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FACTORS CONDITIONING THE DEVELOPMENT OF SAFE FOOD PRODUCTION IN POLAND

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Abstract. Food allergies are a serious problem of modern society. That have contributed to the creation of a separate sector that is involved in the production of foods targeted specifically for it. The aim of the article is an attempt at distinguishing the key success factors that determine not only the success but also the development of safe food production in Poland. To effect the main purpose of the paper, primary as well as secondary materials were used. The basis for the evaluation, apart from papers, making up the literature of the subject, were the results of the research conducted amongst a group of experts among whom the questionnaire was conducted. It related to multi-plane and multi-aspect conditions for the development of safe food in Poland. Then, the STEEPVL analysis and Key Success Factors method were conducted. Analyses show, that the producers of safe food which is targeted at allergic people, to develop their own businesses do not need the organizational and technological support, but mainly financial. Finding the competitive advantages is primarily at the level of skill to raise funds for small and medium-sized enterprises from the pool of national aid and the EU.

Key words: development, production of safe food, Key Success Factors, STEEPVL method

INTRODUCTION

Food safety is one of the main aims of the Common Agricultural Policy of the European Union. This is also reflected in its reform after 2013. However, this is a very broad issue that can be taken on many levels.

Issues related to food safety are regulated by EU and national law [Rozporządzenie... 2002, Ustawa... 2006]. The legislator pays particular attention to the protection of health and the interests of consumers whose preferences are changing rapidly. According to Article 14 Regulation No nr 178/2002 [Rozporządzenie... 2002], food is safe unless it is not harmless for human health and fit for human consumption. The established principles of safe food acquisition, include all the elements of the food chain. The national legislature formulates the concept of food security as a set of conditions that must be met, and in particular: usage of additives and flavorings, the levels of contaminants, pesticide residues, food irradiation conditions and organoleptic characteristics.

The issue of food safety is very important when it comes to the desire or need for a healthy diet. In a society there are more and more health problems, especially of allergic ones. Thus, the plants producing so-called "healthy food" are able to generate from this title more perks than the others¹. Prices of these products are in fact much higher than the others. It carries with it a lot of responsibility.

Promoting their own brand, enterprises guarantee the quality. Unfortunately, most often they are not able to provide it. They are not able to check the quality of the raw materials each time because of a lack of proper facilities. It has bad consequences. The companies might lose the reputation and position in the market and quite often they go bankrupt. Manufacturers occasionally send samples of raw materials or semi-finished products to specialized laboratories. However, it consumes time and primarily expensive.

Under the current legislation, the food safety standard is the minimum standard for each food product. There are many conditions associated with the development of the production of safe food. Thus the aim is an attempt to distinguish the key success factors that determine not only the success but also the development of safe food production in Poland.

MATERIAL AND METHODS

To effect the main purpose of the paper, primary as well as secondary materials were used. The basis for the evaluation, apart from papers, making up the literature of the subject, were the results of the research conducted amongst a group of 8 experts composed of economist, lawyers, food technologists and entrepreneurs engaged in food trade. Questionnaire polls conducted between January and February 2013 related to multi-plane and multi-aspect conditions for the development of safe food in Poland.

While processing the results, both quantitative and qualitative methods were used. Basing on papers by Borodako [2009], Godeta et al. [2006] to analyse the material gathered, the method of Key Success Factors was used. Owing to it, the most important parameters were separated, on which the competitive prevalence to be earned could be based, together with the development of enterprises in the market. Then, the STEEPVL analysis was conducted, where, following such authors as: Mendonca et al. [2004], Ringland [2007], as well as Sutherland and Canwell [2007], 6 groups of factors which have an impact on the development of a given research area were separated. The created

¹ There is no single legal definition of "healthy food", it is often equated with organic food. However, these concepts are not identical.

groups were subject to classification and verification as to their importance and uncertainty so as to be able to state in the final conclusion the most important factors, which are conditions to be fulfilled for the development of healthy/safe food production in Poland.

CHARACTERISTICS OF SAFE FOOD PRODUCTION

Food allergies are a serious problem of modern society. It was found that they affect 2% of adults and about 4-8% of children [Rona et al. 2007]. The effects of allergenic food consumption may be different to the people who are sensitive. They may cause inflammatory skin reactions, digestive problems, respiratory problems, cardiovascular diseases and life-threatening anaphylactic shock.

