BULLETIN
of the Szent István University

SPECIAL ISSUE

PART I.

Gödöllő
2008

With the support of

Faculty of Economics and Social Sciences, Szent István University

Management and Business Administration PhD School of Szent István University

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ISSN 1586-4502

Megjelent 380 példányban

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AGRICULTURAL TRADE AND MARKETING

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CONSUMER BEHAVIOUR IN INNOVATION ADOPTION PROCESS ON FRUIT MARKET

ADAMOWICZ, MIECZYSŁAW

Abstract

It is well documented that regular consumption of fresh fruit contributes to health and well being of people. However, fruit on the market does not always meet consumer expectations. Fresh as well as processed fruit consumption does not increase in Europe and even falls down in some countries. Innovations are one of the factors which can positively influence fruit consumption. Consumers' choice and acceptance of fruit innovations are the topic of studies in ISAFRUIT integrated project within the frame of European Sixth Framework Programme: Food Quality and Safety 5.4.1. Total Food Chain.
Development of new production and processing systems for fruit and fruit products in order to improve quality, safety, convenience, availability, consumer health and price requires research into consumer behaviour and supply chain dynamics. The study aims at creating a theoretical model of antecedents and consequences of consumer behaviour with respect to new products, new processes in fruit and fruit products production and new marketing methods.
This model will help to better understand the forces that drive consumption of fruit and fruit products. It is necessary in order to stimulate consumption of the already existing and new developed products in a variety of situations and contexts. Particular attention will be paid to consumer behaviour in consecutive stages of the innovation process.

Keywords: consumption, fruit safety, marketing methods

Introduction

Innovations are a key issue for enterprise and organization competitiveness and an important development factor for sectors and total economics. Innovations can be viewed and highlighted in several ways and dimensions. They are important as products and process and also as marketing and organizational practices. They can be recognized as a matter of activity and creativity, as an offer for the market and also as a product for purchase and consumption.

Definition and Types of Innovation

According to Oslo Manual (OECD) 2005 innovation is a development and successful implementation of a new or significantly improved product, service, technology, a new marketing method or process or a new organizational method of business practices, workplace organization or external relations aimed at gaining a competitive advantage.

Innovation means a change, creation of something new, something what is a thing or an activity. Innovation is the successful exploitation of new ideas, involves much more than creation of ideas and includes the ways in which they are developed, differed and exploited. Innovation is an outcome, a new product, a process or a service and a process of organizational and managerial combinations and decisions (Dodgson et al., 2005).

Joseph Schumpeter (1942) argued that economic development is driven by innovation through dynamic process in which new technologies replace the old (creative destruction). So

called radical innovations create major disruptive changes, while incremental innovations continuously advance the process of change. Schumpeter distinguished five types of innovations created by innovative firms:

- introducing new products and enriching or improving the existing ones,
- introducing new methods of production and better technologies,
- opening new markets, introducing new selling and distribution methods, improved supply systems, etc.
- using new raw materials and inputs,
- creation of new market structures and new organization systems.

Innovations can be adopted or rejected by an individual member of a system or by the entire social system. Different types of innovation decisions can be distinguished: beginning with optional decisions, through collective decisions, to authority decisions. Results of adopting decisions are reflected in *diffusion of innovations* and in a level of *innovativeness* of individuals and organizations.

