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Investment Risk – Bibliometric Analysis at the Level of EU States

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Abstract

This research examines how investment risk is treated within a selection of 667 articles from the Web of Science database, made by applying keywords and filters, within a bibliometric analysis. The keywords by which the selection was made were investment risk, and the specific filters were: the authors' countries of origin, EU states, and the articles to be published in the period 2019-2023 in order to identify current risks associated with investments. To ensure that the aspects analyzed are from the economic field, we chose the fields of economics, management, and business in the Web of Science categories. In Citation Topics Meso, we chose the subfields of economics and management.

The authors' territorial distribution and affiliation were analyzed using the Web of Science and VOS viewer software functions. The analysis of the density of words and phrases associated with investment risk was substantiated with the help of Word Cloud software, Word Art, and VOSviewer software, applying the co-occurrence filter. The results generated after filtering reveal 5 clusters with a total of 87 words that are associated with investment risk, appearing at least 10 times. In addition, besides the words risk and investments, other terms with strong links in the selection were performance, impact, determinants, market, growth, and liquidity. The associations resulting from our research can form the basis of other research regarding the decision to invest and the classification of the investments or the risks to which the investment process is subject.

Keywords: *Investment risk, Bibliometric research, Vosviewer, Web of Science, Word art*

JEL Classification: D 25, E 22, F 21, G 11, P 33

1. Introduction

Investments as a financial and monetary phenomenon represent the long-term employment of capital by using the population's savings or economic agents to maximize profit by minimizing risks.

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The inclination towards investments in a market economy is based on various economic factors, among which we mention: the volume of investments required at a given moment, the interest rate and its level compared to the rate of return, the evolution of profit rates on existing investments, the level of risk assumption by entrepreneurs, the global economic situation.

The defining elements regarding the investment concept are:

a) The concrete content regarding the investment effort defines the investment as an individualized structure of resources different in nature and volume that are integrated in the realization of some projects.

b) The time-duration factor shows that any project is implemented over time so that its economic parameters have an individual evolution.

c) The notion of efficiency that is the basis of the entrepreneur's acceptance of the change of some present availability of resources for a series of future effects, which in total amount will be above the value of the investment effort.

d). The notion of risk. Investment is an expense made in the present, certain, to obtain some future, uncertain effects.

The investment concept involves the involvement of three determining elements that any investor must be concerned with when making the decision to invest: the duration of the investment, the assumed risk, and its efficiency. The investment is worth supporting only if all components present positive values. Often the full details of the three elements are not always known. The investor must be willing to take certain risks, and at these times, qualities such as skill, experience, instinct, or even chance come into play. By analyzing the functions of human resources management and increasing the performance of specific functions of the investment process by managers, policies and procedures can be developed to ensure the organization's success in this activity [Ciupitu et al., 2022].

Risk can be defined as the possibility of various damages being caused to you, i.e. the danger of losing or suffering damage in future actions due to incomplete information available at the time of decision-making. The pure risk perspective focuses on undesired events and how they can affect planned outcomes. In contrast, the other perspective focuses on obtaining the information needed to make the right decisions and minimize the associated risk. In both cases, managing uncertainty is essential to maximizing the chances of success in implementing the activity or project.

Risk means hazard, the danger of possible losses, or the “possibility of others exposes to loss” [The Oxford English Dictionary, vol. III, p 714] or a possible loss "which modern politics endeavors to prevent or repair" [Petit Larousse; 1974, p. 900].

Risk assessment and management are important historical and economic issues. Historically, risk can be related to people's perceived dangers and the development of fear in the face of threats, including the face of death. With the development of mankind and the emergence of the commodity-money relationship, risk is transformed into an economic category. Thus, the socioeconomic and digital gaps must be considered to highlight the constraints and exclusions from the investment process due to the risks to which they are subjected [Velicu et al., 2022].

From an economic perspective, risk is essential in investment, business, and financial planning decisions. Risk presents an event that may or may not happen. If a certain event has occurred, three possible economic outcomes may vary according to circumstances and context. These results include negative (loss), null, and positive (gain, profit, income). Effective risk management can play a crucial role in determining the outcome of an event.

