COMPETITIVENESS FACTORS OF PHARMACEUTICAL MANUFACTURER

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Abstract

The purpose of the study is to determine the competitiveness of pharmaceutical manufacturers in Bulgaria in unique environment of COVID-19 pandemic. The focus of the study is to fix the main factors that determine competitiveness. Achieving this purpose will form a better understanding of functioning of the pharmaceutical industry, as well as the possibility to take corrective action through recommendations and identify untapped opportunities to increase competitiveness. The results of the study determine two main factors for the competitiveness of pharmaceutical manufacturers – the quality and the price of pharmaceutical products. The leading place of quality as factor defines the manufacturing of pharmaceutical products mainly as part of healthcare system and at next place – as part of the economy. The conclusions reached are crucial in defining the purpose of pharmaceutical policy for safe, effective and affordable pharmaceutical products.

Keywords: Bulgaria; SWOT analysis; Porter's five forces analysis

JEL Codes: D22; I11; L11

1. Introduction

The pharmaceutical industry is unique in its nature. On the one hand, it is a part of the healthcare system and, on the other hand, a part of the industrial production. The dual nature of the pharmaceutical industry is a consequence of the purposes of each of the two sectors: achieving health efficiency and economic effectiveness. Balancing between these purposes leads to difficulties in determining and assessing the competitiveness of pharmaceutical manufacturers.

The importance of competitiveness for pharmaceutical industry is a consequence of the combination between healthcare system and industrial production. Conducting a competitiveness assessment will identify the factors that are leading to production effectiveness as well as healthcare efficiency. The two components of

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competitiveness, production and healthcare, are of particular importance for both the economy and society. The results of the competitiveness assessment are intended for a wide range of stakeholders and can be laid down in a national strategy for economy competitiveness.

2. Top pharmaceutical manufacturers in Bulgaria

The manufacturing of pharmaceutical products, in contrast to import and distribution, is concentrated in the Southwest Bulgaria (Ilieva-Tonova et al., 2016) – over 70% of the volume of pharmaceutical production in Bulgaria. A question remains valid why pharmaceutical manufacturers are not located close to clusters of chemical companies, for example in cities such as Burgas (East Bulgaria) and Ruse (Northeast Bulgaria), which are major suppliers of raw materials for pharmaceutical manufacturing. Perhaps the answer should be sought in the way the pharmaceutical industry established and in particular in the arguments for privatization wave in the 1990s (Madgerova & Kyurova, 2014).

For all administrative regions, pharmaceutical manufacturers are a main employer, determining the level of employment and contributing to raising living standards (Nedelchev, 2019). Local authorities balance between the purposes of maintaining both production and availability of pharmaceutical products nationwide. A major problem for both manufacturers and local stakeholders is compliance with environmental requirements (Petrova, 2018).

The subject of the study are the top manufacturers of pharmaceutical products in Bulgaria. The list of manufacturers has taken into account companies that are registered as manufacturers in the Register of Manufacturers, Importers and Wholesalers of Active Substances of the Bulgarian Drug Agency and with highest volume of manufactured pharmaceutical products as per data from annual reports (Keremidchiev & Nedelchev, 2022).

A cluster of seven pharmaceutical manufacturers is formed from the adopted limitations:

– Adipharm, Sofia. Established as a wholesale distributor of pharmaceutical products in 1994. Performs activities for both production and wholesale distribution. A significant part of the production is intended for export to the Middle East.

– Balkanpharma Dupnitsa, Dupnitsa. Established as a pharmaceutical plant in 1954 and owned by Teva Pharmaceutical Industries Ltd., Israel. The product list includes over 150 items, which are sold in over 50 countries, incl. through subsidiaries of the Teva Group worldwide.

– Balkanpharma Razgrad, Razgrad. The manufacturer has over 60 years of experience in the development, production and sales of generic drugs for human and veterinary use. Owned by Antibiotic Razgrad, Razgrad. Production is related to industrial microbial synthesis, genetics, and pharmaceutical products for the markets of more than 20 countries.

– Balkanpharma Troyan, Troyan. Established in 1953 as a chemical laboratory. Since 2016, has been owned by Teva Pharmaceutical Industries Ltd, Israel. The production is related to gels, tablets, capsules and other forms of pharmaceutical preparations.

– Bul Bio-National Centre of Infectious and Parazitic Diseases, Sofia. Established in 1881 as a chemical laboratory. Fully state owned. The only manufacturer in Bulgaria of vaccines, serums, immunostimulants, allergens, diagnostic drugs.

– Sopharma, Sofia. Originated 100 years ago as a professional organization. Currently is local private ownership acquired through privatization. Includes over 10 plants in Bulgaria and 3 plants abroad, united in Sopharma Group. Over 20% of the Group's activity is related to production and the rest – to distribution. The production is focused on both medicinal products and chemical products.

