

Forecasting of the World's Frozen Food Market, the Key Developments to Date and the Sustainability and Social Responsibility Opportunities – An Economic and Social Perspective

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Abstract: The paper entitled “Forecasting of the World’s Frozen Food Market, the Key Developments to Date and the Sustainability and Social Responsibility Opportunities – An Economic and Social Perspective” tackles the following key aspects: the economic and social perspectives of the world’s frozen food industry; the work done towards a sustainable, secure and healthy food supply; the need to ensure fair prices and a wide range of food and food access solutions; the need to implement a more environmentally sustainable, more resilient, profitable and competitive food chains; the need to deliver wholesome, healthy, safe and ethical and healthy food products; the solutions needed to support the retail frozen marketplace on long run; the need to create a balance between the costs of the retail frozen products and the prices of these products; the perspectives offered by the freezing technology and the quality of the products; the key developments to date concerning the world’s frozen food market, the countries where these types of products are mostly used and the world’s biggest frozen food producers and consumers.

Key-words: world’s frozen food market, frozen food industry, retail, foodservice, food safety and quality, freezing systems and technologies, key developments, sustainability, social responsibility opportunities, an economic and social perspective

JEL-classification: F63, I15, O00, O10, O14, Q01, Q55

Introduction

Today the shifts in global economic, social, demographic and political trends will continue to put a tremendous pressure both on food supplies and on oil supplies, creating new challenges for food and oil manufacturers and consumers (International Food Information Council Foundation 2009 Food & Health Survey; the 2008 Gallop Study of Healthy Fat & Oils; Omega-9 Oils Heart Trustmark, “Healthier Oils. Healthier Business”; Deloitte Touche Tohmatsu Limited (DTTL), 2014; International Energy Agency (IEA), Oil Market Report. World Oil Demand. Highlights, 2017). All these changes will be responsible for significantly reshaping the context for frozen food and for oil and the manufacturers’ and consumers’ perception in this matter.

This paper focuses on the impact of frozen food on nowadays society, due to the following key aspects: the demand for food (and other resources) will reach unprecedented levels and will affect its availability and its

price as the population grows and the income grows; the diets will change in countries and regions such as Africa, China and India, by including more meat and dairy products in their daily menu, which will implicate new resources and new lands to produce on (The Guardian, 2009; The Financial Times, 2015); the consumption patterns are rapidly changing, due to climate changes, extreme weather and water shortages which affect the crops; the prices for processing, transporting and storing the food will continue to rise due to the rising energy costs and the oil prices which are also rising (Helen Lei Sun, 2011; Fantu Cheru and Renu Modi, 2013).

Under these conditions, in the near future the importance of frozen food will continue to grow, and finding solutions for people to have access to food at affordable prices will become a must for our society. In the same time, the resource challenges will intensify the specialists’ focus on waste from a sustainable economic development perspective, in the attempt of being more nature

friendly, nature oriented, diminishing consumption and waste, aiding waste reduction, minimizing the impact of food manufacturers' wastes on the environment and on the communities and properly using their supply chains in order to contribute to a better and more cleaner and healthier society.

1.) A brief history of frozen food and nowadays key developments in the frozen food market

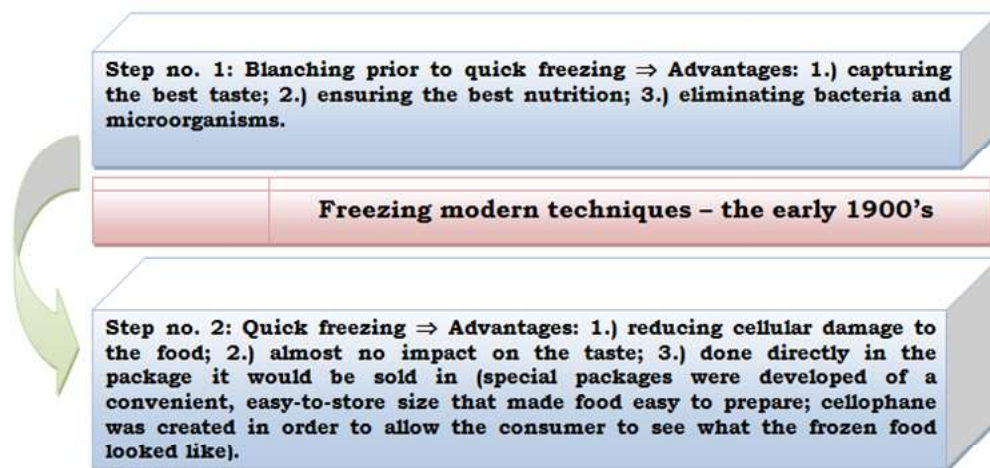
The first part of the article entitled "Forecasting of the World's Frozen Food Market, the Key Developments to Date and the Sustainability and Social Responsibility Opportunities – An Economic and Social Perspective", named "A brief history of frozen food and nowadays key developments in the frozen food market", addresses elements such as the history of frozen food and its importance and nowadays key developments in the frozen food market.