For allergic people the usage of an elimination diet is the only effective way to prevent this undesirable effect, because even the trace of the allergen can be dangerous. In practice, it is often very difficult or even impossible to achieve, as allergenic ingredients may also be included in so-called safe food. The presence of allergens in the final product may be associated not only with the deliberate use of allergenic materials, but also with the use of auxiliary materials supplied by indirect suppliers. There is a risk of contamination of safe raw material during all production stages starting from harvesting, packaging, transportation etc. Inadequate distribution, such as transportation of instant gluten free mix for gluten-free bread production by vehicles where even before being transported, the wheat flour poses a major risk of contamination. Hence undoubtedly it is extremely important to monitor continuously and examine the contents of allergens in different parts of the product by food producers.

To ensure the safety of such foods it is necessary to use fast and sensitive methods for detection of allergenic ingredients. The qualitative analysis are very important, as well as the quantitative determination of allergens. Regard to this the big potential gives the immunochemical methods which use the specific research tools such as antibodies. Their usage allows the identification of the substances present in trace amounts, even in such a complex matrix, as food [Kirsch et al. 2009].

Good Manufacturing Practice (GMP) and Good Hygiene Practice (GHP) and HACCP management system are the mandatory systems that must be implemented by the manufacturer to ensure the safety of produced food. Food aimed at people with food allergies should be produced on special production lines in order to minimize the possibility of contamination of the final product. All raw materials used in production should be under special scrutiny, as well as all equipment and devices. Because even the presence of a small trace of the allergen in the final product may be hazardous to the consumer who is sensitized to a specific component. The experience of safe food producers in the matter of allergies people show that the best employees are those who themselves suffer from allergies. Aware of the risks arising from any trace of impurities, in a very restrictive way that follows the procedures to ensure the safety of the final product [Rona et al. 2007].

It is also important to control continuously the safety of incoming raw materials and ready-to-eat products. However the analysis' costs of allergens in the external laboratories are very high. They reach about 290 PLN per sample, thus they are performed occa-

sionally. It seems appropriate to carry out this type of analysis in the enterprise's own laboratories operating. In this case, the unit cost of the analysis is significantly lower, as is about 60 PLN. However, it requires some capital expenditures associated with the purchase of a machine that cost about 20 000-30 000 PLN, which in the short term are likely to return on investment. Even more, if there is already a laboratory in the food factory, that will be able to reap additional profits by performing analysis of allergens on behalf of other actors involved.

THE POTENTIAL OF SAFE FOOD PRODUCTION

For proper development of any company, especially in the sector of safe food production, not only the appropriate management of available resources is important, but also the proper relationship with the environment.

Seven groups of factors which have an impact on the development of a given research area were separated by the experts. Among them there were economists, lawyers and food technologists. During group discussions, the experts were asked to select, with the use of the indicative method, from the whole pool of suggestions the three most important factors according to them within each of the seven main groups. Based on this, a table was generated, making up the basis for the further STEEPVL analysis (Table 1).

Table 1. Selection of main factors in individual areas of STEEPVL analysis
Tabela 1. Wybór czynników głównych w poszczególnych obszarach analizy STEEPVL

Markings of factors Oznaczenie czynników	Type of STEEPVL factors Rodzaj czynników STEEPVL
1	2
Social (S) – Społeczne (S)	
S1	Awareness of producer responsibility for the health of consumers Świadomość odpowiedzialności producentów za zdrowie konsumentów
S2	The level of risk taken by entrepreneurs in the food industry (not all the test checks – it can succeed) Poziom skłonności do ryzyka przedsiębiorców z branży spożywczej (nie wszystko sprawdzamy testami – może się uda)
S3	Ready for enterprise cooperation (exchange of information between producers, co-producer – external laboratory) Gotowość do współpracy między przedsiębiorcami (wymiana informacji między producentami, współpraca producent – laboratorium zewnętrzne)
Technological (T) – Technologiczne (T)	
T1	Hazard analysis and critical control points (HACCP implementation) Analiza zagrożeń i krytycznych punktów kontroli (wdrożenie systemu HACCP)
T2	A well-organized system of control of raw materials and processed products Dobrze zorganizowany system kontroli surowców i wyrobów gotowych

Table 1 – cont. / Tabela 1 – cd.