– Tchaikapharma High Quality Medicines, Varna. Established in 1999 from private local capital. Owns three plants in Sofia, Varna and Plovdiv. The production is related to generic and licensed medicinal products.

3. Research tools

In assessing competitiveness, a survey was used as a research tool. The survey is based on the interpretation of data, which through inductive conclusions create explanations and conceptual frameworks, develop hypotheses and understanding of the studied processes. The survey creates a discussion with the reader and achieving his conviction of the results achieved. Last but not least, this qualitative research collects and interprets data, creating a sense of participation in the research process for survey participants as well as for the reader.

The survey as a research tool tests the expectations and perceptions of the respondents. As a specific form of communication, the survey data provide a snapshot of the situation. The main advantages of the survey are short time, low costs and understandable data. For us, the leading feature of qualitative research is to overcome most of the imposed limitations arising from the dynamics in the pharmaceutical industry.

The survey as a research tool ensures that all respondents will receive the same opinions at the same time. The equality of the respondents is guaranteed by observing the deadline for answering, as well as reflecting the answers in aggregated and synthesized form.

At the heart of our survey are questions related to the views and experiences of the participants, i.e. we developed two surveys for both type of respondents – manufacturers and consumers of pharmaceutical products. The questionnaire is our original development after an in-depth review of the scientific literature and local regulations. This approach will help to identify practices, strategies and factors that contribute to competitiveness in the pharmaceutical industry.

Given the high level of regulation in the pharmaceutical industry, the importance of random selection of a participant is reduced, including the socio-demographic characteristics of the participants are neutralized. The survey was conducted through a direct survey, i.e. each participant fills in the questionnaire himself. The questions and opinions are prepared and set in Bulgarian, i.e. in the mother tongue of the respondents. From the received answers a database was created, the results of which are graphically presented using Microsoft Excel.
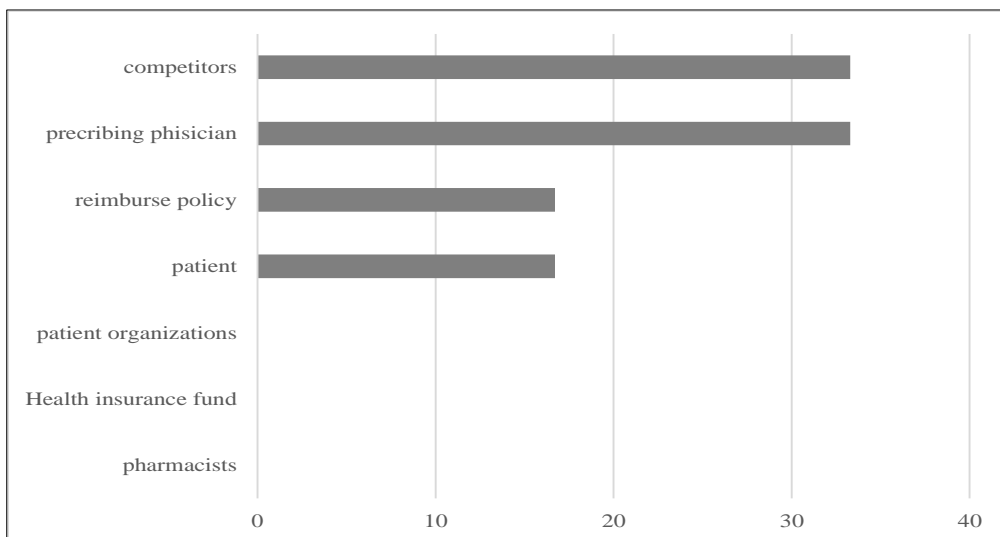
4. Discussions

Following the continuation by the government of the restrictive measures to tackle the pandemic, we conducted a study in March 2021, which covers 78 respondents. The respondents covered of survey are a combination of different levels of society and educational degree, which helps the researcher to accumulate wide data.

The socio-demographic characteristics of the respondents-manufacturers are the following: 67% occupy a tactical level in the managerial hierarchy; 33% manage a production department; 50% have 10-20 years of experience; 50% have an average degree of participation in decision-making in the enterprise; 50% have an education in economics and management; 67% have a master's degree; 50% are aged 36-49 years; 50% are women.

In their activities, manufacturers take into account opinions that are closer to market factors (competitors, the state as a financial source, prescribing physician and ultimate consumer) than opinions from healthcare system (Figure 1).