According to specialists, frozen food has always existed, especially in the

climates where food could freeze, due to cold temperatures (for example, in Russia) (C. Anne Wilson, 1991; Mack L., 2001; Brian A. Nummer, 2002). The history of frozen foods goes back 10,000 years ago to the Chinese, who were the ones who developed systems for storing ice during the warm, summer months, in order to keep food frozen (<https://tommyssuperfoods.com/history-frozen-foods/>). Moreover, many people developed freezing techniques, such as Enoch Piper, William Davis, and Daniel E. Somes. Furthermore, in the early twentieth century, several experiments involving both mechanical and chemical methods able to preserve food were noted. However, in 1924 Clarence Frank Birdseye II developed the first industrial method to freeze food (the quick-freezing industrial method for food) (Kostadin Fikiin, 2003; The Library of Congress, 2017).

The first freezing modern techniques took into account the following aspects (see, in this matter, Figure no. 1: "Freezing modern techniques – the early 1900's"):

Figure no. 1: "Freezing modern techniques – the early 1900's"



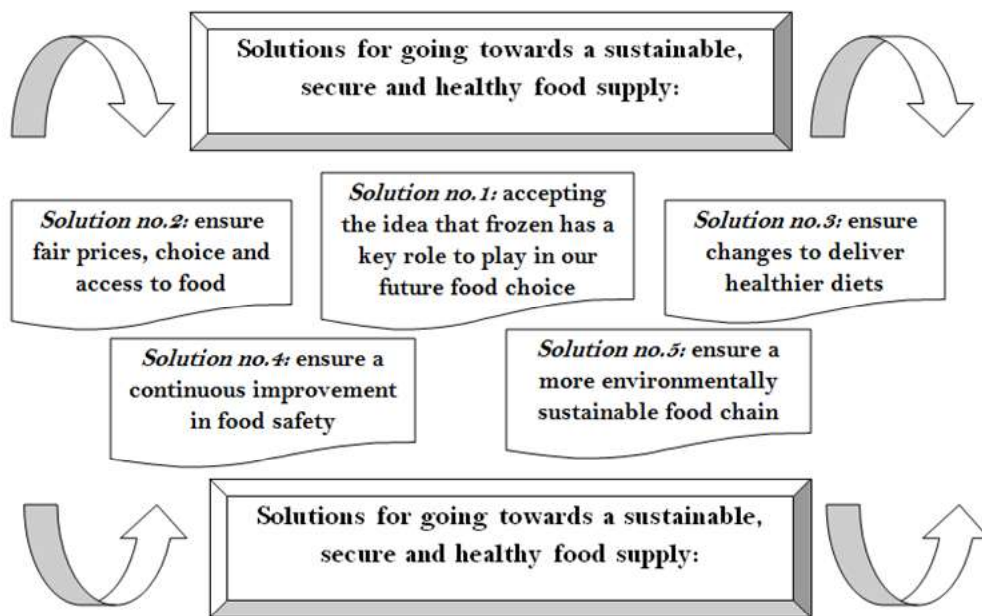
Source: The Author's adaptation after Tommy's Superfoods, *The History of Frozen Foods*, January 26, 2017, available online at the link: <https://tommyssuperfoods.com/history-frozen-foods/>, accessed on 05th of April 2017.

2.) Solutions for going towards a sustainable, secure and healthy food supply

The second part of the article entitled “Forecasting of the World’s Frozen Food Market, the Key Developments to Date and the Sustainability and Social Responsibility Opportunities – An Economic and Social

Perspective”, named “Solutions for going towards a sustainable, secure and healthy food supply”, addresses elements such as finding solutions for going towards a sustainable, secure and healthy food supply and ensuring the world’s food supply on the long run (see, in this matter, Figure no. 2: “Solutions for going towards a sustainable, secure and healthy food supply”).