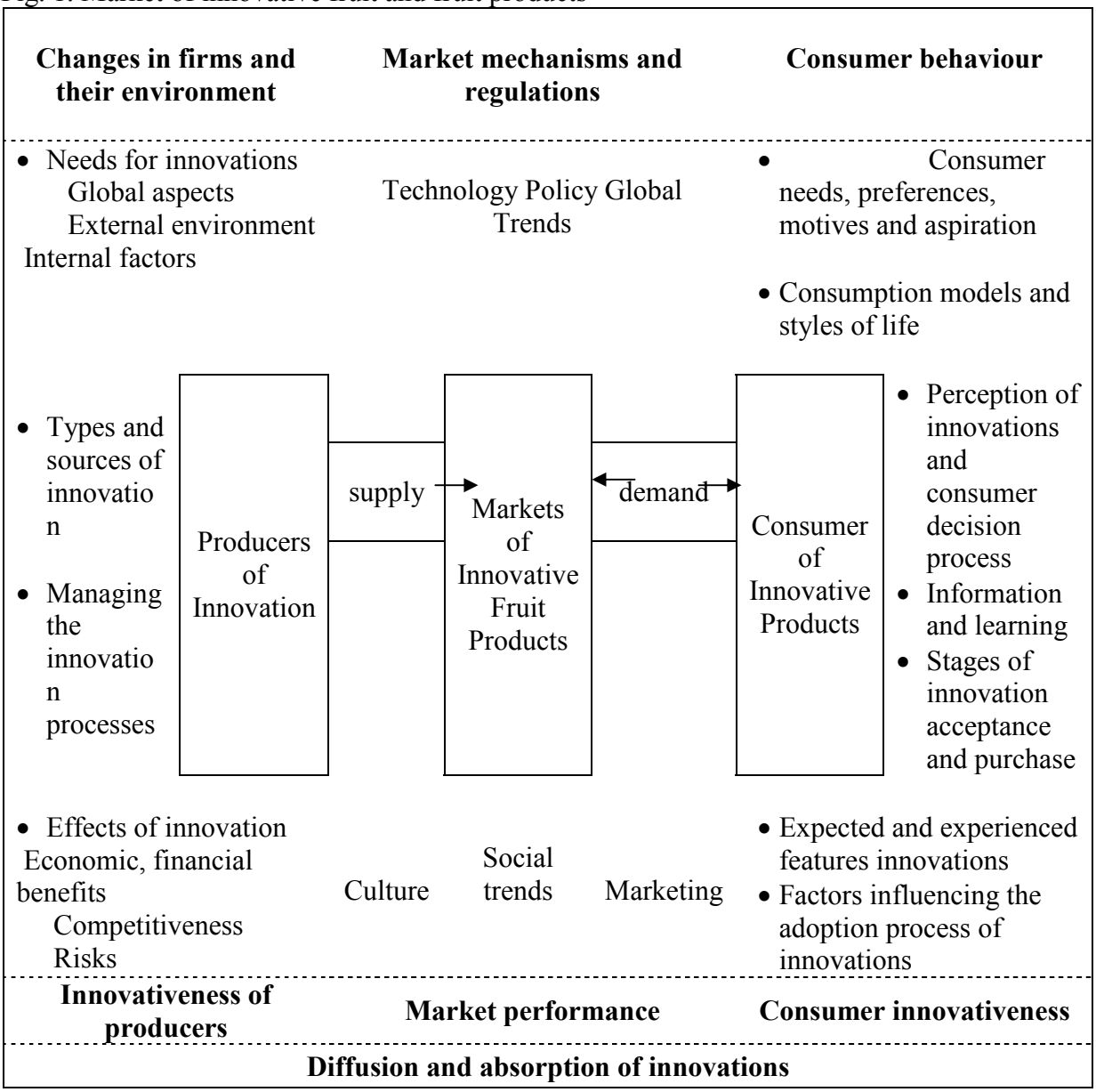
The innovation decision process (Roger, 1995) is the process through which an individual (or other decision-making unit) passes from gaining initial knowledge about an innovation, to forming an attitude toward the innovation, next to making a decision to adopt or reject it and finally to implementation of the new idea followed by confirmation of this decision. This process consists of a series of choices and actions over time through which an individual or a system evaluates a new idea and decides whether or not to incorporate the innovation into ongoing practice. This behaviour consists essentially of dealing with the uncertainty that is inherently involved in deciding about a new alternative to an idea previously in existence. The perceived newness of an innovation and uncertainty associated with this newness are distinctive aspects of innovation decision making (compared to other types of decision making).

The key expression in the innovation definition is the word “new” which means a change. This change should give positive economic and social effects. These effects appear through the market where innovation offered by producers or its outcome must be accepted by consumers. The advantage of a new added value for the last user is reflected in better or cheaper products and in improved services. Innovation is an input at firm, an element of its development strategy and source of profit but it is a reason for risk and uncertainty as well. In national and regional scales, innovations are a subject of innovative policy which aim at efficient diffusion and adoption of innovations as a source of socio-economic growth. In the area of consumption it is a matter of consumers’ demand, promotional activities and social policies of governments. Innovations are important in micro and mezo, national and global scales as well as in different production and service sectors and branches.

