ONCOLOGY DRUGS MARKET ANALYSIS AND KEY TRENDS IMPACTING ROMANIA AND OTHER EUROPEAN PHARMACEUTICAL MARKETS

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Abstract
Although the COVID-19 pandemic affected the diagnostic and treatment of cancer, it also had a positive impact on the growth of the oncology drugs market globally, with certain market segments registering an increase in demand for drugs with respect to the COVID-19 emergency. Nevertheless, oncology represents a key driver for the growth of the pharmaceutical industry (registering approximately 25% of the total pharmaceutical industry revenue in 2020), and the global oncology drugs market size was valued at 141,33 billion dollars in 2019, and it is expected to reach 394,24 billion dollars by 2027. In 2020, the Romanian pharmaceutical market accounted for a revenue of 3.35 billion EUR, earning about 13 times less than the European leader, Germany. Also, as cancer survival rates are low, new programmes should improve screening, diagnosis and treatment in Romania. In general, the reduction in cancer mortality and the progress against cancer has accelerated in the past decade due to more targeted cancer control interventions and investment in improved early detection and treatment, with an important role played by the anticancer treatment with specific anticancer drugs, and also, having information and understanding the profitability of pharmaceutical companies, it is essential to formulating evidence-based policies to reduce drug costs while maintaining the industry's capacity to innovate and provide essential medicines.

Keywords: *oncology drugs market, cancer statistics, pharma companies revenues, drugs costs, sales of oncology medicines.*

Clasificare JEL: *I11, H40, D20, M10.*

1. Introduction

The coronavirus disease 2019 (COVID-19) pandemic affected dramatically in 2020 the diagnosis and treatment of cancer, considered as a major public health problem worldwide (e.g. it is the second leading cause of death in the United States, with lung cancer being the leading cause of cancer death, and worldwide, cancer became the second leading cause of death after cardiovascular disorders). The limited access to care because of health care setting closures and fear of COVID-19 exposure has led to delays in diagnosis and treatment, causing a potential short-term drop in cancer incidence followed by an increase in advanced-stage disease and, finally, increased mortality (Siegel et al., 2022; Yabroff et al., 2021). Despite the negative impact of COVID-19 pandemic, Siegel et al. (2022) stated that the risk of death from cancer has decreased continuously since 1991, for example resulting in an overall drop of 32% in the US. Considering the mortality patterns, there are accelerated declines for lung cancer, slowing incidence for breast

cancer, and stabilizing for prostate cancer. Based on OECD/European Observatory on Health Systems and Policies (2021), life expectancy in Romania is among the lowest in Europe, and the COVID-19 pandemic reduced some of the gains made since 2000, with cardiovascular diseases being the leading causes of mortality, while lung cancer is the most frequent cause of cancer death, with a mortality rate that has increased by nearly 11 % since 2000. Also, OECD/European Observatory on Health Systems and Policies (2021) figures show that the main types of cancer expected in men are lung (17 %), prostate (16 %) and colorectal (15 %), while among women breast cancer is the leading cancer type (28 %), followed by colorectal (12 %) and cervical cancer (8 %), therefore as cancer survival rates are low, new programmes should improve screening, diagnosis and treatment in Romania.

The reduction in cancer mortality and the progress against cancer has accelerated in the past decade due to more targeted cancer control interventions and investment in improved early detection and treatment (Siegel et al., 2022), with an important role played by the anticancer treatment with specific anticancer drugs. Also, according to Ledley et al. (2020), having information and understanding the profitability of pharmaceutical companies, it is essential to formulating evidence-based policies to reduce drug costs while maintaining the industry's capacity to innovate and provide essential medicines.

Therefore, this paper is organized as follows: the second part describes an analysis of international oncology drugs market, section 3 presents an analysis of pharmaceutical industry revenues in Europe, while section 4 is a presentation of main trends concerning international oncology market and a comparison analysis between oncology and non-oncology markets, also section 5 describes an analysis of pharmaceutical industry in Romania, and section 6 provides a summary of the main findings and some concluding remarks.