Figure1. Opinions taken in account by manufacturers in the production of pharmaceutical products, %
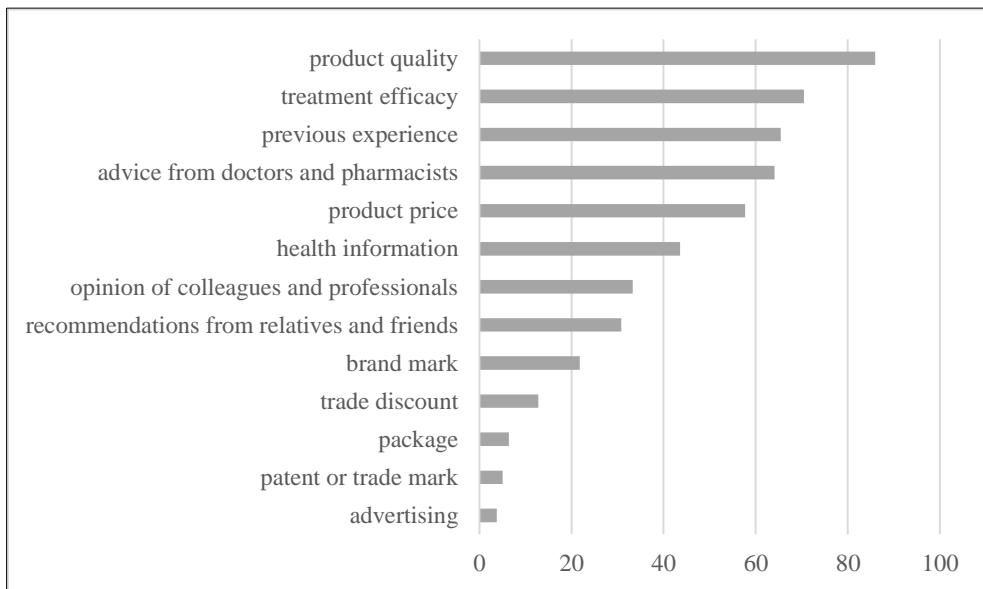

Source: authors' data

Socio-demographic structure of the respondents-consumer are:
– 23% work in the pharmaceutical sector;
– 64% have a master's degree;
– 41% are aged between 36 and 45;
– 69% are women;
– 64% are ultimate consumer of pharmaceutical products;
– 47% have a high level of health culture.

65% of the respondents are ultimate consumer of pharmaceutical goods, which affects the results. Largely, precisely the economic logic and the average level of management form the results of the survey.

To all questions from the survey, the assessment of consumers is lower than those of manufacturers is. Ultimate consumers when purchasing a pharmaceutical product take into account factors related to health: product quality and efficacy (Figure2).

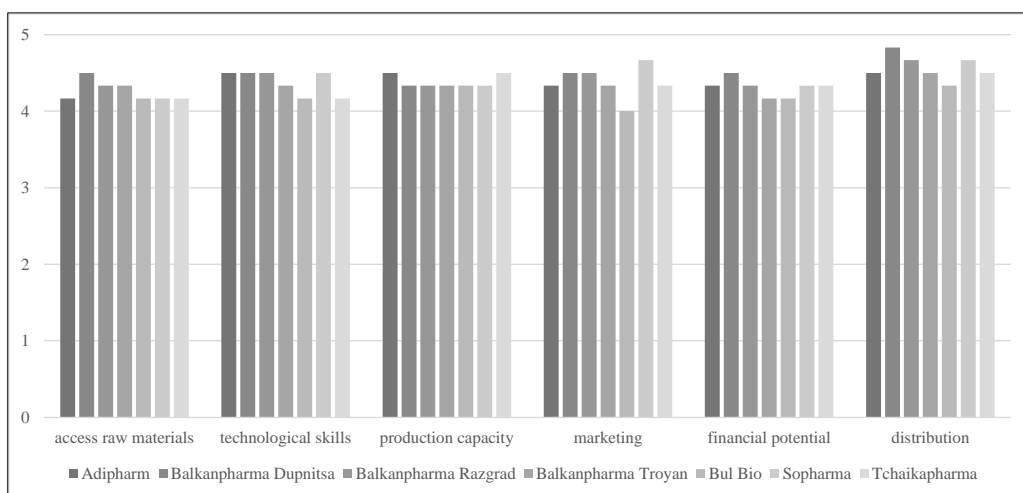*Figure 2. Factors taken in account by consumers in buying a pharmaceutical product, %*

Source: authors' data

We will present the results of the survey using Porter's five forces analysis:

Rivalry among existing competitors. The existing competitors were survey in three areas of competitiveness: resources, workflows and distribution (Figure 3).

Figure 3. Ranking of manufacturers by input, operating and output areas of competitiveness (the maximum score is 5)

Source: authors' data

The highest results at the input were reported for Balkanpharma Dupnitsa, followed by Balkanpharma Razgrad. We can discuss for competitive advantages from supplier relationships for a limited number of manufacturers (Yuleva, 2019). These manufacturers apply a strategy to focus on a narrow market segment, which in fact determines the status quo for future periods (Borisova, 2017).