In prevailing market economic systems innovations are products of markets and subjects of market forces and market mechanisms. The model of a market for innovative products is presented in fig. 1. It includes three following blocks:

- producers of innovations. Their innovativeness and supply of new products depends on changes inside firms and their environment;
- consumers of innovative products. Their attitude, behaviour and ability of accepting and adopting innovations depends on their innovativeness influenced by several internal and external factors;
- market performance depending on market mechanisms and institutional regulations.

Fig. 1. Market of innovative fruit and fruit products



Source: Author's elaboration

All three blocks create an area where diffusion and absorption of innovations take place. The attention in this paper is focused on the consumer block. Fruit and fruit products draw a special attention as a subject of analysis.

Sources of Innovations

All things which inspire people are a source of innovation. Innovations are created in the process of change in economic and social environment. Traditional sources of innovations are owned and imported research and technology. New products, new marketing and organizational methods arise from several sources - consumers, clients, scientists, competitors, workers, managers, participants of distribution channels and others. New products and ideas can mainly arise from:

- consumers – enterprises should always hear consumer's opinions through a system of market monitoring. Consumers' needs, preferences and expectations continuously change and create demand for new innovative products;
- enterprises – must continuously evaluate their own manufactured products and compare them with products of leading competitors and with complementary and substitute products as a source of innovation;
- distribution chains – people who are working closely with distribution of goods and services are well informed about actual opinions and market expectations;
- government decisions – which create a legal and institutional framework can also create incentives for new products, ideas and other innovations;
- research and development activity are always a source of a large number of new ideas and new products which are implemented by large, small and medium enterprises.
  Innovations development is of great importance for contemporary economic subjects.

New products influence enterprises' profits, market share, competitive position on the market, market leadership, etc. According to some American sources, the main driving forces of higher involvement of enterprises in innovative activity are as follows Booz, Allen, Hamilton (1982).

- technological progress – the development of the global technological basis, know-how, possibilities of creating new products and technologies;
- changing needs and requirements of clients and consumers;
- shortening the life cycle of products;
- growing competition in global scale.

Consumers' requirement is the main factor of product quality and the main force for producer's innovativeness. A product which is not accepted by the consumer is eliminated from the market. Large supplies of food products induce producers for innovations.

Innovation in the Firm

The prime medium for an innovation is the firm and the prime motive for innovation is competitiveness enhanced through creation of value and efficiencies. It is the way that firms are motivated and rewarded for innovations through the mechanism of competition that underpins economic performance — their own and in aggregate. Firms innovate in order to generate products and services which customers want to buy at price levels that maintain or improve their competitive positions (Dodgson et al., 2005, p.12).

At the present stage of capitalism, innovations and innovative activity becomes mandatory for the success of the firm on the market. Changes in firms and their environment create needs for innovations. There are several factors influencing innovativeness of producers and suppliers of goods and services for the market. Global aspects, external conditions and internal factors are important. External conditions include: type of market competition, growth trends of the market, technological progress, economic and business situation, role of government interventions, etc. Among endogenous factors we can distinguish financial position of the firm, size and scale of activity, human and social capital, management and marketing strategy, leadership and innovative culture of organization. It enables firms to survive and grow and it provides governments with reasons to pay for social services such as health and education. In several industries innovations have replaced price in the market game. An essential innovation is what allows firms, branches and nations to continue their course in the competitive world in a sustainable way.

Innovation can be conceived as a process whereby organizations invest in developing innovations in a variety of forms, some of which are selected for use by markets, governments or partner organizations and few of which are thereafter successfully propagated and diffused. Among a variety of innovations only few are successful. It is clearly important how an organization may achieve greater efficiencies and predictability in their innovative activities. The innovation process can be managed and organized to achieve profits and other economic and financial benefits and avoid risk and uncertainty. The critical issues for innovative activities of organization are (Dodgson et al., 2005, p.17)

- better allocating resources to reach organizational aims, improved skills and performance of creative and productive individuals and teams;
- benefiting consumers and users through better utility, functionality and quality of products and services through reduced costs and creation of better goods and services;
- increasing the range of future options available to business and society that are important in uncertain and unpredictable environments.

Individuals and individual producers in a social system do not create or adopt an innovation at the same time, but in some over — time sequence. This can be helpful to distinguish adopter categories in a given group and to classify the members involved in the system. Rogers distinguished five following adopter categories on the basis of innovativeness: innovators (2,5%), early adopters (13,5%), early majority (34%), last majority (34%) and laggards (16%).