Risk is a necessary evil in the development process, avoiding it generates obstacles to this progress. Thus, in managing the risk associated with introducing a new product on the market, the economic agent will seek to use the most modern procedures, which will contribute to reducing costs and manufacturing higher-quality products.

The perception of risk in the economic environment is largely related to the probability of an unfavorable outcome with a certain probability. Risk is considered a probability of loss attached to a gain. The investor will accept the risk as a certain loss, assuming that he can compensate it with an additional gain, anticipated with a certain probability. In the financial context, the magnitude of risk is often associated with the variation or volatility of profit. These indicators can also be analyzed through the lens of the recent pandemic that has manifested itself worldwide and which, through distancing measures, has caused a sudden drop in consumer and business income. This situation led to a recession in the global economy [Manea et al., 2022]. The risk can be divided into several categories, presented in table 1, depending on the size of the losses it entails.

Table 1.

Types of investments depending on the level of risk

The level of risk	Types of investments
Minimum or zero level	Placement investments at the minimum or zero bond level, in long-term loans, whose interest rate is maintained
Low grade	Replacement investments, where the changes in the production process are relatively small
Middle grade	Productivity investments, which presuppose changes in production, rationalization of jobs
High grade	Development investments (expansion), which involve market uncertainties, related to the launch of new products, regarding the competition's reaction, price level, sales volume
Very high grade	Research and development investments are often associated with significant uncertainty regarding results.

(Source: Authors contribution)

In the context of risk management, the perspective on risk can be broader and include hazards and threats and opportunities with potential for gain or reward. Any investment involves a certain level of risk because it is always a trailblazer, it does not have a past to ensure the experience needed to predict the future. Applied research represents acquiring new knowledge primarily directed toward a practical or objective purpose, specifically necessary for future development [Spiridon, 2011].

The most important criteria for grouping investments according to their relative level of risk and necessity:

- replacement investments, which have the role of substituting new equipment for physically and morally outdated equipment;
- modernization investments aimed at reducing production costs or improving product quality;
- expansion investments intended to cope with the increase in demand and which concern either the launch of new products or the increase of the production or sales capacity of existing products;
- lavish or luxury investments, which are justified by supporting the prestige of the factory's brand;

- strategic investments that aim to reduce risks due to technical progress and competition.

Strategic investments, in turn, can be offensive investments, defensive investments, and social investments. Offensive strategic investments have a research and development character for the introduction of technical progress. Defensive strategic investments protect the company against the risks generated by the cessation of supplies due to excessive prices or inadequate quality of the raw material. Strategic social investments are those aimed at improving working conditions.

Starting an investment involves carefully evaluating the available solutions from multiple aspects, including technical, economic and socio-political. This assessment is crucial to ensure the investment is well-founded and will bring sustainable long-term benefits. The behavior of the human resource preserves the boundaries, closer or more distant, for understanding and adaptation in different contexts, leading to the adaptation, development, and progress of economic entities through the investment process. [Militaru et al, 2023].

2. Literature review

Investment risk management compares the level of risk with the existing estimates at a given moment. Suppose the estimates are incorrect or inadequate according to the realities existing on the market. In that case, the risk is not correctly quantified either, which leads to major problems in implementing the investment project. Effective analysis and correct diagnosis of these risks is essential to ensure a business's sustainability and long-term success. In a world characterized by uncertainty, capital investment decisions are often made based on forecasted cash flows that may or may not be of the same value as actual cash flows.

This means that in an uncertain environment, decision-making involves assuming risk, namely the possibility that actual results may differ from initial expectations. It is best to seek information from several sources and, most importantly, to assess exactly what we need from an investment point of view and for what period [Simandan et al., 2023].

Organizations and investors can make more informed decisions and minimize the unwanted impact of unexpected factors by effectively managing risk and being agile in the face of uncertainty. Attitudes toward risk matter, particularly, because they underpin how investments trade-off costs with associated utilities, the uncertainty of investment returns, and the insurance benefits that investment can provide [Caliendo et al., 2023].

When it comes to taking risks during the investment process, we need to consider the following questions:

- Is there a need for an increased volume of goods and services?
- Is the increase in production capacity or services justified?
- Is it the right time to establish new production units or services?