1	2
T3	An efficient and fast system for notification of substandard food Sprawny i szybki system powiadamiania o żywności niespełniającej norm
Economic (Ekn) – Ekonomiczne (Ekn)	
Ekn1	Availability of national and EU funds Dostępność funduszy krajowych i unijnych
Ekn2	Problems with liquidity and solvency of the food industry Kłopoty z płynnością i wypłacalnością branży spożywczej
Ekn3	The availability and quality of raw materials for the production of safe food Dostępność i jakość surowców do produkcji bezpiecznej żywności
Ecological (Ekl) – Ekologiczne (Ekl)	
Ekl1	Development barriers related to environmental protection Bariery rozwojowe związane z ochroną środowiska
Ekl2	Activity of environmental organizations Aktywność organizacji ekologicznych
Ekl3	The level of public support for the implementation of environmental technologies Poziom wsparcia publicznego dla wdrożenia technologii środowiskowych
Political (Pl) – Polityczne (Pl)	
Pl1	Loan preferences for small and medium-sized enterprises Preferencje w kredytowaniu małych i średnich przedsiębiorstw
Pl2	Compliance with EU regulations Stosowanie się do regulacji unijnych
Pl3	Public support for certain types of food producers Wsparcie publiczne dla określonych rodzajów przedsiębiorstw spożywczych
Values (W) – Wartości (W)	
W1	The need to compete (to be better than the other) Potrzeba konkurencji (bycia lepszym od pozostałych)
W2	The level of willingness to cooperate Poziom gotowości do współpracy
W3	The need for innovation Potrzeba innowacyjności
Legal (Pr) – Prawne (Pr)	
Pr1	Transparency and uniformity of legal regulation Przejrzystość i jednolitość regulacji prawnej
Pr2	Access to legal analysis Dostęp do analiz prawnych tematu
Pr3	Access to rapid legal instruments Dostęp do instrumentów prawnych szybkiego działania

Source: own study.
Źródło: opracowanie własne.

The separated groups of factors were subjected to evaluation to determinate the force of their importance. Likert's 7-point scale of evaluation was used therefore, where factors of little or no importance were marked with "1" and factors of significant importance for the implementation of the objective were marked with "7".

It turned out that the factor, belonging to the social group marked as S1 – "Awareness of producer responsibility for the health of consumers" is the most important factor for the enterprise export development (Fig. 1). Right after, very important in the production of healthy food was factor T 2 – "A well-organized system of control of raw materials and processed products". On the third place, with a slightly smaller number of points, there was the legal factor Pr1 ("Transparency and uniformity of legal regulation") and technological factor T1 ("Hazard analysis and critical control points (HACCP implementation)").

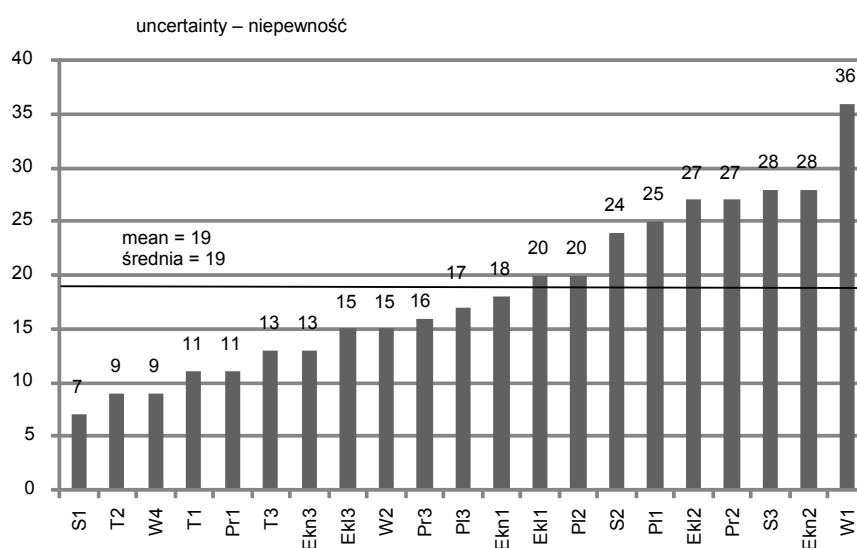


Fig. 1. Factors determining the development of safe food production in Poland

Source: own study

Rys. 1. Czynniki determinujące możliwość rozwoju produkcji bezpiecznej żywności w Polsce

Źródło: opracowanie własne.