Dodgson, Gann and Salter (2005, p. 27) suggest that *in understanding innovations process the three following principles must be recognized*:

- innovation has to be located in its historical context;
- innovation is not a discrete event or activity, but it results from, and contributes to a range of systematic relationships and interdependencies;
- Innovation is socially mediated and results from organizational, managerial and individual practices and decisions.

Taking the historical context, these authors distinguished *five generation innovation process models*:

1. science/supply – driven model,
2. demand/market – driven model,
3. coupling model,
4. integrated model,
5. systems integration and network model.

The science-push generation innovation process, called also science/supply-driven model, emerged after the Second World War. Investment in science, research and extension supported by public policy encouraged innovation process. This linear model of innovation was modified in the 1960s when large consumer oriented companies started to implement marketing strategies.

This, together with consumer movements, highlighted the importance of consumer choice and of pulling innovations by the market. The second generation of innovation process can be described as the demand/market-driven model. The third generation innovation process was a coupling model in which a complex communication and total quality managed practices permitted to use research and technology to adapt production to consumers' wishes and requirements. The integrated and interactive model, which was the fourth generation

innovation model, involved much more complicated information flows within the firm and with multiple sources of innovation and collaboration in a broad scale. At this stage conditions for the development of innovation technology were created. The fifth generation innovation process, which can be observed at present, underline the integration and networking as well as extended use of new types of capital – human capital and social capital.

Consumer Driven Product Development

Market is an area where possibilities of innovative products to succeed are verified. The success of the firm on the market depends on developing a new product. Innovative new products help to exploit firm capabilities for selected market opportunities. The key factor of a new product success is the degree of fit between the new product and consumer needs (Grunnert et al., 1997). As consequence, oriented *New Product Development* takes consumer needs as a starting point for the innovative process in the firm. New products represent a bundle of concrete attributes which are offered by company as a benefit delivery for the market. Consumers on the market evaluate benefits that such products provide.

Product development in food production systems in many countries is an activity of private industrial firms and industry research institutes sponsored by public agricultural research, institutes and universities. Innovations appear at different stages of marketing channels as new products, new processes, new organizational arrangements and new marketing practices. Very seldom it is a kind of integrated innovation strategy in the sector of channel participants.

Real innovations are about creativity, not about asking consumers what they want (Grunnert et al., 1997, p.57). Consumers accept or reject created and offered product which could be treated as innovation. Most new products in the food and drink area fail. Creating and offering innovations for the market, we cannot inquire consumers about their needs but we have to observe and evaluate consumers' reactions to innovations and adjust development of products to their behaviour on the market.

Consumers are the first main targeting groups in food chains which are important in creating innovations for the market. Consumers have preferences for products on the market and these preferences change during purchase and consumption of the product, when the new innovative products appear and are supplied for the market. Understanding how consumers perceive a new product and make decisions to buy or not to buy it is very important for the success of innovation and increase in innovative product consumption. This is why consumer-driven product development approach is a basic factor for the success of product innovations on the market.

Consumer Innovativeness

Consumer innovativeness, as was stated earlier (Rogers) can be defined as a degree to which an individual is relatively early in adopting an innovation. Consumer innovativeness, as a force that leads to innovative behaviour is a broad and still open concept related to diffusion of innovation and marketing. Consumer innovativeness can be understood as consumption of newness" (Roehrich, 2004). It is a tendency to buy new products more quickly and more often than other people do (Midgley and Dowling, 1978). It may be described only as an early purchase of a new product as well as a tendency to be attracted by new products. Midgley and Dowling made distinction between actualized and innate innovativeness. In most of earlier studies, innovativeness is considered as a trait, the nature of which is not precisely defined.

This approach was at present found to be insufficient to explain consumer behaviour on the market with regard to innovative products. Some further research indicated existence of two models – cognitive and sensory innovativeness which have different motivations and activate different mental and physical activities. Cognitive innovativeness was defined as "the desire for new experiences with the objective of stimulating the mind", whereas sensory innovativeness as "the desire for new experiences with the objective of stimulating the senses" (Venkatraman–Price, 1990 p. 294). Important differences between cognitive and sensory innovativeness relate to several dimensions: demographic and cultural background, form of information processing, need for cognition or sensation and perception of innovation characteristic.