Figure no. 2: “Solutions for going towards a sustainable, secure and healthy food supply”



Source: The Authors’ ideas after analyzing the scientific literature presented in the reference section of this Article.

The solutions for going towards a sustainable, secure and healthy food supply are the following:

- Accepting the idea that frozen has a key role to play in our future food choice;
- Ensuring fair prices, choice and access to food;
- Ensuring changes to deliver healthier diets;
- Ensuring a continuous improvement

in food safety;

- And ensuring a more environmentally sustainable food chain.

According to the document Renewables 2016 Global Status Report (Renewables 2016 Global Status Report, REN21, 2016), the elements below were stressed (see, in this matter, Table no. 1: “Food trends according to the data available in the Renewables 2016 Global Status Report”):

Table no. 1: "Food industry trends according to the data available in the Renewables 2016 Global Status Report"

Food industry trends in 2015:	Data available in the Renewables 2016 Global Status Report:
The food industry (together with the beverage and the cooper industry) has substantial demand for low-temperature heat and represents a market that also expanded for solar process heat in industry at a large scale.	Heating and Cooling Sector, Solar thermal renewable energy, p. 36
The food industry (together with the tobacco industry) meets a considerable share of its energy needs with biomass.	Biomass Energy, Bioenergy Markets, Bio-heat Markets, p. 44
Active progress in demonstrating the reliable production of a range of advanced biofuels was made, their purpose being to offer alternatives to conventional biofuels (produced with sugar, starch and oils) and ensuring the prospect of lower life-cycle greenhouse gas emissions by reduced competition with food production.	Bioenergy Industry, Liquid Biofuels Industry, p. 48
The food processing industry is one of the most popular sectors for solar process heat applications in recent years (together with the metal processing, textile, beverage and mining industries).	Solar Thermal Heating and Cooling, Solar Thermal Heating / Cooling Markets, p. 72
Globally, the transport sector continues to a subject of debates over the economic and environmental impacts of biofuels, with a particular emphasis on Europe's and the United States' situation. Some specialists believe that the full life-cycle emissions associated with the fuels negates the positive environmental impact of displaced fossil fuel consumption, while other specialists show a great concern about the impact on food crop prices and land use.	Transport, p. 116
Biogas / Bio methane, which is a gaseous mixture consisting mainly of methane and carbon dioxide produced by the anaerobic digestion of organic matter, includes agricultural residues, animal wastes, food industry wastes, sewage sludge, purpose-grown green crops and the organic components of municipal solid wastes.	Biogas / Bio methane, p. 264
<ul style="list-style-type: none"> • General conclusions: • Increased pressure on world food and oil supplies will forever transform the marketplace. • The challenges in terms of economic, demographic, social, and political trends will put pressure on both the food supplies as well as on the oil supplies, forcing specialist to find alternatives and viable solutions. That is the reason why the reason why the world will become more and more aware of the importance of frozen food as well as of the necessity to find alternative solutions for generating energy. • The increasing need for resources will generate an increasing need to intensify the focus on waste management and on nature's preservation, on sustainable development and on sustainable economic growth. 	

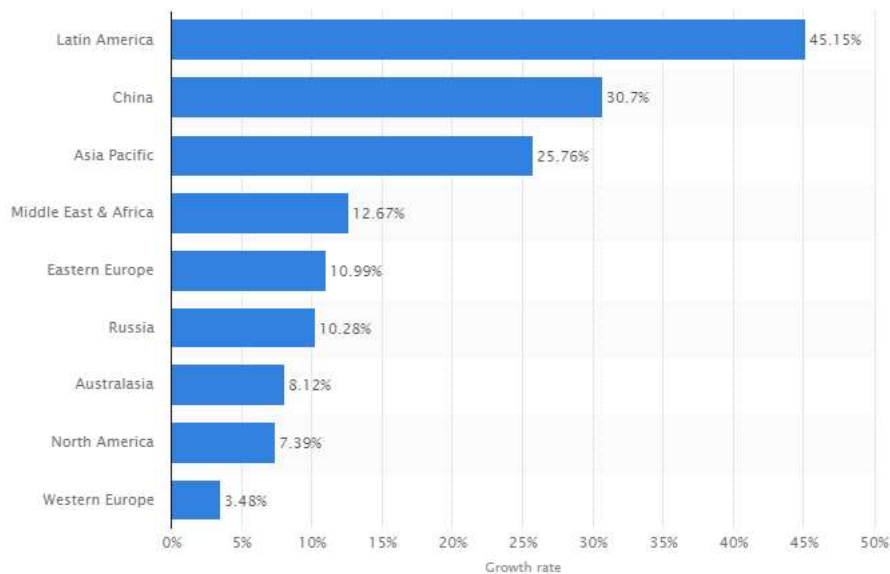
Source: Renewables 2016 Global Status Report, REN21, Renewable Energy Policy Network for the 21th century, available online at the link: http://www.ren21.net/wp-content/uploads/2016/06/GSR_2016_Full_Report.pdf, accessed on 06th of April 2017.