An affirmative answer to one of these questions can bring to the fore the need to solve an investment problem. The decision at the level of an enterprise will take place after performing all analyses and finding all possible solutions within each decision node until the final decision. The intense concern of investors in establishing future measurement models in estimating and forecasting return and volatility series is the basic assumption in the investment decision-making process [Muşetescu et al., 2023].

Entrepreneurs must carry out efficient economic-financial-social activities, i.e. the total value of the incomes achieved should be greater than the total expenses incurred (obtaining a maximum profit with the lowest possible cost). They must consider various economic indicators such as: turnover, gross investment, value added to the cost of factors, the gross result of the exercise. Some researchers believe that management policies regarding investment policy can have an impact on financial results at the economic agent level and national level, such as GDP [Păunică et al, 2023].

Uncertainty can become a significant source of risk when it arises from incomplete information or when there are significant discrepancies between sources of information. A current challenge is the digitization process which, in addition to the advantages offered, also comes with difficulties. One of the most pressing issues associated with digitization concerns information security. The creation of secure technological infrastructures, which can face cyber-attacks and hinder the flow of information, is becoming a constant concern of economic agents who want to involve digitization in the basic activities of companies. In addition, the high cost of investments is another important barrier when investing in digital technologies. Along with this problem, economic agents are also faced with finding staff with the right skills, upskilling or retraining to add value within digitized organizations. [Barbu et al., 2023]. Almost half of Europe's population lacks basic digital skills, and a third of European citizens have no digital skills at all. This discrepancy constitutes a risk in the labor market and may cause problems in terms of innovation capacity in existing European industries [Alexe and Alexe, 2021].

In a global market characterized by uncertainty and rapid changes, selecting the optimal investment becomes a significant challenge. The speed of technical, technological and economic development brings with it a number of factors that can significantly influence the investment environment. Quality represents the level of compliance of a product with the technical requirements of the production rules; otherwise, any modification of such rules leads to a distortion of the product, made to save raw material. materials and lower costs, which turns into a counterfeit product. From an economic point of view, it expresses the optimal ratio between the level of income and expenses for the producer and the consumer [Vladut et al., 2021].

Deciding to invest, either for the development of existing objectives or to achieve new ones, must also consider the uncertainty and risk involved in the investment project. These two important factors must be carefully evaluated and managed. Managers of economic agents make investment decisions by accepting the level of risk associated with each investment project, taking into account their characteristics. "*Managerial characteristics can be associated with acquired education, management mandate and general experience in the financial-fiscal sector*" [Filip, 2020].

3. Research methodology

The bibliometric analysis in this article uses data from the Web of Science, and their processing was done with the help of World Art and VosViewer programs. Starting from the analysis of the specific definitions of risk in general as well as of the risk manifested in the investment process, presented in the 2 previous chapters, and the analysis of correlations between this and other economic terms present in the articles from our selection and highlighted with the help of the 2 programs we can generate new perspectives on investment risk exposure. Bibliometric research is based on a systematic review of the scientific

literature and several bibliometric analyses. Some scientific research articles offer perspectives on the manifestation of risk in the investment process [Radu et al., 2023].

The principles underlying bibliometrics come from bibliography and statistical bibliography. The first researcher to define bibliometrics was Pritchard, in 1981, as an application of mathematical and statistical methods to books and other means of communication. Bibliometrics includes studies that use statistical data related to printed communication, being the quantitative study of written communication. [Broadus, 1987). However, bibliometric analysis has some difficulties, such as the large volume of information that is growing rapidly in the current period, which leads to the impossibility of covering the entire structure of knowledge specific to a research area, requiring more time and resources [Maria et al., 2023].

Querying the Web of Science scientific database using the tag *"investment risk"* yielded 59,321 articles containing this tag. Because we wanted to capture aspects at the level of the European Union regarding the risk in investments treated from an economic point of view, we used the following filters consecutively: Authors' affiliation - European Union states; Web of Science category: Economics, management and business; Citation Topics Meso: Economics and Management; Publication years 2019-2023.