Work processes are activities by the manufacturer to add economic value to the input raw material. We accept *ad hoc* that these processes include technological skills, production capacity, marketing activities and financial potential. The highest scores are reported in the technological skills of manufacturers while production capacities have relatively equal opportunities. The financial potential and the marketing activities show similar scores for the individual manufacturers. Again, Balkanpharma Dupnitsa and Balkanpharma Razgrad have the best results in the four work processes.
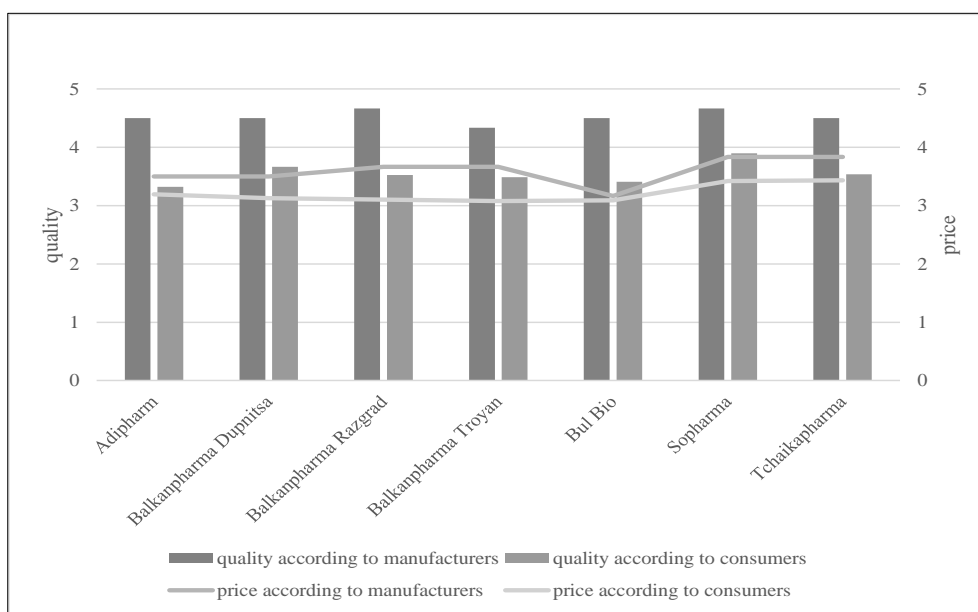
At the output of the manufacturers there is a dependence between the data on the distribution and two of the indicators of the work processes – the data on the distribution to a large extent repeat the dynamics of the financial potential and of the marketing activities. Once again, Balkanpharma Dupnitsa and Balkanpharm Razgrad have the highest results. The presence of Sopharma's own network of pharmacies is not significant factor in the data on the distribution of the pharmaceutical products.

Distribution data are the highest for all manufacturers. Sopharma has the biggest difference between input and output indicators – low value for access to raw resources and high value for distribution at average values of work processes. This case observes a kind of accelerator to increase low input resources to high output results, i.e. achieve an impressive profit. As a general opinion for all manufacturers

are higher indicators for technological skills and marketing activities, while for production capacity and financial potential the values are lower. All manufacturers have similar values in terms of production capacity.

Sopharma products are of the highest quality according to the opinion of both manufacturers and consumers (Figure 4). Sopharma also has the highest product prices.

Figure 4. Quality and price of products according to the opinion of manufacturers and consumers (the maximum score is 5)
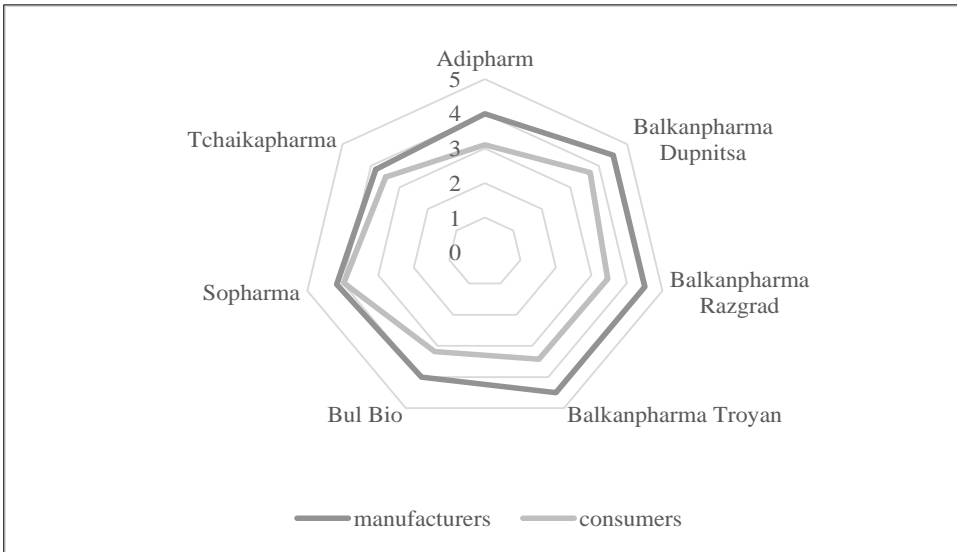

Source: authors' data

The lowest prices are at Bul Bio and only for this manufacturer the assessments of both the manufacturers and the consumers regarding the price of the products coincide. In all indicators, consumer ratings are lower than those of manufacturers are.

