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FACTORS OF FUNCTIONING AND CHANCES OF DEVELOPMENT OF FISH INDUSTRY IN POLAND

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ABSTRACT

The aim of the article is to present the factors of functioning, the chances of development and an assessment of attractiveness of the fish processing industry in Poland. There is a reference to competitive powers inside the industry, entrance barriers, substitution risks, a role of suppliers and purchasers as well as the arguments for an importance of aquaculture in functioning of the industry and an indication of the growing import level. The strong points and weak points of the industry are also determined with the use of Porter model, SWOT analysis and for statistical analysis Spearman rank correlation coefficient and tests of significance. The biggest chances of development in the industry have the big units that ensure a significant part of income for the industry and determine their economic situation. The small entrepreneurs are mainly oriented for a local sale because in their case the access barriers on a market are smaller and little experience is required. The analyses of academic literature and statistical data were used in the article.

Key words: fish industry, food industry, SWOT analysis of food industry

INTRODUCTION

Tha accession of Poland to the European Union became a factor causing significant changes in the food sector and was supported by the development of agriculture and influenced on the gradual increase of the competitiveness of the whole food economy. One of the fastes developing food industry trades in Poland became fish processing because its complete restructuring and quality changes of products cause the increase of domestic demand and fish consumption. The accession of Poland to the European Union resulted in the Polish enterprises being provided with the Common Fishing Policy, which on the one hand created the necessity to comply with its requirements and on the other hand enabled development and modernization of the fish processing. A reliable technological advancement and a high technical productivity and work efficiency in connection with an improving quality of products determine the high competitiveness of Polish fish processing at the European scale [Czapliński 2011].

The main aim of the article is an attempt to indicate factors of functioning, chances of development and an assessment of attractiveness of the fish processing trade in Poland. The present state of fish processing shows the sufficient level of its development to provide fish supply for the domestic market and meet the expectations of purchasers. A complete restructuring of fish processing in the pre-accession period and the quality changes of products resulted in an increase of domestic demand and a fish consumption. For this reason the study refers in detail to the competitive forces inside the trade, access barriers, substitution risks, the role of suppliers and

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purchasers as well as defines the importance of aquaculture in the industry functioning and shows the growing level of import. The authors of the article decided to verify the thesis that the big units producing for the domestic and international market determine the development of fish industry whereas the small units have chances to support local markets. The studies were based on a method of analysis of academic literature and statistical data. The article determines strong and weak points of the industry supporting the conducted studies with Porter model, SWOT analysis, an in the case of statistical analysis the Spearman rank correlation coefficient and the tests of significance were used.

FISH TRADE IN THE FOOD INDUSTRY

The growth of competition on a market results in the fact that the managers of economic units search for new perspectives that can strengthen their competitive position. This task is becoming more and more difficult because the conditions surrounded enterprises are characterized by great changeability and dynamics. One of the methods for an assessment of enterprises competitiveness is Porter model of five forces which belongs to the large set of methods of a strategic analysis of an oranisation. Porter proposes to assess the enterprise activity by analysing five factors that influence on its attractiveness and are decisive for the present and futuree investors. These factors include: competition inside the sector; the risk of appearance of new products and producers; the risk of appearance of substitutes; the risk of appearance of new suppliers (their bargain power); the risk of purchasers' influence (their bargain power) [Gierszewska and Romanowska 2002]. The analysis of these factors was performed to show the organisational situation of the trade.

Internal competition

The structure of the fish processing sector in Poland should be recognized as fragmented (Fig. 1). Most of enterprises (about 80%) belong to the sector of small and medium enterprises. According to the data of the Main Veterinary Inspectorate, in Poland at the end of 2014 there were functioning 253 fish processing entities that also possessed entitlements to trade in the European Union [MIR-PIB 2015]. It is worth to emphasize that as much as 53% of processing plants were located in the Pomeranian and West Pomeranian Voivodeships. The number of plants that were authorized to direct sale only on the local markets at the and of 2014 was 756 plants (109 more than in 2013). The main criterion of competition among plants is the size of a plant. This factor significantly influences on the amount of possessed assortment. The smaller units produce mainly salted and smoked fish [Koszarek 2005], which is determined by the possibility of incurring low costs and do not require to comply with too excessive quality standards. Large plants that have resources for investments are able to compete on the Polish fish market due to advanced production processes and sophisticated technological lines (Fig. 1).