Following the application of the four filters, a number of 667 articles remained in our selection, on which we will perform the bibliometric analysis with various IT tools and applications. The first approach in the bibliometric analysis was the analysis according to the years of publication, according to the countries where the researchers come from, and according to the affiliation of the researchers.

We continued the research by carrying out a comparative analysis starting from the word density using the word cloud within the World Art application. Thus, using the data regarding the name of the articles, the abstract, author keywords and keywords plus, from the selection of the 667 scientific articles, it emerged words with a high density associated with *"investment risk"*. To compare the density of words and phrases associated with the key *"investment risk"*, we used the VOSviewer software by applying the *filters co-occurrence, author keywords, minimum 10 co-occurrences*. Clusters specific to this filter are generated as item pairs. We associated the 5 clusters resulting from applying the filters with the specific risk of the investment process. Words with the highest link strength in each cluster were analyzed by making graphs of the clusters with the component notions and the links with the other clusters.

4. Results

To constitute our selection of scientific articles on which we will perform the bibliometric analysis, we queried the Web of Science database for the tag *"investment risk"*, the result is a number of 59.321 articles that contain this tag in the title, abstract or content of the article. In our research, we want to capture the economic aspects of the risks at the level of the European Union countries in recent years by applying distinct filters so that only the articles that meet these requirements remain in selecting scientific articles. The first filter applied was that the articles were written by authors from the European Union member states at the time of the research. After applying this filter, 10.394 articles remained in the selection. The following 2 filters applied to our selection were likely to help us select only scientific articles that analyze the manifest risks of investments from an economic point of view. The first filter applied was the Web of Science category, from which we chose the Economy, management, and business categories, and 3.664 articles remained. The second filter to

choose to analyze from an economic point of view was the use of Citation Topics Meso, where we chose 2 subcategories, Economics and Management, with a result of 2.195 articles To establish the years of publication of the scientific articles analyzed, we decided on the period 2019-2023, because we wanted to see the intensity of the Covid-19 pandemic within the risks analyzed in the scientific articles. After applying this filter, 667 articles remained in the selection. Table 2 shows the evolution of the number of articles in the selection for which we will do the bibliometric analysis according to the keywords used for the search and the filters applied to the selection.

Table 2.

The order of the Web of Science filters used when querying the database

Filter Web of Science	Item number
Keywords *"investment risk"*	59.321
European Union	10.394
Web of Science Category: economics, management, business	3.664
Citation Topics: Economics, Management	2.195
Publication Years: 2019-2023	667

(Source: Authors analysis made on WOS database (accessed on 15.09.2023))

The annual distribution of scientific articles over the 5 years of the period chosen in the analysis carried out is presented in table number 3. We eliminate the year 2023, which was chosen for the 1,000 citations of articles from previous years, it can be concluded that in the period 2019-2022, the number of published articles is double compared to previous years, which can lead us to the conclusion that we have a growing interest in analyzing risks at the level of the investment process.

Table 3.

Distribution of the 667 articles by year

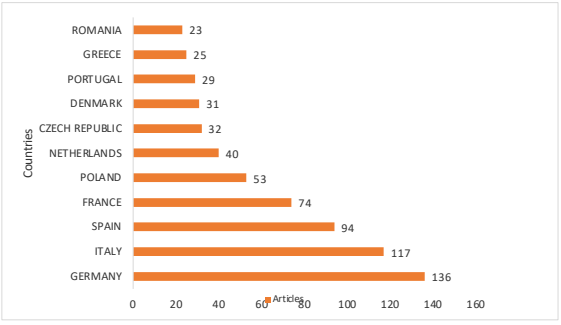
Year	2019	2020	2021	2022	2023
Number articles	154	161	162	137	53

(Source: Authors analysis made on WOS database (accessed on 15.09.2023))

In Figure number 1, we have presented the first 11 countries according to the number of articles in the database subject to our research with the help of the analysis of the bibliometric results from the Web of Science database and the density analysis of the countries of origin of the authors.

