Mapping the Financial Performance of the Pharmaceutical Businesses in Romania

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Abstract

This study assesses the financial performance of firms in the pharmaceutical industry in Romania, with a focus on companies engaged in pharmaceutical wholesaling, according to CAEN code 4646. The main objective was to assess the economic level of this vital sector for the national economy, by analyzing financial indicators such as net turnover, net profit, personnel expenses and average number of employees. The analysis was carried out at territorial level, for each county, and according to categories of taxpayers. The data used in the study come from a sample of 1,164 firms selected based on the declared CAEN code. The results show a significant polarization, both territorially and by taxpayer size: large taxpayers generate the majority of turnover and profit, while small firms predominate in terms of numbers but operate on a small scale. The findings of the study underline the need to develop economic policies that support the balanced development of the pharmaceutical sector and boost long-term competitiveness.

Key words: pharmaceutical industry, financial performance, business strategies, Classification of Activities in the National Economy (NACE)
J.E.L. classification: I15, I18

1. Introduction

The pharmaceutical industry is one of the most dynamic and essential sectors of the economy, with a direct impact on the health and quality of life of the population. In the context of globalization and rapid economic change, the analysis of the financial performance of businesses in this industry becomes a necessity for understanding how companies contribute to economic and social development. In Romania, the pharmaceutical sector is of strategic importance, being both an engine of economic growth and a key element in ensuring the sustainability of the healthcare system.

The present paper focuses on mapping the financial performance of companies in the pharmaceutical industry in Romania, using a set of relevant indicators: turnover, profit, personnel expenses and average number of employees. These indicators allow a comprehensive and detailed analysis of how firms in this sector manage their resources and generate economic value. By aggregating data from all firms in the sector, the analysis provides a comprehensive picture of financial performance at national level.

The aim is to identify the trends and challenges faced by pharmaceutical companies in Romania, thus contributing to the foundation of economic policies and business strategies that support the sustainable development of the sector. At the same time, the paper aims to highlight the link between financial performance and the dynamics of the pharmaceutical market, emphasizing the role of this sector in the context of the national economy.

2. Literature review

The financial performance of companies in the pharmaceutical industry is influenced by several internal and external factors, such as intellectual capital, advertising effectiveness, financial risks, innovation strategy and local market specificity (Béresné Mártha, Tömöri & Lakatos, 2021;

Montalban & Sakinç, 2013). Studies in the literature contribute to the understanding of these issues and provide a useful comparative framework for the analysis of the Romanian pharmaceutical industry.

Research by Kusumawardhani (2012) emphasizes the role of intellectual capital in increasing profitability and productivity in the Indonesian pharmaceutical industry. This link is also highly relevant in the context of Romania, where the development of human capital and research and development (R&D) skills is a key driver of financial growth (Rus, 2018; Rus 2023). Complementarily, Rahman et al. (2020) explores advertising effectiveness as a determinant of profitability, highlighting the importance of a well-calibrated marketing strategy. These issues are particularly relevant in Romania, where the positioning of pharmaceutical brands can significantly influence financial performance.

Regarding the specific determinants of profitability, Tyagi and Nauriyal's (2017) study of the Indian pharmaceutical industry highlights the role of firm size, cost structure and innovation. These findings resonate with the realities of the Romanian pharmaceutical industry, where differences in scale and the degree of technological innovation directly influence economic performance. Similarly, several authors on the productivity crisis in the global pharmaceutical industry have emphasized the need for constant investments in R&D to maintain competitiveness, an essential aspect also for Romanian companies (Cockburn, 2006; Toma, 2020; Tömöri, Lakatos & Mártha, 2021; Tyagi & Nauriyal, 2016).