A trend causing significant evolution of the market has been observed recently. This trend involves a complete change of consumers expectations. The society, taking into account health advantages, is more often choosing more expensive but good quality goods. As a consequence there is a growing pressure of competitiveness among the processing enterprises, that in order to survive on the market are obliged to meet more and more increasing consumers expectations.

Increased competition is also connected with a searching for new consumer groups. The important target groups became young people and children. A customer in a given segment can easily change a supplier. Wide offer selection means that the consumer often compares, what is better for them without the necessity of incurring additional costs. That is why the entities have to shape their sale strategy is such a way that a relation between a price and quality ensures that a given product will become competitive on the market (Fig. 1). It is not easy, because it depends on a number of factors that influence the competitiveness of a given company. They include the scale of activity, investments, technology that is used and developmental research being conducted. These activities require a lot of outwork funds, which triggers a need for searching for a new funding source. To retain the

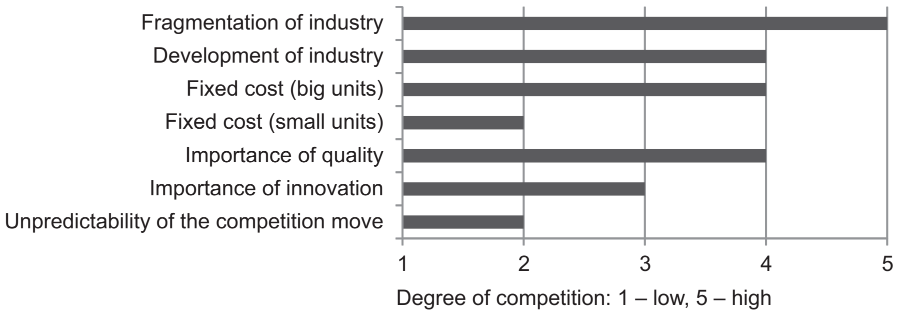


Fig. 1. Competition inside the fish processing trade

Source: Own studies.

appropriate quality standards of the manufactured goods it is crucial not only to purchase good quality resources but also to use suitable seasonings and put the products in an aesthetic packaging. However, it is the only way for an economic unit to be noticed by a potential consumer. It is worth paying attention to appearing risk at the moment of searching new directions of activity. In a phase of an entity initiation it is necessary to incur a lot of cost but only the biggest companies can afford that (Fig. 1). In case of inappropriate grade of a management and investment control it can be connected with great loses and as a consequence inability to produce a good quality product at an affordable price. It also cannot be forgotten that the process of creating new products requires fulfilment a number of technological requirements and a creation of appropriate organoleptic properties, which contributes to increase of costs incurred by an enterprise (Fig. 1).

The risk of appearing new products and producers

The possibility of obtaining the right to enter the market forces the new units to give competitive prices or an attractive product offer. The appearance of new innovative entities causes an essential risk of decreasing profitability of the existing companies. However, their entrance can be made difficult by certain barriers which are presented below (Fig. 2). Small enterprises as well as big enterprises with significant capital diversity are functioning on the fish industry market. The biggest players on the fish market consolidate the trade by adding to their capital group smaller partnerships. For the reason of the scale of activity they possess a substantial capital which leads to the limitation of the number of potential new enterprises. In the case of the local sellers the costs are not high. An important factor in the case of big units is to possess a technological base and experience

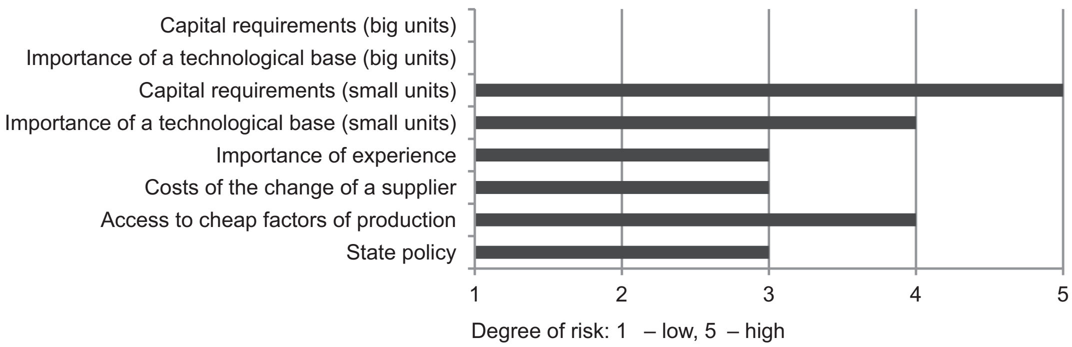


Fig. 2. A degree of risk of new enterprises entering the fish processing industry