Innate innovativeness has a global character and can be applied across product classes, however, they have some weaknesses when we want to predict current or future behaviour on specific markets. A concept of consumer innovativeness that can be applied to different product domains considered a specific context of product category. The concept of domain specific innovativeness (DSI) was defined as an interaction between global innovativeness and strong interest in product category (Midgley and Dowling, 1978, Roehrich et al., 2002). The DSI concept appeared to predict more precisely actual adoptive behaviour than innate innovativeness.

Among other recent concepts of consumer innovativeness we can recognize "market mavenism", "food neophobia", "food involvement" and big numbers of socio-demographic and intercultural characteristics (Prosińska, Bartels, Adamowicz,. 2007). Market mavens could be described as "expert shoppers" searching for new products and information related to them. Food neophobia is a personality trait which is being triggered when consumer is confronted with novel, unfamiliar food. It is defined as "extend to which consumers are reluctant to try novel food products" (Eertmans et al.. p. 714). Food neophilia is a concept contrary to the food neophobia. It is a kind of preference toward unfamiliar food. This preference is often expressed as seeking for a new kind of food. The similar concept of food involvement explains why consumers are highly involved with some specific foods e.g. natural, healthy or light foods.

Many contemporary consumers pay special attention to nutritional and health features of food products. Increased importance of healthy and high quality food becomes an important element of life style. Healthy diet is balanced and diversified, has rich elements in the form of fruit and vegetables, fresh and natural products, low fat content and is also rich with fibre.
From a variety of food products consumers select more frequently food without chemical conserving substances, artificial colours and other chemical additions. A growing importance for consumers have the following (Górska-Warsewicz, 2003):

- low processed food and ecological food,
- food with decreased energy contents "light food",
- food enriched with vitamins and mineral contents,
- probiotic food,
- easy for consumption food,
- wellness food.

Tourilla (2001) distinguished 5 groups of innovative foods on the contemporary food markets.

- functional foods which are easy for consumption and have positive health effect such as disease resistance or antiallergenic effects;
- genetically modified products or components of the product;

- nutritionally modified foods with higher content of fibre, lower content of fat, sugar, enriched with some minerals or vitamins;
- organic foods;
- ethnic foods which are not traditionally known and used on the particular market.

Specific socio-demographic characteristics of consumers such as gender, age, profession, income, education, etc. are also recognized as important factors of consumer innovativeness. Even the result of socio-demographic features influence on innovativeness are not consistent, they might be always a relevant group of variables in specific domain of food market. Several studies on consumer innovativeness show that there are significant differences in innovativeness among different cultures (Steenkamp et al., 1999, Singh, 2006). Culture determines which product people choose, determines the structure of product people choose, determines the structure of consumption, influences individual decision making process and the way people communicate about the product (Engel et al., 1993, Singh, 2006 p. 176). Hofstede (1983) identified four cultural dimensions responsible for a large part of variability between the nations: individualism, power distance, uncertainty avoidance and masculinity. (Steenkamp et al., 1999) pointed out that innovativeness correlates positively with: independence, extraversion, and impulsivity, risk taking, tolerance of ambiguity, flexibility, inner-directed social character, etc.

Consumer innovative behaviour is closely related to the type of specific markets. We will refer to the food market with special reference to fruit and fruit products. Consumer innovative behaviour on food market arises from consumer food choice behaviour, consumer preferences and consumer perception of food products. Consumer perceptions and the attitude to specific products influence decision on choice of one product over the other. Preferences for different food products are interrelated to each other. Models of innovative product consumption are determined by five main groups of factors (Fig. 2):

- individual characteristic of the consumer, e.g. socio-economic and cultural features, lifestyle, knowledge, etc;
- situational characteristics or consumption circumstances, e.g. physical or social surrounding, consumption at home or outside;
- product characteristics, e.g. meat, dairy or poultry products, fresh or processed fruit;
- type of innovation;
- marketing communication and global trends.

Those groups could be recognized as important fields for innovative food production and tasks in modifying consumer preferences related to innovation.