As a consequence of product quality and price, the reputation of individual manufacturer is formed (Figure 5). Consumers' perceptions of reputation are lower compare those of manufacturers are.

The highest reputation is assigned to Balkanpharma Dupnitsa, Balkanpharma Razgrad and Balkanpharma Troyan according to the opinion of both the manufacturers and the consumers. Reputation data largely correspond to manufacturers' responses to product quality.

Figure 5. Comparison between the opinions of manufacturers and consumers about the reputation of manufacturers (the maximum score is 5)

Source: authors' data

The reputation of manufacturers is high – in 66% of responses (Figure 6). We can discuss for the formation of traditions in choosing a manufacturer, as more than half of consumers (55%) use the products of a particular manufacturer. Regardless of the determination of the preferred manufacturer, there is a practice of changing the manufacturer for the last five years in 85% of the responses. Most often, the change of the preferred manufacturer with another manufacturer is due to higher quality (92%) and lower price (78%). It should be noted that the chosen five-year period is significant for the Bulgarian reality given the transition period of the economy, health care reforms, the establishment of social norms (Nedeltchev, 2005) and the age of the respondents.

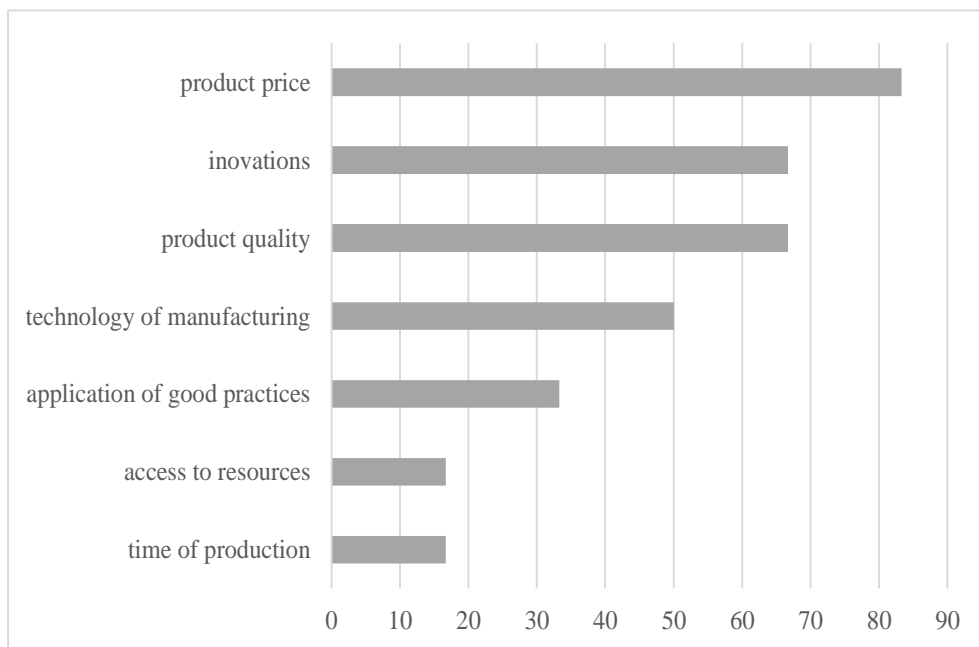*Figure 6. Reputation of manufacturers according to the opinion of manufacturers and consumers*

Source: authors' data

Suppliers. All respondents identified suppliers as a competitive advantage. In most cases, a supplier means access to raw materials. Suppliers are at the heart of a competitive strategy to diversify products.

Access to resources has low effect over the competitiveness of enterprises (Figure 7). In determining competitiveness, input resources and working processes are of the least importance.