The link between innovation and profitability is also reinforced by Ken et al. (2008), who analyze the effect of patent lag on financial gains. In an industry characterized by long product development cycles, including in Romania, patents and innovation protection strategies are key to financial success. In the same register, Kounnou and Kyrkilis (2020) explore research and development (R&D) intensity as a driver of competitiveness and profitability in the Greek pharmaceutical industry, highlighting the importance of investing in innovation to remain relevant in a globalized market.

In addition, financial risks and their impact on profitability are analyzed by Tömöri et al. (2021), who demonstrate that a prudent approach to financial risk management can improve firms' economic performance. This observation is applicable to the pharmaceutical industry in Romania, where economic instability can influence firms' strategic decisions. Research by Fenyves et al. (2019) on the profitability of pharmaceutical companies in Visegrád countries provides a comparative basis to understand Romania's positioning in the regional context.

The studies by Montalban and Sakinç (2013) highlight the phenomenon of financialization of the pharmaceutical industry, suggesting that excessive orientation towards quick profits can negatively affect productive models. These conclusions are essential for Romanian companies, where a balance between profitability and long-term sustainability is needed. In the same perspective, the analysis of Stănică et al. (2015) on the profitability of the pharmaceutical industry in Romania provides important insights for understanding the local factors that determine economic performance.

The analysis of financial performance in the pharmaceutical industry in Romania can be better understood through the prism of recent research in related fields, which provide complementary insights and applicable methods. The study by Aivaz et al. (2023) highlights the impact of economic sanctions on financial indicators in the transportation sector. Using a discriminant model, the research demonstrates how external factors such as sanctions influence key variables such as turnover and profit. This approach can be extended to the pharmaceutical industry, where international market fluctuations and strict regulations play a similar role.

At the same time, Munteanu, Ionescu-Feleagă and Ionescu (2024), explore financial strategies to support the circular economy, a concept that can provide practical solutions for efficient resource management in the pharmaceutical sector. Circular economy principles are relevant in this context, given the need to minimize costs and optimize the use of materials. In this direction, research coordinated by Herciu, and his team (2023) proposes improved business models to support sustainability. Applying such a framework in the pharmaceutical industry can help reduce waste and increase competitiveness.

The importance of strategic reorganization is also highlighted by Stroie et al. (2023), who propose a risk analysis model for reorganization decisions. This approach is highly relevant for pharmaceutical companies facing economic pressures and the need to remain competitive in a changing market. In addition, Aivaz, in its 2021 paper, explores the relationship between infrastructure, medical staffing and financial indicators, revealing that investments in human resources and infrastructure can have a direct impact on financial performance. This is particularly significant for the pharmaceutical industry, where skilled staff and modern facilities are essential for success.

Furthermore, the dynamics of economic performance and its link to factors such as education and governance are highlighted by Munteanu et al. in 2024, analyzing the perception of corruption in the Schengen area. These results provide a basis for understanding how transparency and quality of governance can directly influence the sustainability and success of pharmaceutical companies. Furthermore, research conducted by Vancea and his team in 2024 (Vancea, Aivaz & Spiru, 2024; Vancea et al., 2024) on quality of life and medical rehabilitation methods emphasizes the importance of improving functional capabilities to support an integrated and efficient health system.

By integrating these perspectives, the analysis of financial performance in the Romanian pharmaceutical industry becomes not only an assessment of traditional economic indicators, but also an exploration of broader aspects such as sustainability, governance and strategic innovation (Ali, 2021; Stroe et al., 2023). This integrated framework contributes to a deeper understanding of how pharmaceutical companies can maximize their economic potential and meet the demands of an evolving market.

By integrating these studies, research on mapping financial performance in the Romanian pharmaceutical industry can benefit from a comprehensive framework linking global perspectives and local realities. The proposed multidimensional approach allows not only the identification of current trends, but also the formulation of strategies to support the sustainable development of this essential sector.