3.) Frozen pizza industry worldwide – a nowadays perspective

The third part of the article entitled “Forecasting of the World’s Frozen Food Market, the Key Developments to Date and the Sustainability and Social Responsibility Opportunities – An Economic and Social Perspective”, named “Frozen pizza industry worldwide – a nowadays perspective”, presents a case study on the frozen pizza industry.

The frozen pizza industry is known to be one of the biggest industries worldwide. The data available below (see, in this matter, Figure no. 3: “Projected growth rate of the frozen pizza industry worldwide from 2015 to 2017, by region (in billion U.S. dollars)”) presents the projected growth rate of the frozen pizza industry worldwide from 2015 to 2017, by region in billion U.S. dollars.

Figure no. 3: “Projected growth rate of the frozen pizza industry worldwide from 2015 to 2017, by region (in billion U.S. dollars)”^A



Source: <https://www.statista.com/statistics/499282/global-growth-rate-of-the-pizza-industry/>, accessed on 10th April 2017

According to the data available at <https://www.statista.com/statistics/>, Western Europe holds the largest share of the global pizza industry (which accounts for 38.8 percent of the industry), being closely followed by North America (which accounts for 32.6 percent of the industry). Moreover, in December 2016, Latin America was ranked

as the region with the greatest pizza industry projected growth (accounting for 45.15 percent of the industry), while by comparison North America registered a growth of only 7.39 percent and Western Europe had a growth of 3.48 percent during the same period of time.

The details concerning the world pizza market and the U.S.A. pizza market are presented in the lines below (see, in this matter,

Table no. 2: “The world pizza market and the U.S.A. pizza market”):

Table no. 2: “The world pizza market and the U.S.A. pizza market”

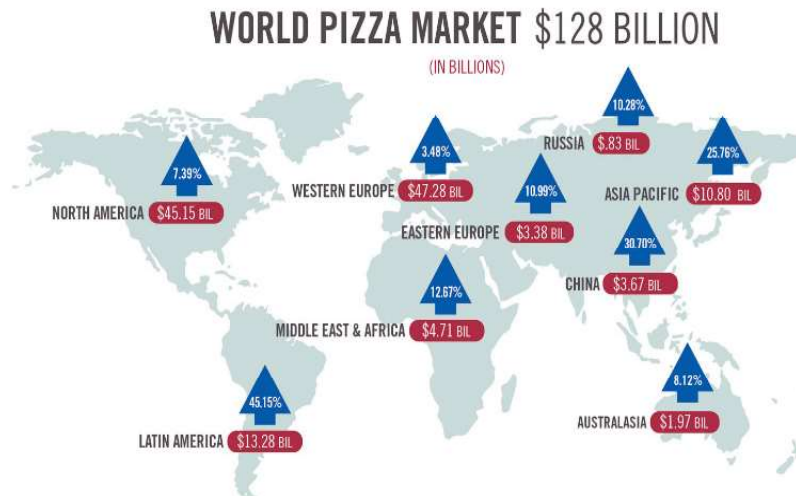
Comparison pizza market 2015 figures with pizza market 2017 figures:		
World pizza market	128 billion U.S. dollars	2017 growth from 2015
U.S.A. pizza market	44 billion U.S. dollars	2017 growth from 2015
No. of U.S.A. pizzerias	76,723	2017 decrease from 2015
Average unit sales	579,127 U.S. dollars	2017 growth from 2015
Consumer demand	26%	2017 growth from 2015

Source: EUROMONITOR INTERNATIONAL, CHD EXPERT, and <http://www.pmq.com/December-2016/Pizza-Power-2017-A-State-of-the-Industry-Report/>, accessed on 10th April 2017

The figures below position Russia on the first position of the chart, with a pizza market of 83 billion U.S. dollars, followed by Western Europe with a pizza market of 47,28 billion U.S. dollars and North America with a pizza market of 45,15 billion U.S. dollars (Rick Hynum, 2016 – 2017; EUROMONITOR

INTERNATIONAL and <http://www.pmq.com/December-2016/Pizza-Power-2017-A-State-of-the-Industry-Report/>) (see, in this matter, Figure no. 4: “World pizza market, with projected growth rate, by region (in billion U.S. dollars), including a forecast through 2020”).