2. Oncology drugs market analysis

As mentioned in Fortune Business Insights (2020), the objectives of treating patients with cancer are to cure the disease, prolong survival, and improve the quality of life. Nevertheless, an important role is played by the oncology cancer drugs, that are mainly used to reduce the total number of cancer cells in the body, reduce the tumour size and the symptoms (Fortune Business Insights, 2020).

Though on one hand the COVID-19 pandemic affected the diagnostic and treatment of cancer (Siegel et al., 2022), on the other hand it had a positive impact on the growth of oncology drugs market globally, with certain market segments registering an increase in demand for drugs with respect to the COVID-19 emergency (Fortune Business Insights, 2020). Therefore, knowing that oncology represents a key driver for the growth of the pharmaceutical industry (registering approximately 25% of the total pharmaceutical industry revenue in 2020), according to Fortune Business Insights (2020), the global oncology drugs market size was valued at 141,33 billion dollars in 2019, and it is expected to reach 394,24 billion dollars by 2027. This increase is determined by various factors, such as: the rising prevalence of different cancers, increasing new drug launch and product approvals, and increasing research activities by the pharma companies in this domain (Fortune Business Insights, 2020). Also, the pharma companies involved in the oncology drugs market have significantly improved their supply chain management, improved the capabilities of their R&D (e.g. FUJIFILM Corporation and the National Cancer Center Japan launched a research project for new cancer immunotherapy, etc.), made more investments in their manufacturing management and quality control. For example, the Roche company pharmaceutical division sales increased in 2020 by 7% as compared to 2019, due to the sales of Tecentriq and Perjeta, two oncological drugs, and AstraZeneca registered a growth of 34% in oncology segment, due to sales of Imfinzi, Enhertu and Tagrisso, mainly because of the panic buying medications in 2020 (Fortune Business Insights, 2020).

Fortune Business Insights (2020) presents the following statistics regarding global market size: North America accounts for the first-largest share in the global market, due to growing

incidence and increasing prevalence of cancer in the U.S., along with new product launches in the region (e.g. the North America's market size represented 65.63 billion USD in 2019); moreover, European oncology market is anticipated to account for the second-largest share in the global market, due to high growth countries, such as UK, Germany, France, Italy, Spain; also, due to rising awareness among population, Asia Pacific market is expected to register a faster growth rate; and, the rest of the regions (Latin America, Middle East, Africa) are expected to exhibit a limited growth rate, mainly due to less awareness and affordability to high-cost biologic drugs.

Also, according to Fortune Business Insights (2020), the top three leading players in the global market of oncology drugs are F. Hoffmann-La Roche Ltd (Basel, Switzerland), Genentech, Inc. (California, U.S.) and Novartis AG (Basel, Switzerland), and their leading position is determined by a strong oncology product portfolio, key strategic business acquisitions and robust product pipelines, but also these leading players have a wider geographic presence, and invest actively in research and development resulting in strong regulatory approvals. Other key companies in the oncology domain are: Pfizer Inc. (New York, U.S.), Bristol-Myers Squibb Company (New York, U.S.), GlaxoSmithKline plc. (Brentford, U.K.), Eli Lilly and Company (Indiana, U.S.), AstraZeneca (Cambridge, U.K.), Sanofi (Paris, France), Bayer AG (Leverkusen, Germany), etc. For instance, considering the oncology sales, based on Global Data (2022)'s pharmaceutical revenue figures, F. Hoffmann-La Roche Ltd is expected to obtain a revenue of 29.814 million dollars ($m) in 2023 (with a growth rate of 0.55% in comparison to 2022), Novartis AG 20.684 $m (growth rate of 14.44% in comparison to 2022), AstraZeneca 16.645 $m (growth rate of 16.50%), Pfizer Inc. 14.209 $m (growth rate of 10.16%).

3. Pharmaceutical industry revenues in Europe

Based on Ledley et al. (2020) results, for the period 2000-2018, the large pharmaceutical companies' profitability was significantly greater than other large, public companies, but the difference was less pronounced when considering company size, year, or research and development expense. Also, according to Meyers et al. (2022) among 10 of the world's largest pharmaceutical companies' revenues generated from the sale of cancer drugs have increased by 70% over the past decade (e.g. revenues from cancer drugs accounted for 25% of the net revenues generated in 2019, up from 14% in 2010), while revenues from other medicines have decreased by 18%.