3. Research methodology

This study aimed at analyzing the financial performance of firms in the pharmaceutical industry in Romania, having as their object of activity the wholesale trade of pharmaceutical products, according to the NACE code 4646. The research was carried out through a detailed statistical analysis using SPSS version 28 software, which allowed the rigorous selection and processing of the relevant data. The choice of NACE code 4646 was essential to ensure an exclusive focus on the relevant firms in this specific sector. The database used included financial and operational information on 1,164 firms as of 2023, providing an overview of economic activity in this sector. The indicators analyzed - net turnover, net profit, personnel expenses and average number of employees - were selected to provide a comprehensive perspective on the financial and structural performance of the companies. Data were collected from official sources and verified to ensure accuracy and relevance.

The analysis involved several key steps. First, the data were processed to eliminate any inconsistencies and to ensure that all information was accurate and complete. Next, firms were classified by county and into three main categories of taxpayers - large, medium and small taxpayers - based on economic size and financial indicators. This categorization was used to facilitate the interpretation of differences and variations in performance.

SPSS was used to generate descriptive statistics and comparative analysis, which allowed a detailed understanding of the distribution of indicators at the national level and by taxpayer category. Measures of central tendency (mean) and variance (standard deviation) were calculated, as well as kurtosis and skewness indicators.

4. Findings

Figure 1 provides an overview of the distribution of firms engaged in pharmaceutical wholesaling in the counties of Romania. With a total of 1,164 firms nationwide, the data reflect significant differences between counties in the presence of this type of economic activity.

Bucharest stands out with an impressive 535 firms, accounting for almost half of all companies in this sector (about 46%). This concentration underlines the capital's role as a central hub for the distribution and trade of pharmaceuticals, benefiting from an advanced logistical infrastructure, access to large markets and proximity to the headquarters of many companies.

Other counties with a significant number of firms are Ilfov (101 firms), Cluj (68 firms), Iași and Timiș (56 firms each). These counties are important economic centers, characterized by a large population, strong medical institutions and high demand for pharmaceuticals. At the opposite pole, counties such as Caraș-Severin (0 firms), Harghita, Ialomița, Mehedinți and Tulcea (one firm each) have a low or non-existent presence of firms in this sector. This may indicate a combination of lack of infrastructure, low demand in these areas and different economic priorities.

Figure no. 1 The distribution of firms engaged in pharmaceutical wholesaling in the counties of Romania

Source: Author's own processing

Regions with a higher economic development (such as Bucharest-Ilfov, North-West and West) tend to concentrate a higher number of firms, due to higher demand for pharmaceutical services as well as more developed infrastructure. On the other hand, counties in less developed regions (South-West Oltenia, South-East) show lower values, reflecting an unequal concentration of economic activities. Counties such as Cluj, Iași, Brașov and Timiș, which are important university centers, have a higher presence of pharmaceutical firms. This can be associated with the training and attraction of pharmaceutical specialists, as well as easier access to scientific and medical resources. Many counties register fewer than 10 firms, indicating a modest distribution of this type of activity in less populated or less developed areas. Counties such as Alba, Gorj, Sălaj and Vaslui have only a few active firms, suggesting a possible dependence on larger regional centers.

This unequal distribution raises questions about equitable access to pharmaceuticals in less developed regions. The lack of firms in certain counties may indicate a potential vulnerability in the supply chain, especially in emergency or pandemic situations.

The distribution of firms active in pharmaceutical wholesaling in Romania is strongly influenced by factors such as the level of economic development, infrastructure, population and regional demand. Although there are strongly consolidated centers, such as Bucharest and Ilfov, there are also areas where the presence of this type of activity is minimal or absent, highlighting the need for policies to support the uniform development of the pharmaceutical sector at the national level.

Table 1 provides a statistical analysis of four financial and operational indicators for the 1,164 firms in Romania operating in the pharmaceutical wholesaling sector: net turnover (Net Turnover), net profit (Net Profit), personnel costs (Personnel Expenditures) and average number of employees (Average Number of Employees). The analysis highlights the central characteristics (mean), the variances (standard deviation) and the distribution (kurtosis and skewness) of these indicators.