"The need to compete" (W1), an element contributing to the development of enterprises in the sector was in fourth place in order of precedence. It is interesting that it was more important than T3, "An efficient and fast system for notification of substandard food", which was rated on the same level as "The availability and quality of raw materials for the production of safe food" (Ekn3).

Next, the evaluation scale was then transformed in the following way: (1→7) (2→6) (3→5) (4→4) (5→3) (6→2) (7→1). Based on this, a list of factors (Fig. 2), differentiated as to uncertainty, was received. This was done on the basis of methodological indications of Nazarko et al. [2012].

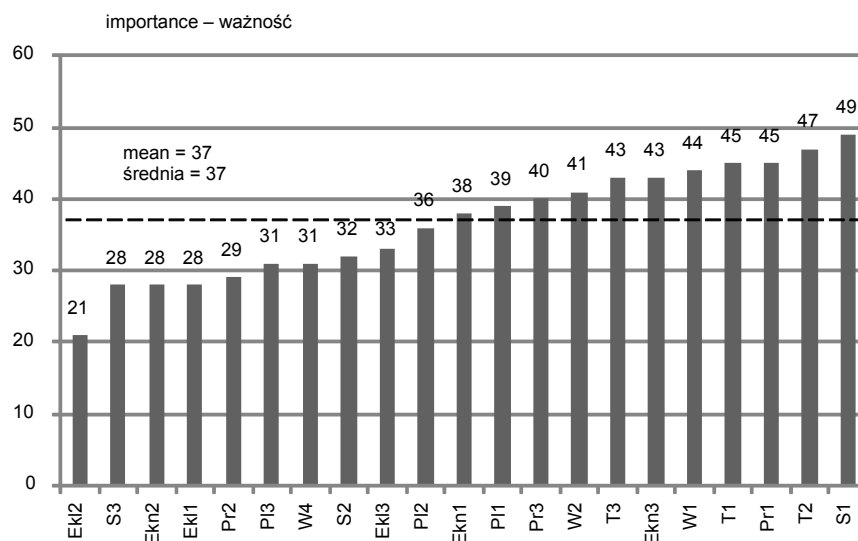


Fig. 2. Evaluation of uncertainty factors of STEEPVL analysis

Source: own study.

Rys. 2. Ocena niepewności czynników głównych analizy STEEPVL

Źródło: opracowanie własne.

Most fears were concerned with value factor, mainly the activity of “The need to compete (to be better than the other)” W1. It has exceeded 8 points on the scale, such as placed at the second position the factor Ekn2 („Problems with liquidity and solvency of the food industry”) and S3 („Ready to enterprise cooperation”, concerning the exchange of information between producers, co-producer – external laboratory”).

Such factors as: “Hazard analysis and critical control points (HACCP implementation)” (T1), “A well-organized system of control of raw materials and processed products” (T2), and “An efficient and fast system for notification of substandard food” (T3) occupied very far places. This situation indicates a belief in the stability and guarantee, as well as the inability to exert their destabilizing effects on the industry.

The results of analysis related to uncertainty compared to the evaluation of the force of the factors influencing the safe food production in Poland, were a basis to separate initially the factors which make up conditions for the execution of the task (Fig. 3). Pursuant to the data presented in Figure 3, as such were recognized the factors included into the values group (W1 “The need to compete (to be better than the other)”) and political (P11 “Loans preferences for small and medium-sized enterprises”).

Both the above-mentioned factors were characterized at the same time by a higher evaluation of uncertainty from the average for the whole group of 19 and a higher evaluation of importance noted as average, at a level of 37. Assuming that a group of elements which have an average value in terms of validity and uncertainties may include those that are located only slightly below the key factors. Much less important for the development of safe food production are “Availability of national and EU funds” (Ekn 1) and “Compliance with EU regulations” (P12). These are linked in terms of the