In 2021, the top global pharmaceutical companies based exclusively on revenue with pharmaceutical products were Pfizer, Roche, and AbbVie, generating 81 billion U.S. dollars, 68 billion U.S. dollars, and respectively 56 billion U.S. dollars (Statista, 2022). In the same year, 2021, the United States was still the largest single pharmaceutical market, generating more than 550 billion U.S. dollars of revenue, and the European market was responsible for generating around 228 billion U.S. dollars (Statista, 2022). For instance, according to Statistica (2021), in 2020, Europe's share of global pharmaceutical revenues was 23.9%.

According to Statista (2022), Europe has the oldest, still active pharmaceutical company worldwide: Merck KGaA, while the European market is one of the largest and most prominent pharmaceutical markets in the world, and as a consequence one of first widely approved and used COVID-19 vaccine worldwide came from a U.S.-European collaboration, between German firm BioNTech and American company Pfizer.

As presented in Figure no. 1, when considering the total revenue of the European leading pharmaceutical markets in 2020, the top three markets were Germany (a total revenue of 42.57 billion EUR), France (31.71 billion EUR) and Italy (27.98 billion EUR). Based on Statista (2022), the high revenue of the German pharmaceutical market is determined mainly due to prescription drugs sales, which accounted for approximately 32 billion euros of revenue, followed by pharmacy drugs revenues. The Romanian pharmaceutical market accounted for a revenue of 3.35 billion EUR, earning about 13 times less than the European leader, Germany.

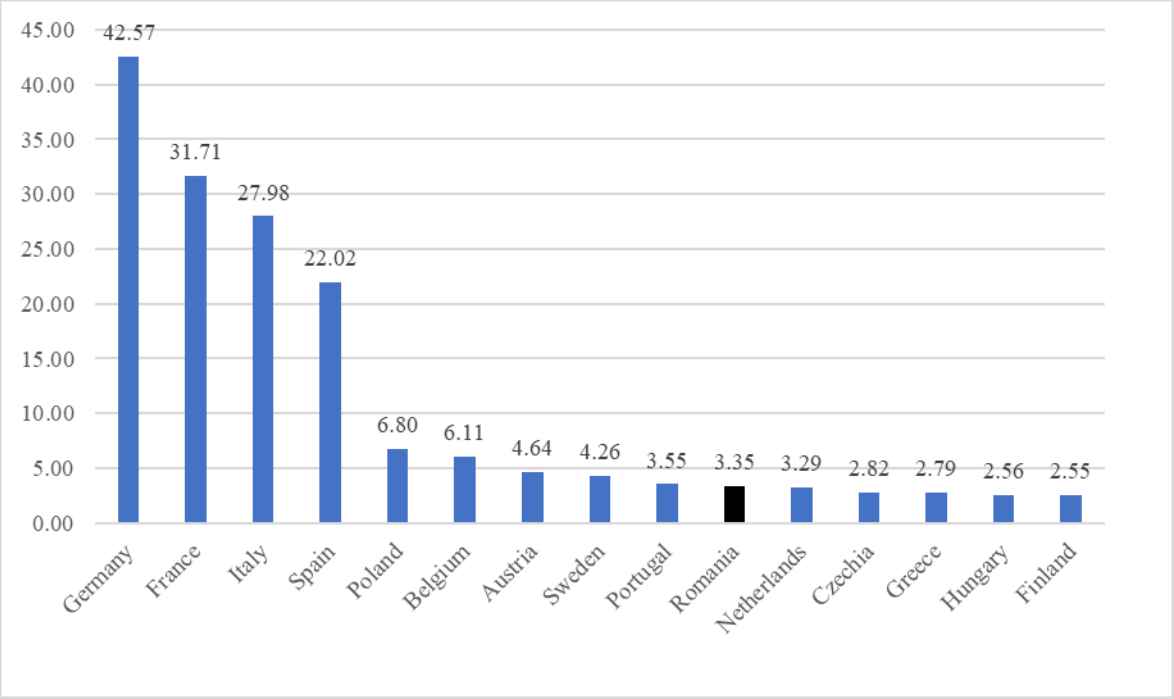


Figure no. 1: Revenue of leading pharmaceutical markets in Europe in 2020 (in billion euros).
Source: Statista (2022), BPI Pharma-Daten (2021), pg. 40.
https://www.statista.com/statistics/458845/european-pharmaceutical-markets-turnover/,
https://www.bpi.de/fileadmin/user_upload/Downloads/Publikationen/Pharma-Daten/Pharma-Daten_2021_DE.pdf.