Table no. 1 Statistical analysis of the financial and operational indicators

	Net Turnover	**Net Profit**	**Personnel Expenditures**	**Average Number of Employees**
Mean	46766656.63	2157472.35	2082896.98	16.81
N	1164	1164	1164	1164
Std. Deviation	314277534.908	10177833.335	8858718.305	72.366
Kurtosis	244.342	335.693	118.152	239.569
Skewness	14.761	16.194	9.736	13.699

Source: Author's own processing

The average net turnover is about 46.7 million lei per firm, while the average net profit is about 2.16 million lei. These values reflect a profitable industry, but with significant dispersion between companies. The average personnel costs are RON 2.08 million and the average number of employees is 16.81 per firm, suggesting a reasonable relationship between personnel costs and the size of the organization. The high standard deviation on all four indicators indicates large differences between firms. Net turnover varies significantly between firms, with a standard deviation of over RON 314 million, indicating the presence of very large firms influencing distribution. Similarly, net profit shows a high variation (RON 10.17 million), indicating marked differences in the financial performance of firms in this sector.

Personnel expenses and the average number of employees also show a considerable variation, indicating differences in staff structure and management strategies between companies. This high dispersion suggests the existence of both small and medium-sized companies as well as large organizations dominating the market.

The high kurtosis and skewness values indicate that the distributions are highly skewed and concentrated. The kurtosis of 244.34 for net turnover and 335.69 for net profit indicate a highly concentrated distribution around a central value, but with the presence of very large outliers. Skewness of 14.76 for net turnover and 16.19 for net profit confirms this strong skewness, with most firms having values much lower than the average, while a small number of firms with very high values pull the average upwards. Personnel expenses and average number of employees also show a significant skewness (skewness of 9.73 and 13.69), indicating that most firms have relatively small structures, but there are also a few firms with very large numbers of employees and associated expenses.

The statistical analysis reveals an industry characterized by strong polarization, with a few large companies dominating the market and numerous small or medium-sized firms. This asymmetric distribution suggests that smaller firms find it difficult to compete with larger players with superior resources and infrastructure. At the same time, the high dispersion across indicators underlines the need for economic policies to support the balanced development of the sector, especially for smaller firms.

Table 2 provides an overview of the average performance of firms in Romania's counties engaged in pharmaceutical wholesaling. Interpretation of the data reveals significant variations across counties, reflecting the unequal distribution of resources and economic capacity.

At national level, the average turnover is 46,766,656 lei, but there are marked differences between counties. Bucharest (52,525,322 lei), Ilfov (85,774,699 lei) and Iași (17,670,257 lei)

dominate with high values, reflecting their role as important economic centers in pharmaceutical distribution. Also, Tulcea (191,179,683 lei) and Argeș (458,591,068 lei) counties record exceptional values, signaling the presence of large players on the market. In contrast, counties such as Sălaj (RON 227,229) and Gorj (RON 376,703) show extremely low turnovers, indicating low activity in this sector. The average net profit at national level is RON 2,157,472, and the distribution follows the trends observed for turnover. Bucharest (RON 2,930,884) and Tulcea (RON 5,071,020) lead, demonstrating the capacity of these counties to generate high profits. On the other hand, very low profits are found in counties such as Sălaj (29,542 lei) and Gorj (152 lei), which may indicate a lack of competitiveness or economic activity in these areas.