Source: Own studies.

gained for years. The relationships between a consumer and a producer often change as well as the requirements of the final recipients are still increasing. The biggest market players have their own laboratories where they develop products that are to increase a sale and become competitive. Experience is of lower importance to new technologies and the small entities selling locally seldom have experience. The costs connected with the change of a sources supplier are not very important and the given units usually have the regular base of suppliers and they make a long-term contact with them.

The consumers in Poland do not have the appropriate knowledge of fish. This can be used both by importers and sales specialists. The high quality products are connected with incurring higher costs because of their delicacy, time for their processing and creating appropriate conditions for processing. In practice there is a risk of replacing fish by their very similar substitutes which are not as high quality as the original products.

Substitution risks

Polish society is to a large extent oriented to meat consumption. Due to the latest problems caused by frauds in the meat sector and the spread of certain diseases there can be noticed a gradual increase of fish products importance that more often are becoming an element of everyday meal. For the purpose of an assessment if the consumption of the specific kinds of meat has an influence on the consumption of fish the basic statistical study was used, that is Spearman's rank correlation. The study results are presented in Table 1.

Table 1. The study of a connection between the consumption of the specific kinds of meat and the consumption of fish with the use of Spearman rank correlation

Year	Consumption per 1 inhabitant (kg)			
	fish (x)	poultry meat (y_1)	pork meat (y_2)	beef meat (y_3)
2010	12.8	24.6	42.2	2.4
2011	11.9	25.0	42.5	2.1
2012	11.4	26.1	39.2	1.6
2013	12.3	26.5	35.5	1.5
2014	13.2	26.9	38.5	1.6

Dependence between	Results of the study
x, y_1	$= 1 - \frac{6 \cdot 14}{120} = 0.3$
x, y_2	$= 1 - \frac{6 \cdot 26}{120} = -0.3$
x, y_3	$= 1 - \frac{6 \cdot 17{,}5}{120} = 0.125$

Source: Own studies based on Mieczkowski [2015], MIR-PIB [2015].

The data analysis shows that the fish consumption is characterized by a low dependence in relation to the consumption of poultry meat or pork meat. In relation to beef meat there is a lack of linear relationship. It means that society do not subject the choice of one product to another. Fish products are a very good source of protein so they are a group of products that are seldom replaced. Hence there is a small risk that substitutes can effectively replace fish products in a price and object respect (Fig. 3).