4. International oncology market trends and a comparison analysis between oncology and non-oncology markets

The following analysis provides an overview of the international oncology and non-oncology market from 2010 to 2019. As follows, Table no. 1 illustrates the sales of oncology and non-oncology medicines worldwide per capita in 2019 in comparison to 2010, by selected developed country, suggesting that international oncology and non-oncology markets have grown rapidly over the past decade.

Table no. 1: Oncology sales vs. non-oncology medicine sales per capita in 2019 in comparison to 2010, for developed countries, in Canadian dollars.

Country	Oncology sales per capita			Non-oncology sales per capita		
	2010	2019	2019/2010	2010	2019	2019/2010
United States	75	247	3.29	944	1733	1.84
France	66	132	2.00	473	501	1.06
Switzerland	60	160	2.67	462	678	1.47
Spain	60	120	2.00	399	548	1.37
Japan	59	124	2.10	604	683	1.13
Belgium	53	170	3.21	442	537	1.21
Germany	52	121	2.33	377	546	1.45
Italy	49	132	2.69	374	554	1.48
Canada	40	105	2.63	532	615	1.16
Sweden	40	101	2.53	358	463	1.29
Australia	40	91	2.28	387	364	0.94
Norway	31	112	3.61	334	534	1.60
United Kingdom	29	89	3.07	267	404	1.51
OECD median	37	89	2.41	373	404	1.08

Source: Statista (2020), Oncology Medicines in Canada (2020), pg. 12-14. https://www.statista.com/statistics/1184822/oncology-vs-non-oncology-drug-sales-per-capita-by-country/, https://www.canada.ca/content/dam/pmprb-cepmb/documents/reports-and-studies/chartbooks/OncologyChartbook-2010-2019-EN.pdf.

The United States was the leader of the global oncology and non-oncology medicines sales per capita in the analysed years, 2010 and 2019. For instance, in 2019, non-oncology medicine sales per capita in the United States were 247 Canadian dollars, compared to oncology per capita sales which stood at 75 Canadian dollars in 2010, therefore this indicator increased 3.29 times compared to 2010. Also, when considering the non-oncology medicine sales per capita in the United States, in 2019, there was an increase of 84% (a total of 1733 Canadian dollars) in comparison to the prior analysed year, 2010 (a total of 944 Canadian dollars). Considering the European markets, in the case of oncology medicines sales per capita, in 2019, the top three leaders were Belgium (170 Canadian dollars), Switzerland (160 Canadian dollars), and France and Italy (132 Canadian dollars); and in the case of the non-oncology medicine sales, in 2019, the top three leaders were Switzerland (678 Canadian dollars), Italy (554 Canadian dollars) and Spain (548 Canadian dollars). Also, in 2019, Norway had the highest growth of all comparator European countries, increasing 3.61 times in 2019 in comparison to 2010, in the case of oncology medicines sales per capita; and also registering an increase of 60% for the non-oncology medicine sales, for the same analysed period. For oncology and non-oncology treatments, in 2019, all analysed European markets per capita sales have remained above OECD median.