Table no. 2 Average performance of firms in Romanian counties

Counties	Net Turnover	Net Profit	Personnel Expenditures	Average Numberer Employees
Alba	1126995.00	146316.50	67525.50	2.00
Arad	3174353.93	441097.29	201436.07	3.93
Argeş	458591068.92	19534252.00	11091480.15	124.92
Bacău	13593855.25	483753.12	732189.44	10.81
Bihor	9112213.07	872908.59	450935.96	6.44
Bistriţa-Năsăud	11305680.80	629524.40	1114818.20	13.20
Botoşani	1247512.25	6385.50	132349.50	3.00
Brăila	6438827.56	157156.78	1056396.11	10.00
Braşov	71713347.82	654407.43	2791366.04	29.79
Buzău	3564010.00	353935.22	211061.44	3.67
Călăraşi	6078347.00	935552.75	649113.25	5.00
Cluj	19581812.75	1423009.18	1063808.43	8.93
Constanţa	5279753.83	584750.57	333709.52	5.43
Covasna	1390005.00	179716.75	188867.50	3.00
Dâmboviţa	5217453.80	771623.80	125454.20	3.60
Dolj	12166310.12	555707.21	516067.38	8.17
Galaţi	46007400.00	1140800.00	909664.00	17.30
Giurgiu	13772037.67	252436.00	729739.33	8.50
Gorj	376703.50	152.50	37428.00	1.00
Harghita	3066241.00	101787.00	458263.00	10.00
Hunedoara	70672121.67	2435076.33	2133436.67	27.44
Ialomiţa	4632331.00	1674325.00	63916.00	2.00
Iaşi	17670257.39	1106393.27	1094649.68	13.12
Ilfov	85774699.14	1894125.72	2015747.20	21.54
Maramureş	21120461.53	1661596.73	1734666.93	14.80
Mehedinţi	17923590.50	189589.50	256919.50	5.50
Bucharest	52525322.76	2930884.47	2921500.29	18.36
Mureş	73751999.61	1740595.39	2400967.47	24.78
Neamţ	3086689.78	337205.67	108152.11	3.44
Olt	3499693.00	286985.00	984978.00	13.50
Prahova	26554898.72	922626.72	835550.56	14.06
Sălaj	227229.50	29542.00	24063.50	1.00
Satu Mare	1090430.50	168201.00	79412.25	2.25
Sibiu	5316034.41	230220.12	479845.29	6.06
Suceava	29043902.67	685166.67	952645.33	17.50
Teleorman	19816140.80	958818.60	1941934.20	23.80
Timiş	12907433.82	1072502.93	638909.07	6.91
Tulcea	191179683.00	5071020.00	4051921.00	53.00
Vâlcea	24213318.00	1371763.50	645785.50	9.00
Vaslui	24951356.80	1577911.20	311757.80	5.40
Vrancea	6390634.83	577948.00	228255.00	4.50
Total	**46766656.63**	**2157472.35**	**2082896.98**	**16.81**

Source: Author's own processing

The average personnel expenditure is 2,082,896 lei. The counties with the highest expenses include Tulcea (4,051,921 lei), Bucharest (2,921,500 lei) and Maramureș (1,734,667 lei), which may reflect the presence of large firms with complex structures. In contrast, counties such as Sălaj (24,063 lei) and Satu Mare (79,412 lei) have very low expenditures, suggesting small firms or fewer activities in this sector. At national level, the average number of employees per firm is 16.81. The highest values are recorded in Tulcea (53 employees), Argeș (124.92 employees) and Teleorman (23.8 employees), indicating the presence of large firms with large workforces. At the opposite pole, counties such as Gorj (1 employee) and Sălaj (1 employee) show very small firms or limited economic activity.

The data reflect an unequal distribution of pharmaceutical activities in Romania. Developed areas, such as Bucharest-Ilfov and Transylvanian counties (Cluj, Brasov, Mures), show high values for all indicators, while counties in the South-East and South-West (Gorj, Sălaj, Mehedinți) lag far behind. This suggests that economic and logistic infrastructure plays a key role in supporting the financial performance of pharmaceutical firms.

The analysis shows that pharmaceutical activity is concentrated in a few large counties and urban centers, while many counties have little or almost no activity in this sector. These disparities highlight the need for strategic interventions to support the uniform development of the pharmaceutical sector across the country. In addition, economically high-performing counties can serve as models for implementing successful strategies in less developed regions.