Figure 7. Factors for determining competitiveness according to manufacturers, %
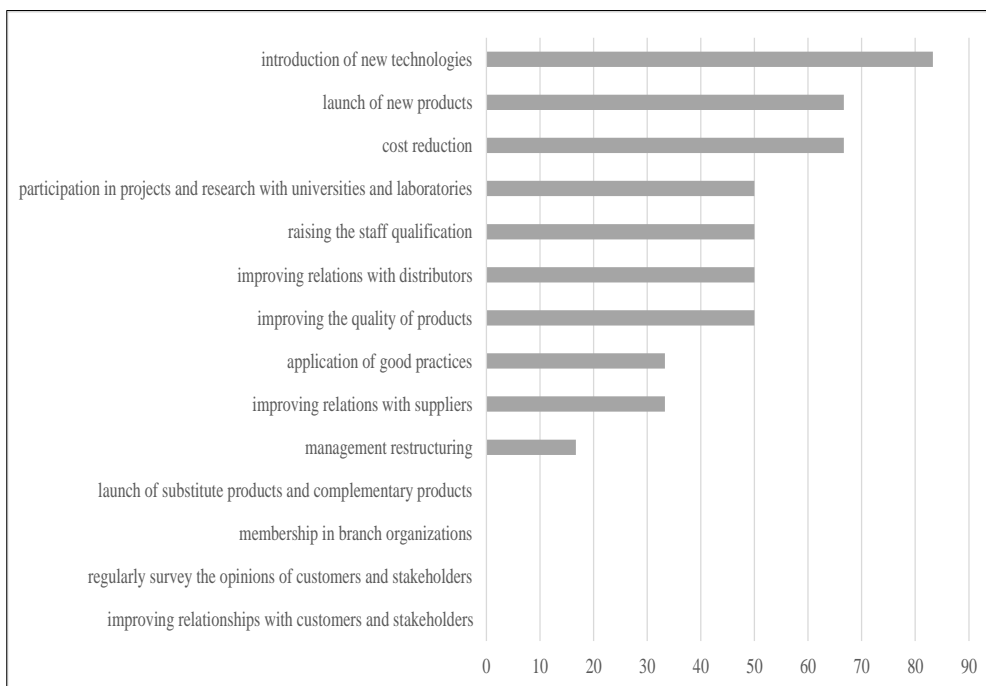

Source: authors' data

Suppliers are reflected in the responses of respondents who are at a strategic level and practice in areas such as distribution, logistics and marketing. In most cases, the influence of suppliers on competitiveness is associated with opinions about increasing sales, customer loyalty and taking into account the views of competitors in the production of pharmaceutical products.

Buyers. Their impact on competitiveness is average. Buyers have twice as much of a role in improving competitiveness as suppliers (Figure 8).

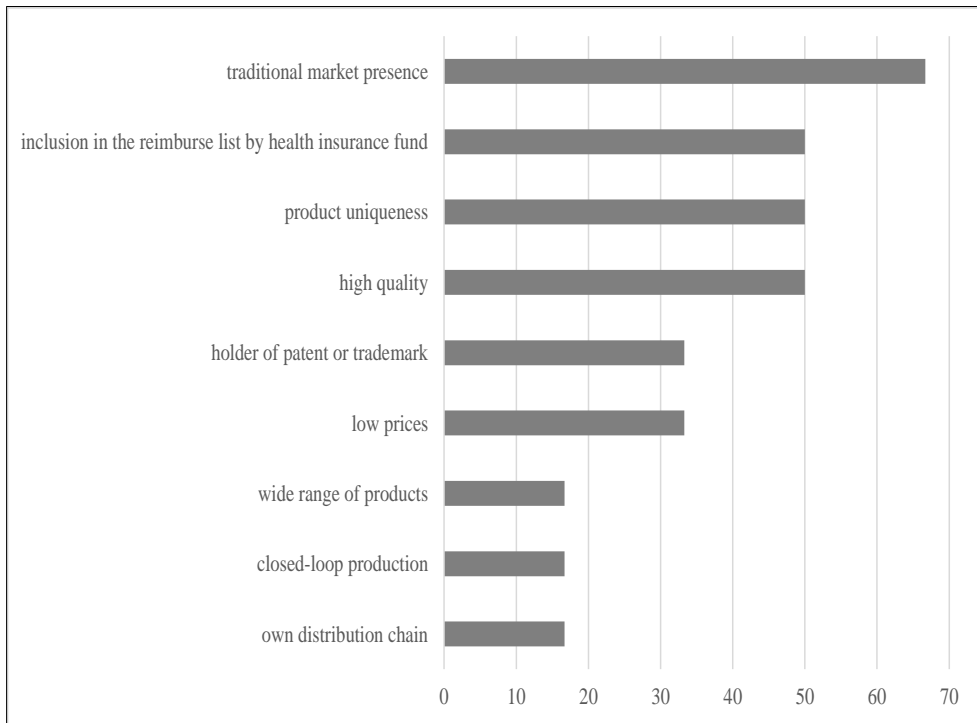*Figure 8. Factors for improving competitiveness according to manufacturers, %*

Distribution is reflected in the opinion of the respondents not so much in the distribution network, but rather in the methods of distribution – product price and trade discounts (Stoimenova et al., 2019). Despite the fact that manufacturers take an interest mainly in the opinion of competitors, the improvement of the competitive position is presented as a consequence of focusing on a narrow market segment, high quality and low prices. Own distribution network is a weak participant in competitiveness, as well as the closed production cycle.