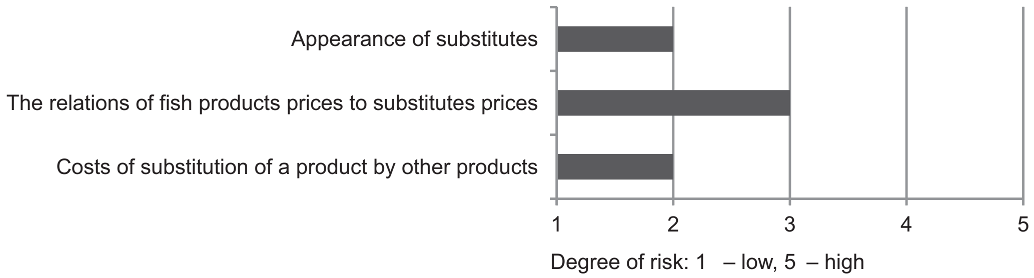


Fig. 3. Substitution risks in the fish processing industry

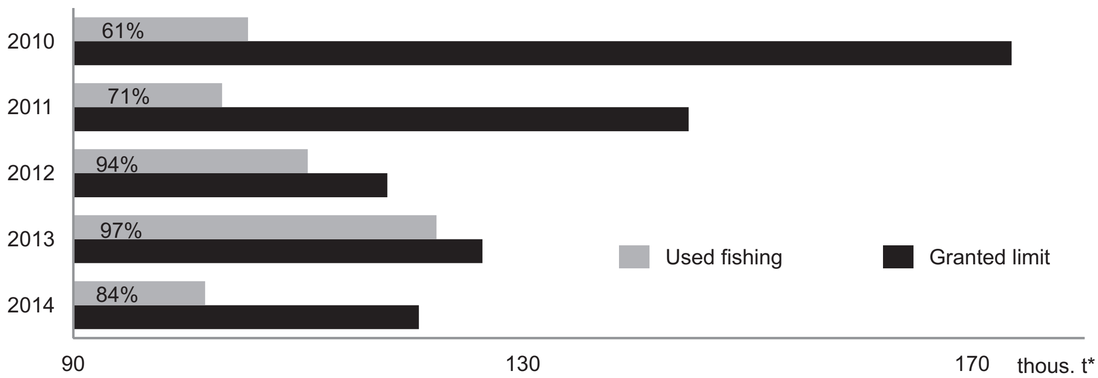
Source: Own studies.

The risk of appearing of new suppliers

Domestic fishing and fish production in aquaculture provide fish supply in about 50%, and in reality – after eliminating a side export – this share is 30% [Hryszko 2013]. On account of this an import has mainly a source character and is regarded as a base of functioning of fish processing in Poland.

In order to characterize a bargain power of suppliers it is necessary to analyse three main ways of supplying resources: sea fishing, aquacultures and import.

In 2014 the Polish sea fishing amounted to 170,500 t and was lower by 12.8% compared with the previous year [MIR-PIB 2013].The reason can be found in the decrease of sprat fishing in the Baltic Sea and a significant limitation of fishing grounds exploitation in Mauritania, especially pelagic fish. The characteristic feature of the Polish Baltic fishing is the fact that fishing quotas granted Poland are not fully realized by the Polish fishermen. The analysis of this phenomenon is presented in Figure 4.



The data contain the following species of fish: cod, salmon, sprat, herring.
* In the case of salmon the number of fish was taken into account.

Fig. 4. The use of fishing limits in the Baltic Sea in the years 2010–2014

Source: Own studies based on the statistical date of the Ministry of Agriculture and Rural Development.

The alternative of solving problems in the fishing industry is focusing on an aquaculture. Despite its great potential in Poland it cannot satisfy needs of the producers and processing enterprises owners. This situation cannot be changed by a fact that according to the planned development the level of fish supply from an aquaculture is going to amount to 49 000–62 000 t to 2020. Focusing on aquaculture may be crucial for consumers.

Its development can increase a market supply, which could result in decrease of prices and attracting new customers. That in turn would allow to increase companies profitability. The problem should be solved not only at the domestic level but also the European Union level where the structure of procedures should be strenghten by among others limitation of Norwegian monopoly for salmon that gradually is becoming fish of international expectations.

In terms of a species and product structure the import of fish is greatly developed. Sea fish are mainly imported to Poland (about 90% of the whole import) with a small share of other products. Figure 5 presents the main fish suppliers to Poland.

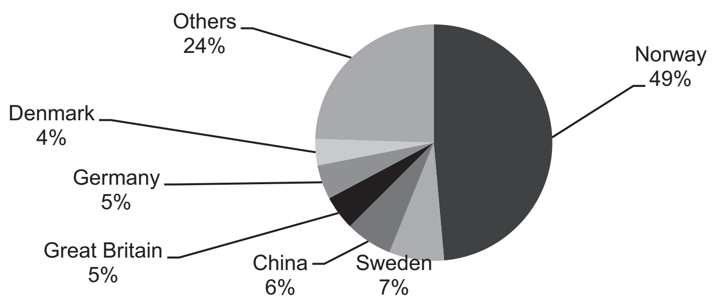


Fig. 5. The directions of import of fresh fish, frozen fish, salted and smoked fish

Source: Own studies based on the Statistical Yearbook of Foreign Trade 2015 [GUS 2016].

The significant import of resources is not a big threat for domestic producers. Only a small percentage of the all imported resources end up on a finished products market. The most important are fish that after appropriate processing are intended for further export. The bargain power of the fish industry in Poland is quite significant (Fig. 6). It is mostly dependent on a situation on the world markets. The certain states put an enormous pressure on the price development by established monopoly. The Polish potential in supplying resources is not fully used. The biggest chance is a gradual development of the aquaculture that allows with time to satisfy the needs of the fish processing enterprises owners.