Using a classification of firms by taxpayer category, of the 1,164 firms analyzed, small taxpayers predominate among the 1,164 firms analyzed, making up most companies in the industry. This suggests a segmented market in which most players have limited resources and capacity, probably operating in local or regional markets. Although small firms are numerically dominant, large contributors play a key role in the industry, even if they are much smaller in number. These companies are most likely to make a disproportionately large contribution to the total turnover and profit generated in the sector, with access to extensive resources, well-developed infrastructure and scalable strategies (Gikas, 2024). They are the main pillars of the pharmaceutical industry and center market dynamics around them. On the other hand, medium-sized contributors occupy an intermediate position, acting as a bridge between small and large firms. They have the potential to become a bridge of development for the sector, having more flexibility than large firms, but also more resources than small ones. They can act as an engine for growth if they benefit from favorable conditions.

The strong polarization between large and small firms reflects the challenges of an industry where differences in resources and capabilities significantly influence economic performance. The predominance of small taxpayers' points to a huge potential for growth, but also to a need for support for these firms to become more competitive (Stan, 2021; Stan 2022; Paraschiv & Stan, 2023). At the same time, large taxpayers remain essential to sustain the financial stability of the entire sector.

From this perspective, any strategy to support the pharmaceutical sector should be customized to the particularities of each category of taxpayers, considering the needs and potential of each taxpayer category. Small firms need support to develop their capabilities, medium-sized firms can benefit from policies that enable them to evolve into large firms, and large companies need to be supported in maintaining their position in the global market. This dynamic makes the distribution of contributors a central dimension of any analysis of the financial performance of the pharmaceutical sector in Romania.

The results presented in Table 4 reflect a significant difference in the financial performance and organizational structures of pharmaceutical firms in Romania, depending on the size of the taxpayer. The analyzed indicators highlight the strong polarization between large, medium and small taxpayers.

Large taxpayers record the highest values for all indicators. The average turnover of around RON 521 million is far higher than the other categories and the average net profit of over RON 16 million indicates remarkable economic efficiency. Personnel costs are also considerably higher at almost 19.5 million lei, reflecting complex organizational structures and a large workforce. This conclusion is supported by the average number of employees, which reaches 139.77, significantly higher than in the other categories.

Table no. 3 Average indicators by taxpayer size

Taxpayer category	Net Turnover	Net Profit	Personnel Expenditures	Average Number of Employees
Large	521480043.55	16072501.93	19445787.64	139.77
Small	2869597.48	436217.62	204577.99	3.22
Medium	37906338.83	3645950.74	2856213.81	23.43
Total	46766656.63	2157472.35	2082896.98	16.81

Source: Author's own processing

In contrast, small taxpayers demonstrate modest financial activity. The average turnover of almost 2.87 million lei and the average net profit of 436,217 lei indicate limited resources and a low capacity to generate significant profits. The average personnel costs of 204,577 lei and the average number of employees of 3.22 suggest that these firms operate on a small scale, probably focused on local and regional markets. Medium-sized taxpayers fall between the two extremes, with an average turnover of 37.9 million lei and an average net profit of around 3.65 million lei. These firms have average personnel costs of over 2.85 million lei and have, on average, 23.43 employees. These indicators reflect stable economic activity, with a higher growth potential than small taxpayers, but without reaching the economic performance of large taxpayers.

5. Conclusions

Overall, the national average for all firms in the pharmaceutical sector reveals a net turnover of about 46.7 million lei, a net profit of 2.15 million lei, personnel expenses of 2.08 million lei and an average number of 16.81 employees per firm. These values are significantly influenced by large taxpayers, which dominate the sector in terms of financial performance.