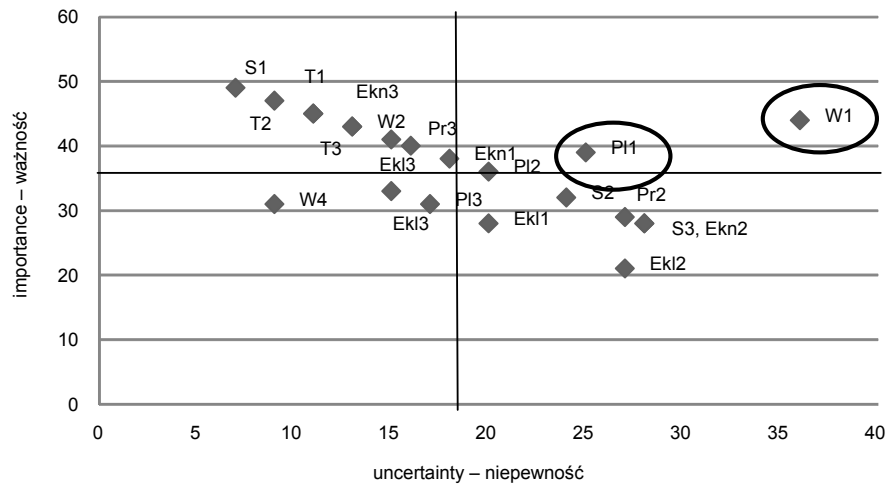


Fig. 3. Key factors for development of safe food in Poland

Source: own elaboration.

Rys. 3. Czynniki kluczowe dla możliwości rozwoju produkcji bezpiecznej żywności w Polsce

Źródło: opracowanie własne.

subjects of the key factor P11 which refers to the loans preferences for small and medium-sized enterprises. At the same time they indicate the area in which they focus on activities tied to the need for company owners to compete. It consists of being superior to others and acquiring certain competitive advantages.

It is interesting that at the same time, such a high ranking in importance position, which have a stable position, the technological factors are not included in the key group which has a direct impact on the development of enterprises engaged in producing safe food in Poland.

CONCLUSIONS

1. There are many technological limitations, which mainly boil down to the need for specific rules that determine the way and the organization of safe food production for people suffering from allergies, especially digestive.

2. Development of safe food production is determined by both an appropriate settlement of resources and the changes occurring in the environment.

3. The most important elements affecting the development of the sector are social factors such as a sense of responsibility for the health of consumers (S1), technological factors (A well-organized system of control of raw materials and processed products – T2) and legal factors (Transparency and uniformity of legal regulation – Pr 1).

4. The factors associated with the greatest uncertainty of success are: the need to compete (W1), problems with liquidity and solvency of the food industry (Ekn2) and

the lack of will for cooperation (exchange of information between producers, co-producer – external laboratory) (S3).

5. The key success factor in determining the development of safe food production in Poland is primarily a need to compete (be better than the others) that mainly refers to credit preference for small and medium-sized enterprises (P11), as well as easy access to national and international funds (Ekn1), as well as the compliance to EU regulations.

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CZYNNIKI WARUNKUJĄCE ROZWÓJ PRODUKCJI BEZPIECZNEJ ŻYWNOCI W POLSCE

Streszczenie. Alergie pokarmowe stanowią istotny problem współczesnego społeczeństwa. Przyczyniły się do powstania odrębnego sektora, zajmującego się wytwarzaniem żywności skierowanej specjalnie do tego segmentu rynku. Celem artykułu jest próba wyodrębnienia kluczowych czynników sukcesu determinujących rozwój produkcji bezpiecznej żywności w Polsce. W pracy wykorzystano materiały pierwotne i wtórne. Oprócz dostępnych opracowań wchodzących w zakres literatury przedmiotu, zebrano także zespół ekspertów, wśród których przeprowadzono badania ankietowe, dotyczące wielopłaszczyznowych i wieloaspektowych uwarunkowań rozwoju produkcji bezpiecznej żywności w Polsce. Do analizy wykorzystano metody ilościowe i jakościowe, a także Metodę Kluczowych Czynników Sukcesu oraz STEEPVL. Z analiz wynika, że producenci bezpiecznej żywności, przeznaczonej dla osób z alergią, do tego, aby rozwijać własną działalność, nie potrzebują wsparcia organizacyjnego i technologicznego, ale głównie wsparcie finansowe. Szukanie przewag konkurencyjnych odbywa się przede wszystkim na płaszczyźnie

umiejętności pozyskania funduszy dla małych i średnich przedsiębiorstw z puli środków pomocy krajowej oraz unijnej.

Słowa kluczowe: rozwój, produkcja bezpiecznej żywności, Kluczowe Czynniki Sukcesu, analiza STEEPVL

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