New entrants. The constitution of new competitors in the pharmaceutical industry is related to the licensing regime, which is not the subject of our study. All other things being equal, new competitors should overcome the momentum created by existing competitors both in terms of brand and to impose new market niches. Given the short period of the recent economic history of Bulgaria, it can be argued that for the last 30 years, traditions have been successfully established in relation to existing competitors (Chart 6). New entrants should take into account the limitations of the local market in terms of capacity and requirements of competent authorities at both national and EU level. Our analysis identified as a key threshold for new entrants to overcome the established traditions between manufacturers and consumers (Figure 9).

Figure 9. Competitive advantages of manufacturers, %

When overcoming the traditions, the new entrants should take into account the advantage of including in the reimburse list by the health insurance fund (Gergova et al., 2019). The up-to-date list includes three of the studied manufacturers:

– Actavis (Balkanpharma Dupnitsa and Balkanpharma Troyan) – the state health insurance fund pay for 74 pharmaceutical products of this manufacturer. The level of reimburse for the products of this manufacturer is 67%, i.e. the health insurance fund covers most of the price and the rest is borne by the ultimate consumer.

– Sopharma – the state health insurance fund pay for 84 pharmaceutical products and has reimburse at 60% of the price,

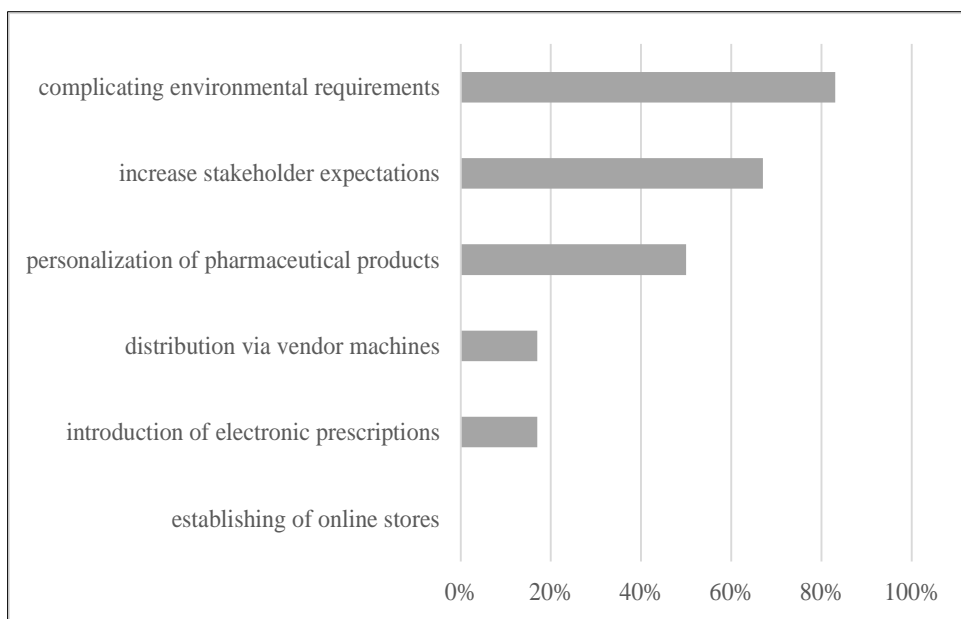– Tchaikapharma – for 117 pharmaceutical products and reimburse at 62% of the price.

For all other manufacturers, the price of the pharmaceutical products is borne entirely by the ultimate consumer. Preconditions are created for the transition from oligopoly to monopoly in patients who use preferential prices under the state health insurance fund. Given the predominant age of respondents (36-45 years), it is understandable that 47% of respondents do not consider the presence of a pharmaceutical product in the reimburse list by the health insurance fund and 80% do

not think that the price of the pharmaceutical product is important, as the health insurance fund pays part of the price.

Substitute products. The annual reports of manufacturers reveal low cost for research, which reduced likelihood of launching substitute products.

New entrants are more likely to enter new market niches in both manufacturing and distribution (Ilieva-Tonova et al., 2022). The view of manufacturers that there is no threat of market changes identifies stakeholders and competent authorities as creation of new opportunities (Figure 10).

Figure 10. Changes in the market as a threat to competitiveness

Source: authors' data

5. Conclusion

Based on the results obtained from the study of the competitiveness of pharmaceutical manufacturers in Bulgaria we can draw the following conclusions:

First, the data from the benchmarking of producers by a set of competitiveness factors do not identify a clear leader. Our interpretation of this fact is the large number of dimensions of competitiveness. Perhaps only product quality should be taken into account when determining competitiveness, as the study concerns healthcare system, and in particular the pharmaceutical industry.