The disparities between the three categories suggest a concentration of resources and economic success among large taxpayers, while most small and medium-sized companies operate at much lower levels. This polarization highlights the importance of supporting small and medium-sized taxpayers to reduce the gaps and stimulate sustainable economic growth in the pharmaceutical sector. At the same time, these differences raise questions about the long-term competitiveness and sustainability of small firms, which could benefit from specific economic policies and strategies to improve their performance.

6. References

- Aivaz, K.A., 2021. Correlations Between Infrastructure, Medical Staff and Financial Indicators of Companies Operating in the Field of Health and Social Care Services. The Case of Constanta County, Romania. *Monograph „Under the pressure of digitalization: challenges and solutions at organizational and industrial level*, pp.17-25.
- Aivaz, K.A., Munteanu, I., Rus, M.I., Chiriac (Matei), A., Leta (Mihai), F., 2023. Clarifying the Impact of Sanctions on Financial Indicators in Transports. An Empirical Comparative Analysis Using the Discriminant Model. *Transformations in Business & Economics*, Vol. 22, No 3A (60A), pp.933-953.
- Ali, A., 2021. Supply chain performance, profitability and Liquidity: An analytical study of Indian pharmaceutical sector. *Accounting*, *7*(6), pp. 1479-1490. https://doi.org/10.5267/j.ac.2021.3.016
- Béresné Mártha, B., Tömöri, G., & Lakatos, V., 2021. The Effect of Financial Risk Taking on Profitability in the Pharmaceutical Industry.
- Cockburn, I. M., 2006. Is the pharmaceutical industry in a productivity crisis? *Innovation policy and the economy*, *7*, pp. 1-32. https://doi.org/10.1086/ipe.7.25056188
- Fenyves, V., Nyul, B., Dajnoki, K., Bács, Z., & Tömöri, G., 2019. Profitability of pharmaceutical companies in the Visegrád countries. *Montenegrin journal of economics*, *15*(4), pp. 99-111. https://doi.org/10.14254/1800-5845/2019.15-4.8
- Gikas, A., 2024. Evaluating factors enhancing profitability and sustainability of the pharmaceutical industry in Greece. In *Financial Stability, Economic Growth and Sustainable Development* (pp. 133-146). Routledge. https://doi.org/10.4324/9781003438670-12