Regarding the oncology sales as a share of the total pharmaceutical market, Table no. 2 presents these statistics for global developed countries, for the same analysed years. As it was expected, the international oncology sales as a share of the total pharmaceutical international market have grown rapidly over the analysed period. The highest increase was registered in Belgium, with 13.30% growth in 2019, in comparison to the base year, 2010, whereas the lowest increase was accounted in Spain, respectively in 2019, this indicator increased with only 4.90% in comparison to 2010, mainly due to the fact that Spain had a high level of oncology sales as a share of the total pharmaceutical market in 2010. Therefore, in 2010, when considering the share of oncological sales, the top three markets were Spain - Spain oncology sales accounted for 13.10% of total prescription pharmaceutical sales, Germany and France – both markets oncology sales accounted for 12.20% of total prescription pharmaceutical sales. Also, in 2019, the top three leaders were two European markets – Belgium (share of 24%) and France (share of 20.90%); and Australia (share of 20.1%). The majority of European countries' shares were above the international median (OECD median), except Norway.

Table no. 2: Oncology sales as a share (%) of the total pharmaceutical market, by developed country, 2010 and 2019.

	Oncology sales as a share of the total pharmaceutical market		
Country/Year	2010	2019	2019-2010
United States	7.40%	12.50%	5.10%
France	12.20%	20.90%	8.70%
Switzerland	11.60%	19.10%	7.50%
Spain	13.10%	18.00%	4.90%
Japan	8.90%	15.30%	6.40%
Belgium	10.70%	24.00%	13.30%
Germany	12.20%	18.10%	5.90%
Italy	11.60%	19.30%	7.70%
Canada	7.10%	14.60%	7.50%
Sweden	10.00%	18.00%	8.00%
Australia	9.30%	20.10%	10.80%
Norway	8.40%	17.40%	9.00%

United Kingdom	9.90%	18.10%	8.20%
OECD median	9.90%	17.40%	7.50%

Source: Statista (2020), Oncology Medicines in Canada (2020), pg. 12-14. https://www.statista.com/statistics/1184822/oncology-vs-non-oncology-drug-sales-per-capita-by-country/, https://www.canada.ca/content/dam/pmprb-cepmb/documents/reports-and-studies/chartbooks/OncologyChartbook-2010-2019-EN.pdf.

Also, based on Oncology Medicines in Canada (2020), in 2019, the 20 top-selling oncology medicines in the OECD presented a similar share of sales across international markets, respectively between 56-72%, with the highest share of sales was observed in Belgium (72%), and the lowest in United Kingdom (56%). Moreover, according to Oncology Medicines in Canada (2020), of the 111 oncology medicines that first recorded sales in the OECD between 2011 and 2019, 74 new oncology medicines were on the market in Germany by 2019, being the highest number in European market, representing 98% of OECD sales for new medicines in 2019.

5. Pharmaceutical industry in Romania

As presented in Figure no. 2, the pharmaceutical in industry in Central and Eastern Europe (CEE) is presenting a rapid and significant growth, also, in 2019, Romania's pharmaceutical market had a revenue of 3.5 billion euros (becoming the second biggest pharmaceutical market in the CEE region after Poland, recording a revenue of 6.8 billion euros), and the estimated figures show that Romania's pharmaceutical industry revenue peaked at 66.6 billion Romanian lei in 2020, with pharmaceutical distribution accounting for a 66% share (Statista, 2022). Also, according to Chis et al. (2021), in 2020, the net profit of pharma companies increased by almost 19% compared to the previous year and by more than 346% compared to the level of 2010.

Although this significant increase, unfortunately, research and development (R&D) expenditure in the pharmaceutical industry has decreased considerably over the last few years, from 250 million euros in 2013 to 75 million euros in 2019, respectively decreasing by 70 percent (Statista, 2022).