Types of Innovations on Fruit Markets

The consumer behaviour model in innovation adoption process (Fig. 2) creates the base for research in WP 1.3 of PILLAR 1 ISAFRUIT Project. ISAFRUIT is a European integrated research project funded by the European Union in the Sixth Framework Programs, divided into seven Pillars that focus on all aspects of fruit, from its start as a seed till consumer eats or drinks it in any fresh or processed form. The strategic goal of the project is to increase fruit consumption through a transdisciplinary approach leading to high quality product from environmentally safe, sustainable methods. Sixty-two institutions from sixteen countries participate in the project which started in January, 2006 and will be over in June, 2010. Pillar 1 is devoted to consumer driven and responsive supply chain in the fruit sector in Europe.

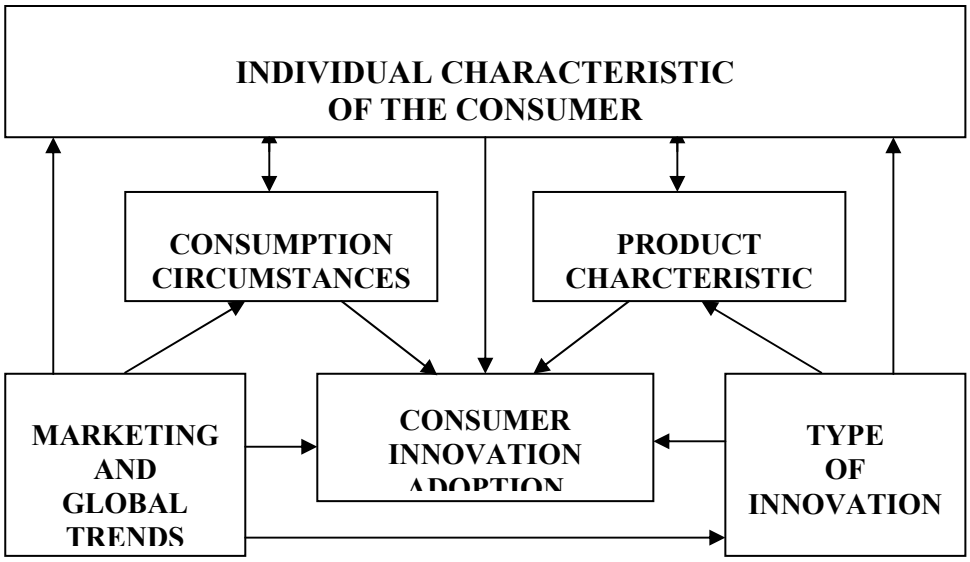


Fig.2. Consumer behaviour model in innovation adoption process on fruit market
Source: Author's elaboration with the use of the ISAFRUIT WP1.3. deliverable: Theoretical framework on consumer innovative behaviour (draft)

The main goal of the WP 1.3 is to study consumer innovative behaviour. Objectives of this WP are (Zimmermann and van der Lans, 2007):

- to develop an integrated framework for understanding determinants of consumer decision making with respect to fruit innovations;
- to analyze the process and stages of consumer acceptance and choice of new innovative products;
- to understand consumer behaviour towards different fruit products innovations that affect fruit consumption in different economic, social and cultural conditions;
- to develop research guidance for further research and innovation strategies of enterprises supplying fruit and fruit products for the market.

One of the first stages of research is identifying and selecting fruit innovations which have been introduced in the fruit sector recently. This can help to distinguish different types of innovations, identify most important directions of innovations in the sector and select specific innovations for further analysis and research from the consumer perspective.
To prepare such list of innovations we sent inquiries to all researchers, members of ISAFRUIT project, to recognize the names of innovations in the fruit area, known by the respondents from professional experience and awareness of changes on the fruit market. On one hand, we asked them to mention the most important fruit innovations they are familiar with because of their specific scientific or professional background. On the other hand, we asked to mention also innovations that they think are most important for consumers. We also asked for short descriptions of innovations they listed. We suggested that respondents should make a distinction between different types of innovations: product, marketing, process and organizational ones.

Sixty-two persons from twelve countries sent in their lists of innovations. These lists included 405 innovation examples, of which 157 were product innovations, 99 marketing innovations, 117 process innovations and 32 organizational innovations. It gave a wide perspective how

people related to the science see innovations on fruit and fruit products markets in Europe (Prosińska et al., 2007).

