 13th June, 2006
11. **Datamonitor /2006/b):** Targeting the Needs of People Who Live Alone. Downloaded in April, 2006
12. **Datamonitor (2006/c):** Homeworking 2003. A US and European Market Assessment. Downloaded in April, 2006
13. **Productscan Online (2006),** Worldwide New Product Database. Publication of the Marketing Intelligence Service Ltd., Naples, NY, USA. Downloaded on 8th June, 2006
14. **Stagnito Rollout!** 27th July, 2006, p. 10

**Other sources**

1. **Balogh, S.:** Zárójelentés „A magyar élelmezési politika alapjai” c. OTKA kutatásról. Manuscript. Szeged. 1993
2. **Eurostat** (1998): Panorama of EU-Industry 1997, p.100
3. **Eurostat** (2002): Consumers in Europe. Facts and Figures, Data 1996-2000, p.72
4. **OECD** (1979): Impact of Multinational Enterprises on National Scientific and Technical Capacities: Food Industry. Directorate for Science, Technology and Industry, Paris.