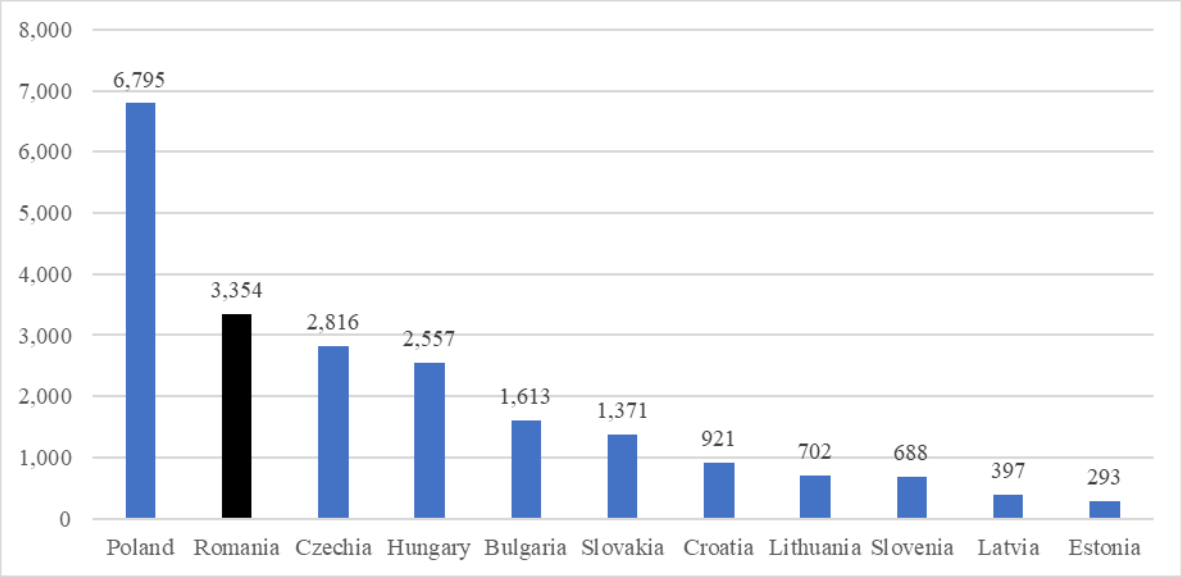


Figure no. 2: Revenue of pharmaceutical markets in CEE in 2020 (mil. EUR).
Source: Statista (2022), https://www.statista.com/statistics/458901/pharmaceutical-markets-turnover-central-and-eastern-european/.

When considering the pharmaceutical drug production, in 2019, it recorded a revenue worth 4.4 billion Romanian lei, doubling their revenue over the last decade (Statista, 2022).

Also, based on Table no. 3 figures, the highest total revenue of the pharmaceutical industry in Romania, by sector, considering the period 2009-2020, was observed in 2020, amounted to over 66 billion Romanian lei. In terms of revenue value, 2020 has been the peak of the pharma industry in Romania for the two sectors: pharmacies (22 billion Romanian lei) and pharma distribution (40.20 billion Romanian lei). When considering the production sector, the highest value of revenue was accounted for in 2019, respectively 4.50 billion Romanian lei. Comparing the increases/decreases of revenues with the value accounted in the previous year, we can observe that for total revenue, the highest increase was accounted in 2019 (an increase of 15% in comparison to the previous year, 2018), and the lowest increase in comparison to the previous year, was observed in 2020, an increase of 2% in comparison to 2019. Also, when considering the highest increases/decreases accounted for each sector, we can observe: for production sector - an increase of 32% in 2017, in comparison to 2016, and a decrease of 28% in 2016 in comparison to 2015; for distribution sector – a high increase of 19% in 2019 in comparison to previous year, 2018, and a low increase of only 2% in 2020 in comparison to 2019; and for pharmacies sector, an increase of 12% in 2018, in comparison to 2017, and a decrease of 1% in 2015 in comparison to 2014.

Table no. 3: Revenue of the pharmaceutical industry in Romania from 2009 to 2020, by sector (in billion Romanian lei)

Year/ Sector	Production		Distribution		Pharmacies		Total	
	Value in billion Romanian lei	%	Value in billion Romanian lei	%	Value in billion Romanian lei	%	Value in billion Romanian lei	%
2009	2.40	-	17.00	-	10.90	-	30.30	-
2010	2.70	1.13	18.20	1.07	12.30	1.13	33.20	1.10
2011	2.80	1.04	20.80	1.14	12.40	1.01	36.00	1.08
2012	3.10	1.11	21.40	1.03	13.40	1.08	37.90	1.05
2013	2.90	0.94	23.50	1.10	14.40	1.07	40.80	1.08
2014	3.60	1.24	24.60	1.05	15.40	1.07	43.60	1.07
2015	3.90	1.08	26.10	1.06	15.30	0.99	45.30	1.04

2016	2.80	0.72	28.60	1.10	16.70	1.09	48.10	1.06
2017	3.70	1.32	31.00	1.08	17.20	1.03	51.90	1.08
2018	3.90	1.05	33.30	1.07	19.20	1.12	56.40	1.09
2019	4.50	1.15	39.60	1.19	20.90	1.09	65.00	1.15
2020	4.40	0.98	40.20	1.02	22.00	1.05	66.60	1.02

Source: Statista (2022), KeysFin (2021), https://www.statista.com/statistics/1251007/romania-pharma-industry-revenue-by-sector/, https://www.keysfin.com/.