Second, the winner is Balkanpharma Dupnitsa because the production is aimed at a wide range of ultimate consumers and is easily accessible, i.e. due to manufacturing of pharmaceutical products without a prescription. In this case, the

importance of the prescribing physician, pharmacist, state health insurance fund and patient organizations is reduced. This explains the exclusion from the list of winners of Bul Bio, which is aimed at the hospital market, and Adipharm, which manufactures mainly for export and is not sufficiently recognizable to Bulgarian consumers.

Third, the quality of pharmaceutical products determines the competitiveness of pharmaceutical manufacturers. Other factors to increase competitiveness are the cost of pharmaceutical products and the effects of treatment. Marketing tools have the weakest impact on competitiveness. We can answer the question posed in the introduction that the pharmaceutical industry is mainly a part of healthcare system rather than a part of economy.

When summarizing the results of the study, two leading factors for the competitiveness of pharmaceutical manufacturers are formed:

– Product quality. The participation of quality in determining competitiveness is justified by the fact that pharmaceutical production is part of healthcare system. The main goal of healthcare system is to achieve the efficiency of the pharmaceutical product. No correlation of the product quality with other factors for competitiveness such as promotion and advertising was found.

– Product price. It has a place in determining competition due to the fact that pharmaceutical production is part of the economy. In manufacturing, the leading goal is to achieve effectiveness and is close to market principles. In countries with a low standard of living, consumers prefer a manufacturer mainly by the price and to a lesser extent because of the quality of the product.

6. Recommendations

In addition to the results and conclusions, we will make recommendations to pharmaceutical manufacturers to improve their competitiveness. We will use SWOT analysis as a research tool.

Through SWOT analysis, we will try to establish the optimal strategy, including recommendations for corrective action, which we accept as opportunities to improve competitiveness. The analysis consolidates the individual results for these manufacturers (Figure 11).

Figure 11. Strategies for improvement of competitiveness for pharmaceutical manufacturing

	Opportunities	Threats
	O1 good infrastructure for business location O2 state policy for mass use of generic pharmaceutical products O3 a large number of external distributors O4 increasing demand for generic pharmaceutical products O5 significant foreign investment, incl. acquisitions from local producers O6 positive attitude towards generic pharmaceutical products O7 availability of a list of pharmaceutical products for reimbursement from the state health insurance fund O8 availability of export potential O9 possibility to influence the price of some pharmaceutical products O10 price inelasticity of demand for pharmaceutical products	T1 new competitors and importers after European Union membership T2 decline in customers' solvency T3 unpredictable regulatory environment T4 weak financial results of the main customer (hospital market) T5 organizing public tenders for the purchase of pharmaceutical products by the state T6 international commitments to protect intellectual property T7 increased environmental requirements T8 low health care costs in the state budget T9 traditional export markets remain outside the European Union T10 small national market
Strengths S1 reputation as a manufacturer S2 good provision with qualified staff S3 positive image in society S4 a quality management system is applied S5 sole manufacturer of a specific pharmaceutical product in Bulgaria S6 possession of a production license S7 high transparency of the activity and the results due to the adopted shareholder form S8 customer recognition S9 contractual relations with universities and laboratories S10 knowledge of the infrastructure of the national market	**SO strategy** (increase market share) SO1 bargaining to change the prices (S1, O9) SO2 discovering new market niches (S10, O4)	**ST strategy** (cost reduction) ST1 new product launch (S8, T5)
Weaknesses W1 lack of energy-saving technologies in manufacturing W2 low level of feedback from stakeholders W3 limited range of pharmaceutical products for production W4 the need for a long period of time when switching to new production W5 constant updating of knowledge and skills of the staff W6 maintaining a significant number of contracts with distributors W7 the adopted organizational structure does not provide an opportunity for quick reaction to changes in the external environment W8 insufficient investment in R&D W9 mandatory hiring of certified staff W10 dependence on the chemical industry as a major supplier of raw materials	**WO strategy** (promotions) WO1 new technologies to improve quality (W8, O5)	**WT strategy** (new policy towards distributors) WT1 establishing cooperation with biotechnology companies (W7, T6) WT2 increasing R&D costs (W8, T1) WT3 finding new distributors (W2, T8) WT4 divestment and closing of losing production (W10, T9)

Source: authors' data

We recommend that each of the surveyed pharmaceutical manufacturers to implement a specific strategy (Figure12):

Figure 12. Recommended strategies

SO strategy	ST strategy
Bul Bio Adipharm	Sopharma
WO strategy	**WT strategy**
Balkanpharma Razgrad Tchaikapharma	Balkanpharma Troyan Balkanpharma Dupnitsa

Source: authors' data

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