Figure no. 4: “World pizza market, with projected growth rate, by region (in billion U.S. dollars), including a forecast through 2020”

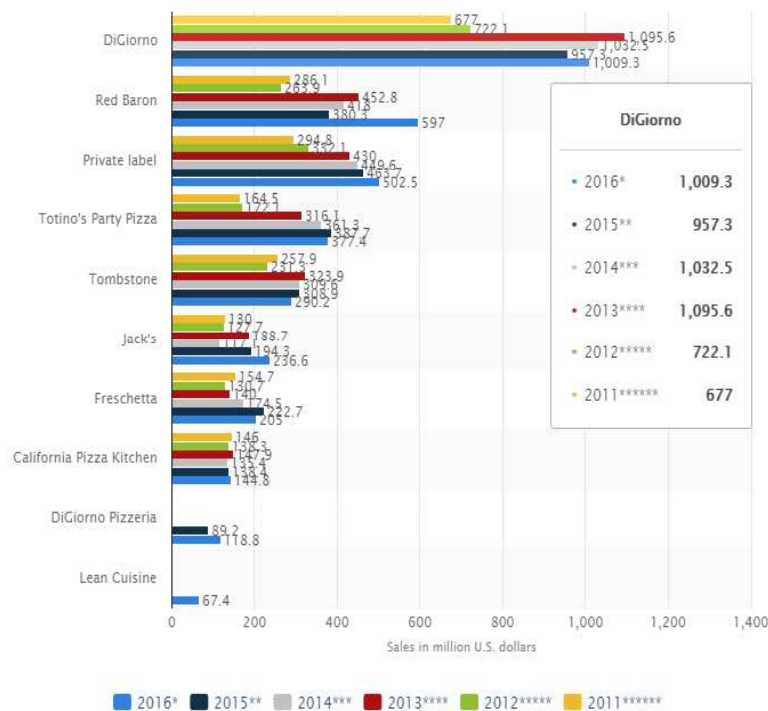


Source: EUROMONITOR INTERNATIONAL and <http://www.pmq.com/December-2016/Pizza-Power-2017-A-State-of-the-Industry-Report/>, accessed on 10th April 2017

This figure below shows the sales of the leading frozen pizza brands from the United States of America from 2011 to 2016. DiGiorno, owned by Nestlé, was the top ranked frozen pizza brand of the United States with about 1.01 billion U.S. dollars' worth of sales in 2016, followed by Red Baron

with 597 billion U.S. dollars' worth of sales in 2016 and Private label with 502,5 billion U.S. dollars' worth of sales in 2016 (see, in this matter, Figure no. 5: "Sales of the leading frozen pizza brands of the United States from 2011 to 2016 (in million U.S. dollars)").

Figure no. 5: "Sales of the leading frozen pizza brands of the United States from 2011 to 2016 (in million U.S. dollars)"



Source: <https://www.statista.com/statistics/189650/top-frozen-pizza-brands-in-the-united-states/>, accessed on 10th April 2017

Conclusions:

The paper entitled "Forecasting of the World's Frozen Food Market, the Key Developments to Date and the Sustainability and Social Responsibility Opportunities – An Economic and Social Perspective" shows the major role played by frozen food on the marketplace.

The frozen food industry is one of the fastest growing industries worldwide nowadays, and is expected to play a key role in the near future due to the advantages brought to the consumers': it offers the possibility to have access to food anytime and anywhere; it enables a better food consumption, due to the fact that it is available in small and big portions, depending on the needs of the

consumers; it offers the possibility to try different types of food (food diversity), no matter of the region or culinary preference; it is fresh and very easy to store and to cook; it is extremely necessary in a world in which more and more women are working the same as men do; it is nutritious and cost effective; it is safe, due to the freezing process; it offers of vast selection of products all year around; it

helps reduces food waste; it reduces the risk of food poisoning.

However, frozen food is known to have disadvantages as well: some products present a high level of sodium and preservatives, as well as high fat values and calories; some products have lost their natural values; some products have lost their natural flavor;

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