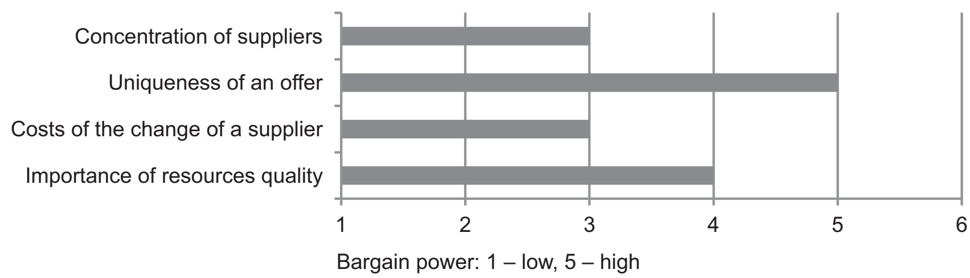


Fig. 6. The bargain power of the fish processing industry suppliers

Source: Own studies.

The risk of purchasers influence

As it results from the data in Table 1 the fish consumption in Poland is increasing. During the studied period the consumption of salmon rose the most (by 88.6%) and cod (by 45.9%) [MIR-PIB 2015]. The consumption of river cobbler and tilapia decreased the most. The increasing trend is mainly caused by the growing customers awareness concerning a healthy diet. They more often realize that fish is an important element of a balanced diet, source of protein and other vital nutritients. The other very important factors influencing the level of fish consumption are price and quality. It is worth emphasizing that during the last five years prices of fish have been growing faster than the prices of meat products and even than the prices of the basic food products. The statistical data of the discussed problem are presented in Table 2. It should be noticed that during the last studied year the prices of meat and food dropped. It is connected with the world food overproduction and that the resources got cheaper, above all the reserves of pork and a good harvest. An opposite situation is on the fish market where the amount of resources maintains the growing tendency.

Table 2. The factor of the fish retail prices changes compared with the meat retail prices and food in total (%; the previous period = 100)

Year	Fish retail prices	Meat retail prices	Food retail prices in total
2010	103.8	98.6	102.7
2011	106.2	105.3	105.4
2012	108.5	108.4	104.3
2013	101.1	101.8	102.0
2014	100.0	98.9	99.1
Average annual pace of increase of the fish retail prices			4.9
Average annual pace of increase of the meat retail prices			3.2
Average annual pace of the increase of food retail prices			3.4

Source: Own studies based on Statistical Yearbook of Foreign Trade 2012, 2015 [GUS 2013, 2016].

Despite the growing prices the quality of the purchased goods is becoming more and more important for customers. However, they are a little afraid of consuming fish because of their anatomical structure. In spite of advanced technologies enabling the enterprises to get rid of fishbones customers still do not feel safe.

It is also essential to show an impact of the fish retail prices growth on the amount of fish consumption in society. In order to present this dependence Pearson correlation coefficient may be used. Figure 7 shows a dispersal of the values of the studied variables.

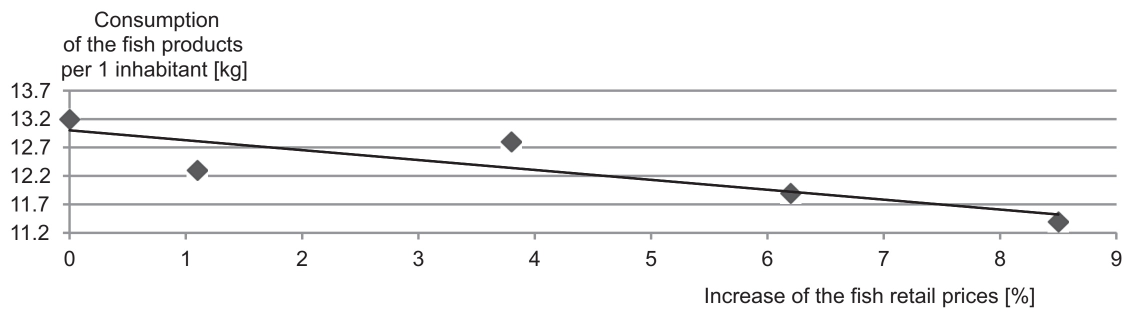


Fig. 7. Dispersal of the value of the fish retail prices growth to the amount of the fish products consumption in society

Source: Own studies.