Also, according to Statista (2022) the pharmaceutical market in Romania has recently strengthened, with 8045 pharmaceutical units in 2020, with a considerable expansion of the biggest pharmacies, for example, the pharmaceutical company Catena had the highest number of pharmacies in the country (854 pharmacies in Romania) and remained the most important company in the pharmaceutical retail sector, registering a revenue worth 4.7 billion Romanian lei. Moreover, the coronavirus (COVID-19) pandemic had a positive impact upon pharmaceutical companies' revenues, leading to a growth in pharmaceutical sales (Statista, 2022).

In 2019, according to Statista (2022), the number of employees working in the pharmaceutical drug production has increased by only 10% in comparison to 2009, recording a total of 10,085 people in 2019.

As presented in Table no. 4, for the analysed period 2009-2020, the highest value of the total net profit was accounted for in 2020, representing over 3 billion Romanian lei. For the same period, the highest increase in comparison to the previous year was observed in 2010, an increase of 33% in comparison to 2009, and the lowest increase was observed in 2019 in comparison to 2018. When considering the net profit of the pharmaceutical industry in Romania from 2009 to 2020, by sector, based on the following table, the pharma production sector peaked its net profit in 2018 at 0.70 billion Romanian lei, and the pharma distribution and pharmacies sectors accounted the highest value of net profit in 2020 (0.70 billion Romanian lei, respectively 0.80 billion Romanian lei).

Table no. 4: Net profit of the pharmaceutical industry in Romania from 2009 to 2020, by sector, in billion Romanian lei.

Year/ Sector	Production		Distribution		Pharmacies		Total	
	Value in billion Romanian lei	%	Value in billion Romanian lei	%	Value in billion Romanian lei	%	Value in billion Romanian lei	%
2009	0.10	-	0.30	-	0.20	-	0.60	-
2010	0.10	1.00	0.10	0.33	0.60	3.00	0.80	1.33
2011	0.10	1.00	0.50	5.00	0.40	0.67	1.00	1.25
2012	0.20	2.00	0.40	0.80	0.40	1.00	1.00	1.00
2013	0.30	1.50	0.60	1.50	0.30	0.75	1.20	1.20
2014	0.20	0.67	0.60	1.00	0.50	1.67	1.30	1.08
2015	0.30	1.50	0.80	1.33	0.40	0.80	1.50	1.15
2016	0.40	1.33	1.00	1.25	0.50	1.25	1.90	1.27
2017	0.50	1.25	1.00	1.00	0.60	1.20	2.10	1.11
2018	0.70	1.40	1.20	1.20	0.70	1.17	2.60	1.24
2019	0.50	0.71	1.40	1.17	0.70	1.00	2.60	1.00
2020	0.60	1.20	1.70	1.21	0.80	1.14	3.10	1.19

Source: Statista (2022), KeysFin (2021), https://www.statista.com/statistics/1251018/romania-pharma-industry-net-profit-by-sector/, https://www.keysfin.com/.

Also, by calculating the chain base indices, we observed that the highest increase in comparison to the previous year was observed in 2012, for the production sector (increased 2 times

compared to 2011), and the highest decrease was observed in 2014, for this sector (a decrease of 33% in comparison to the prior analysed year, 2013). Considering the same method, in the case of distribution sector, the highest increase was registered in 2011, increasing 5 times in comparison to 2010 and the highest decrease was accounted in 2010 (with a decrease of 67% in comparison to 2009); and in the case of pharmacies sector, the highest increase was accounted in 2010, increasing 3 times compared to 2009, and the highest decrease was observed in 2011, a decrease of 33% compared to 2010.