- Herciu, M., Ogrean, C., Mihaiu, D., Serban, R., Aivaz, K.A. and Tichindelean, M., 2023. Improving business models for the circular economy: developing a framework for circular fashion. *Transformations in Business & Economics*, Vol. 22, No. 3 (60), pp. 305-325
- Ken, Y., Tsai, T. Y., & Ou, Y. K., 2008. Study of the time lag effect of patent impact on profitability of US pharmaceutical industry from innovation to profit. In *PICMET'08-2008 Portland International Conference on Management of Engineering & Technology* (pp. 2588-2596). IEEE. https://doi.org/10.1109/PICMET.2008.4599887
- Kounnou, V., & Kyrkilis, D. (2020). Competitiveness, profitability and R/D intensity: The case of the domestic pharmaceutical industry in Greece. *Business Performance and Financial Institutions in Europe: Business Models and Value Creation Across European Industries*, pp. 47-55. https://doi.org/10.1007/978-3-030-57517-5_3
- Kusumawardhani, T., 2012. Intellectual capital, financial profitability, and productivity: an exploratory study of the Indonesian pharmaceutical industry. *Asian Journal of Business and Accounting*, *5*(2).
- Montalban, M., & Sakinç, M. E., 2013. Financialization and productive models in the pharmaceutical industry. *Industrial and Corporate Change*, 22(4), pp. 981-1030. https://doi.org/10.1093/icc/dtt023
- Munteanu, I., Ileanu, B.V., Florea, I.O. and Aivaz, K.A., 2024. Corruption perceptions in the Schengen Zone and their relation to education, economic performance, and governance. *Plos one*, 19(7), p.e0301424, https://doi.org/10.1371/journal.pone.0301424
- Munteanu, I., Ionescu-Feleagă, L., & Ionescu, B. Ș., 2024. Financial Strategies for Sustainability: Examining the Circular Economy Perspective. Sustainability, 16(20), p. 8942. https://doi.org/10.3390/su16208942
- Paraschiv, G.I. and Stan, M.I., 2023. Exploring the Impact of Companies' Profiles on Environmental Activities. *Ovidius University Annals, Economic Sciences Series*, 23(1), pp. 171-181. https://doi.org/10.61801/OUAESS.2023.1.23
- Rahman, M., Rodríguez-Serrano, M. Á., & Lambkin, M. (2020). Advertising efficiency and profitability: evidence from the pharmaceutical industry. *Industrial Marketing Management*, *89*, pp. 619-629. https://doi.org/10.1016/j.indmarman.2019.02.001
- Rus, M. I., 2018. Financing of Research Activity from Private vs. Governmental in Romania. *Ovidius University Annals, Economic Sciences Series*, 18(1), pp. 505-509.
- Rus, M. I., 2023. The Impact of Sustainability in Research-Development-Innovation Activity. *Ovidius University Annals, Series Economic Sciences*, 23(1). https://doi.org/10.61801/OUAESS.2023.1.135
- Stan, M.I., 2021. Issues concerning the dynamics of labor productivity at the level of the companies in Constanta County operating in the" Construction" sector before and after the COVID-19 pandemic. *Technium Soc. Sci. J.*, *25*, p. 225, https://doi.org/10.47577/tssj.v25i1.5095.
- Stan, M.I., 2022. The impact of the pandemic crisis on employment in the context of urbanization. *Technium Soc. Sci. J.*, *33*, p.492, https://doi.org/10.47577/tssj.v33i1.6977.
- Stănică, F. A., Străchinaru, A. I., & Ilie, V., 2015. Influences on the profitability of the pharmaceutical industry in Romania. *Theoretical and Applied Economics, Asociatia Generala a Economistilor din Romania–AGER*, 97-105.
- Stroie, C., Duțescu, A., Munteanu, I.F. and Aivaz, K.A., 2023. The reorganisation decision test: A risk analysis model to increase competitiveness. *Journal of Competitiveness*, 15(2), https://doi.org/10.7441/joc.2023.02.05.
- Toma, P., 2020. Size and productivity: a conditional approach for Italian pharmaceutical sector. *Journal of Productivity Analysis*, 54(1), pp. 1-12. https://doi.org/10.1007/s11123-020-00580-y
- Tömöri, G., Lakatos, V., & Mártha, B. B., 2021. The effect of financial risk taking on profitability in the pharmaceutical industry. *Economies*, *9*(4), 153. https://doi.org/10.3390/economies9040153
- Tyagi, S., & Nauriyal, D. K., 2016. Profitability determinants in Indian drugs and pharmaceutical industry: An analysis of pre and post TRIPS period. *Eurasian Journal of Business and Economics*, 9(17), 1-21.
- Tyagi, S., & Nauriyal, D. K., 2017. Firm level profitability determinants in Indian drugs and pharmaceutical industry. *International Journal of Pharmaceutical and Healthcare Marketing*, *11*(3), pp. 271-290. https://doi.org/10.17015/ejbe.2016.017.01
- Vancea, A., Aivaz, K.A. and Spiru, L., 2024. Medical Rehabilitation as a Pillar of Quality of Life: A Bibliometric Mapping of Contemporary Research. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 15(2), pp.414-426, https://doi.org/10.18662/brain/15.2/58.
- Vancea, A., Iliescu, M., Aivaz, K.A., Popescu, M.N., Beiu, C. and Spiru, L., 2024. Improving Functional Capacities and Well-Being in Older Adults: Strategies in Physical Medicine and Rehabilitation. *Cureus*, 16(8), https://doi.org/10.7759/cureus.66254