A detailed analysis of the problem indicates that the correlation of the studied variables is negatively strong (amounted to –0.86). It means that a growth of the fish retail prices on the market results in a decrease of the fish products consumption in society. This trends have been very distinct for five years now.

Another factor that has an influence on a bargain power are the dstribution channels. There are three main distribution channels in Poland. They include: own distribution to consumers; foreign distribution by brokers; export.

The big companies belonging to the incorporated companies are mainly oriented for a wholesale and retail sale. A few years ago small groceries were the main sale channel for the fish processing products. The super- and hypermarkets chains have been taking up stronger and stronger position recently. They provide professional organisation of sale, exposition of goods and the proper products promotion. The significant number of producers and a rich offer of processing companies enables an easy change of a supplier, so the bargain power of purchasers significantly grows (Fig. 8). It is worth paying attention to development of own brands as their development plays an importal role on the market. The Graal company cooperates especially closely with these units. The smaller units often do not have access to a foreign distribution, that is why they build a local sales coverage.

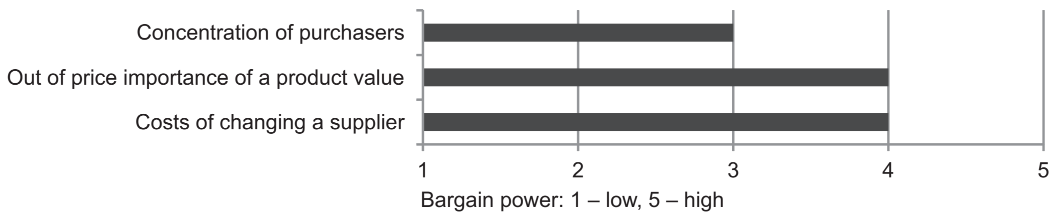


Fig. 8. The bargain power of the fish processing industry purchasers

Source: Own studies.

A very important distribution channel is export which is available especially for big international companies. The total export of fish and fish products in 2014 amounted to 366 400 t and was 10.1% smaller than in the previous year [MIR-PIB 2015]. This fall is caused by decrease of the sprats direct sale in the foreign ports. For abroad the dominant values in the structure have salted and smoked fish (42.8%), tinned fish and marinated fish (25.3%) and fish fillets and fish meat (23%). In 2014 they amount to 91.1% in total of the whole fish products export.

SWOT ANALYSIS

As a supplement of a competitiveness assessment of a given industry SWOT analysis may be used, which is one of the basic methods used in economy and finances of economic entities (Table 3). It involves finding determinants that influence on functioning of the unit and classify them into four groups. That allows to recognize the strong and weak points of the fish processing industry as well as the potential chances and risks for its further development.

Figure 9 shows the final assessment of the performed analyses. It may be noticed from the figure that the biggest powers both for big and small enterprises are the bargain powers of the suppliers and purchasers. In the case of the big enterprises the competition inside the trade is at the same level, and as for the small enterprises the access barriers should be recognized (in the case of the big enterprises they were recognized as average). The substitution risks should be recognized as having a little influence on both kinds of enterprises.

Table 3. SWOT analysis of the fish processing industry

Strong points	Weak points
significant dynamics of the fish processing sector development	high prices of fish compared with the other food products
gradual increase of the fish consumption per 1 inhabitant	not fully used fishing limits
modern production lines of big economic units	dependence from the world fish processing trends
health properties of fish	seasonal access to the Baltic resources
well developed science and research base	producers different opinions concerning the association representing producers interests
big share of export in sale	
Chances	**Risks**
better quality of fish products	possibility of competition – the European fish processing companies
change of consumers eating habits	dishonest sellers – substitution of fish by their cheap substitutes
development of an aquaculture as an alternative source of resources	increase of fish prices
	significant development of own brands

Source: Own studies.