6. Conclusions

As stated in Statista (2022), the global pharmaceutical market, with a major role in how people get medications and what people pay for medication, has experienced significant increase in recent years, growing 3.25 times, from 390 billion U.S. dollars in 2001 to about 1.27 trillion U.S. dollars at the end of 2020. When considering the top pharmaceutical products, oncologics is the top therapeutic class for drug sales globally, followed by antidiabetics (Statista, 2022). According to Iqvia Institute (2022), oncology is the leading therapy area for innovation, in terms of: the level of clinical trial activity, number of companies investing in therapeutics, size of the pipeline of therapies in clinical development, novel active substances being launched, and the level of expenditure on these drugs. Also, according to Statista (2022), in 2021, global oncology spending totalled 187 billion U.S. dollars, while the costs stood at 86 billion dollars six years earlier. Based on Gautam and Pan (2016), IMS Health (2014), the new therapies demand will continue to experience a steady growth, a favorable trend for the long-term pharma industry dynamics. Moreover, based on Iqvia Institute (2022) projection figures of the global spending and growth in the worldwide oncology market between 2022-2026, in 2022 the oncology spending is expected to be around 208 billion U.S. dollars, respectively 306 billion dollars until 2026 (Statista, 2022). The maximum projection for the 2022-2026 CAGR is 12 percent (Iqvia Institute, 2022; Statista, 2022). Collectively, the top five tumor types - breast cancer, lung cancer, multiple myeloma, prostate cancer and colorectal cancer, account for 53% of all oncology sales (Iqvia Institute, 2022).

Fortune Business Insights (2020) emphasizes some key factors restraining and driving the oncology market growth. Therefore, the increasing prevalence of cancers will boost the oncology cancer drugs market demand, and implicitly the rising awareness regarding cancer will positively impact the global market in the upcoming years, and the presence of a strong pipeline of drugs will spur growth opportunities (Fortune Business Insights, 2020). But also, there are some factors that are restricting the global oncology market growth in the upcoming years, such as adverse effects of drugs (e.g. chemotherapy drugs that kill cancer cells, but also damage normal body cells), stringent government regulations; access, pricing and reimbursement, R&D productivity, and patent expiration (Fortune Business Insights, 2020; Gautam & Pan, 2016), so big pharma companies have been revamping their strategies to remain competitive in this new business environment (Gautam & Pan, 2016). For instance, according to Gordon et al. (2018), after launch, anticancer drug costs may change substantially, and regardless of competition or supplemental indications, there is a steady increase in costs of patented anticancer agents over time, therefore new regulations may be needed to prevent additional increases in drug costs after launch. Saluja et al. (2018) stated that over the past decade, costs of novel oncology drugs have increased, while clinical benefits of these medications have not experienced a proportional positive change, observing that the incremental anticancer drug costs have increased at a much greater rate than monthly prices, indicating that the increase in anticancer drug costs may be higher than commonly reported. For instance, according to OECD/European Observatory on Health Systems and Policies (2021), Romania has significantly increased its health spending (including oncology segment), but remains the EU country with the second lowest health expenditure, both on a per capita basis and as a share of GDP, so the weakness of primary care and prevention may explain Romania's high mortality rates from both preventable and treatable causes, with the latter the fourth highest in the EU in 2017. Since 2018-2019, Romania invested in efforts to strengthen prevention, new screening programmes were

introduced for cancer (also for cardiovascular diseases and tuberculosis), and these measures could help to improve the uptake of breast cancer screening among women in the target group, which is extremely low, knowing that only 9 % of Romanian women aged 50-69 reported accessing breast cancer screening, in comparison to other European countries (i.e. the EU average was 57 % in 2019) (OECD/European Observatory on Health Systems and Policies, 2021).

Therefore, Prasad et al. (2017) proposes some solutions intended to reduce or, at a minimum, curb the rise in anticancer drug prices, in order to ensure widespread access to these medications, such as: changes in how drugs prices are negotiated, drug price transparency, introduction of generic and biosimilar drugs, patent length, proposed experiments to improve drug reimbursement, importation of drugs from foreign countries, legal solutions to a fiscal problem.

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