According to a form in which fruit are consumed, we can distinguish in the list of innovative products the following groups:

- ***natural fresh fruit*** e.g. new apple varieties, fruit without pits and seeds, adequate size fruit, fruit addressed to specific groups of consumers, fruit of a new taste and look, antiallergic fruit, pests resistant fruit, long storage fruit, etc,
- ***prepared fresh fruit*** e.g. cut, pilled and sliced fruit, mixed in salads, snacks, desserts etc,
- ***dried fruit*** with different flavours and colours, enriched with carbohydrates or probiotic properties,
- ***processed or semi processed fruit*** mixed with other products such as vegetables, dairy products, chocolate etc. in a form of marmalades, snacks and desserts,
- ***juices, drinks, nectars*** of different contents, tastes and functions,
- ***fruit vines and vinegars***.

Among marketing innovations a set of almost hundred examples were enumbered. These innovations referred to the following groups:

- ***selling forms, places and time***, related mostly to the distribution as an element of marketing-mix,
- ***market segmentation*** in which several special consumer groups were distinguished,
- ***packaging***, very diversified according to the size, form of material used, functionality and other features,
- ***labelling*** and other ways of informing about the product: place of origin and other special features,
- ***trademarks and branding***,
- ***promotion campaign*** focusing on health influence, quality, nutrient contents, taste etc.

Analysis of the innovative character of fruit products enabled identification of major groups of innovations perceived by respondents (Zając, 2007). These groups reflect basic trends in consumer behaviour on fruit and fruit product markets. These trends may be grouped as following: sensory characteristics, high nutritional value, health promotion, organic, natural products, convenience of consumption, target group orientation, place and time of consumption, availability and longevity for consumption, variation of products and assortment offer, packaging and label information.

Products with specific sensory characteristics – better taste, adequate shape and size, attractive appearance, preferred colours, freshness, smoothness, seedless fruit varieties, level of acidity, luxury packing, etc.
Products with high nutritional value – contents of specific elements such as carbohydrates, pectins, fibre, minerals, vitamins, dried matter, adequate for specific consumer groups or recommended nutrition value, precise, daily fruit intake, etc.
Products with positive influence on health and feeling – health promotion and desease preventing products, functional products, natural and/or organic products, antiallergic, dietary, products influencing metabolism, antioxidants, fitosteroles and fitostanoles.

Organic and natural products – fresh fruit, fruit products without chemical conserving substances, low processed fruit, fruit purchased at orchards and roads, ecological labels, etc.

Products convenient for consumption – fully prepared and ready for consumption, pilled, cut and sliced fruit, salads and desserts, adequate and easy handling packing, seedless fruit, easy opening and closing boxes, bottles and containers.
Products targeted to specific segments on the market – baby and school children, elderly, diabetics, workers, high level income groups, trade marks, branding, targeting group promotion.
Products consumed at special time and places – at home, out of home, during travel, at a party, at school, breakfast, before going to bed, etc.
Products available at specific time and place - products with long time for consumption, available on the market out of the season or in places far away from where they were produced, specialized shops, vending machines, road selling, orchards selling, distribution systems and logistics.
Differentiation of products and assortment offer – new fruit varieties, new brands, variety of tastes and packages, different mix or composition products.
Adequate packing and labelling of products – informing and persuading consumers to purchase and consume, trade marks and branding, protecting freshness, health and nutrient values.

Innovations representative for the above groups will be selected for more detailed study of consumer innovativeness.

Conclusions

Research and analysis results prove that there is a wide variety of innovations offered and available in the fruit and fruit products sector. They cover all four fields, such as product, marketing, process and organizational innovations. However, their share in the surveyed group differs significantly i.e. product innovations make the biggest share (39 per cent), the next are process innovations (29 per cent), followed by marketing (24 per cent) and organisational innovations, which make the smallest share (8 per cent).

Further studies led to a more detailed division into ten new categories such as: products with specific sensory characteristics, products with positive influence on health and feeling, products with high nutritional value, organic and natural products, products convenient for consumption, products targeted to specific segments on the market, products consumed at special time and places, products available at specific time and place, differentiation of products and assortment offer and adequate packing and labelling of products. The study showed that there are a lot of new, changed, modified or improved products in fruit and fruit products sector. They offer different, new qualities and meet different needs of various consumers. All this proves that there is a strong tendency to develop and introduce innovations in this field.

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