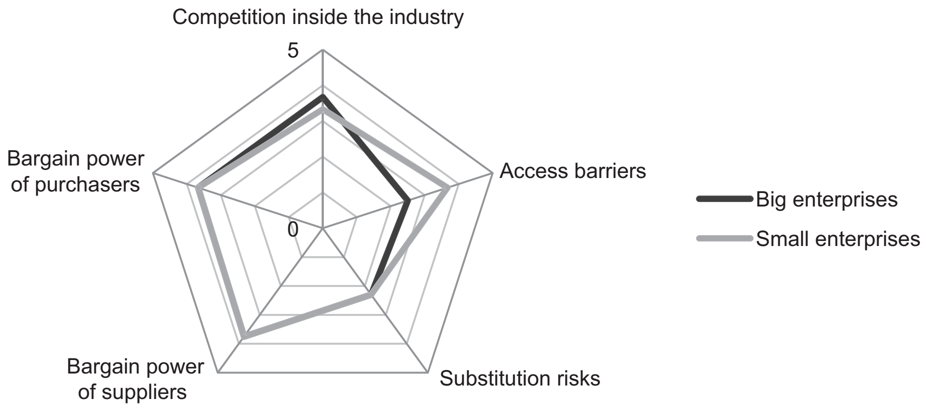


Fig. 9. Competitive powers in the fish industry according to Porter model

Source: Own studies.

CONCLUSIONS

To sum up the arguments on the factors of functioning and chances of development of the fish industry in Poland it should be emphasized that this industry provides the supply of fish, fish products and sea food at the sufficient level for the domestic market with their growing consumption in spite of decreasing fishing in the Baltic Sea. It may be expected that in the nearest years the big decrease in domestic fishing results in a limitation of the export volume of fish, fish products and sea food from Poland. There are also tendencies to decrease prices of a lot of imported species of fish on the domestic market, which is additionaly strengthen by

the falls of prices of the other food products and more and more noticed the effect of deflation. The preliminary research of the source data and the studies based on them allow to formulate the following findings:
1. The fish processing industry in Poland is characterized by the significant fragmentation which greatly increases its competitiveness level both for the big and small units. The certain difference in shaping the level of possible risks for the previous companies in terms of their size should be also taken into consideration.
2. The possibilities to enter a market decrease with the growth of a company – in order to enter the market it is necessary to incur a big capital outlay to compete with the strong incorporated companies.
3. A high innovation, an appropriate technical and research base and experience become factors that allow to fight with big market players.
4. The opposite situation is present among the smaller entrepreneurs who are oriented for a local sale. In their case the entrance barriers are smaller and experience is not very important.
5. The bargain power of the suppliers in the fish industry is significant. The vital shortage of the supply of resources from the local markets is compensated by import.
6. The bargain power of purchasers is also shaped at the medium-high level. The manufactured goods are distributed by three distribution channels. The companies more often have to adopt a quality and price strategy because of the changes in development of the consumers behaviour.
7. For the potential customer the health issues are becoming more and more important, the quality as well as the other not connected with price factors are more crucial.
8. The big units will be more competitive in the future and they are shaping the development of the industry.

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UWARUNKOWANIA FUNKCJONOWANIA I SZANSE ROZWOJU BRANŻY RYBNEJ W POLSCE

STRESZCZENIE

Celem artykułu jest próba określenia uwarunkowań funkcjonowania, szans rozwoju oraz ocena atrakcyjności branży przetwórstwa rybnego w Polsce. Odniesiono się do sił konkurencyjnych występujących wewnątrz branży, barier wejścia, zagrożeń substytucyjnych, roli dostawców i nabywców, jak również zdefiniowano znaczenie akwakultury w funkcjonowaniu branży i wskazano na rosnący poziom importu. Określono także mocne i słabe strony branży, korzystając z modelu Portera oraz analizy SWOT, a w przypadku analizy statystycznej wskaźnikiem korelacji rang Spearmana oraz testami istotności. W branży większe szanse rozwoju mają jednostki duże, które zapewniają znaczną część dochodów dla branży i stanowią o jej koniunkturze. Przedsiębiorcy mniejszego formatu są nastawieni głównie na sprzedaż lokalną, gdyż w ich przypadku bariery wejścia na rynek są mniejsze i wymagane jest niewielkie doświadczenie. Wykorzystano analizy piśmiennictwa oraz danych statystycznych.

Słowa kluczowe: branża rybna, przemysł spożywczy, analiza SWOT branży rybnej