Figure 1

Classification of authors' countries of origin according to the number of published articles

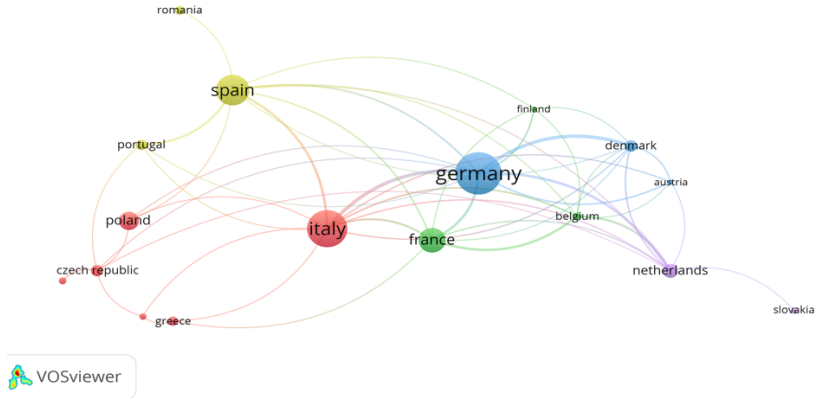


(Source: Own conceptualization, from Web of Science (accessed on 15.09.2023))

For the comparative analysis regarding the countries of origin of the authors of the scientific articles, we decided to use the VOSviewer program by applying the Co-authorship filter, with a minimum number of 10 documents per country and a minimum number of 10 citations per country. A number of 17 countries met the conditions of the applied filters, being presented in Figure number 2, together with the correlations between the articles and the countries of origin of the authors.

Figure 2

Correlations country of origin authors



(Source: Own conceptualization, from Web of Science (accessed on 15.09.2023))

VOSviewer software highlights the links between items in addition to the actual number. In Table number 4, we have presented the articles by country, the number of citations, and the links between the documents. Making the comparison with the data in Figure 1, we notice that only the first 2 countries, in terms of the number of articles, keep their order and according to the link between the articles. So, we can conclude that through the VOSviewer program, we can highlight those articles that have a higher correlation, and we can also make an assessment of the impact of scientific articles in the academic environment

Table 4.

Strength of links between analyzed articles

Country	Documents	Citations	Total link strength
Germany	136	1005	49
Italy	117	735	35
Netherlands	40	244	24
Denmark	31	319	23
France	74	337	23
Spain	94	499	22
Belgium	22	160	18

(Source: Own conceptualization, data processing with VOSviewer software)

Another analysis carried out with the help of the VOSviewer program is presented in Table number 5 regarding the clusters of countries within the 667 articles, where we selected an appearance of at least 10 articles. In the table, we have 5 clusters and the grouping of countries within these clusters.

Table. 5.

VOSviewer clusters and related colors

Cluster 1 (6 items)		**Cluster 2 (3 items)**	
Croatia		Belgium	
Czech Republic		Finland	
Greece	Italy	France	
Lithuania	Poland		
Cluster 3 (3 items)	**Cluster 4 (3 items)**	**Cluster 5 (2 items)**	
Austria	Portugal	Netherlands	
Denmark	Romania	Slovakia	
Germany	Spain		

(Source: Own conceptualization, data processing with VOSviewer software)

Analyzing the groupings resulting from the VOSviewer analysis, we see the correlations between the articles written by authors resident in the European Union states. In table number 6, we analyzed the authors' affiliation of the 667 articles in our analysis.

Table 6.

Affiliation of article authors

Affiliations	**Number articles**
European Central Bank	27
Copenhagen Business School	17
Tilburg University	17
Udice French Research Universities	17
Centre National de la Recherche Scientifique CNRS	16
Bucharest University of Economic Studies	14
Goethe University Frankfurt	13
University of Zagreb	11
Poznan University of Economics Business	10
University of Bologna	10
Bank of Italy	9

(Source: Own conceptualization, from Web of Science (accessed on 15.09.2023))

It is observed that within these results, most of the affiliates are the authors of scientific articles and are from the academic, university, and financial spheres, banks, or financial institutes.

Qualitative analysis of the sample of articles was first performed using the word cloud of the words contained in the article title, author keywords, plus keywords and abstracts. The words with the highest frequency following the analysis with the Wordart software: *Risk, Invest, Market, Financial, Perform, Model, Portfolio, Fund, Firm, Return, Investor, Result, Stock, Effect, Study, Bank.* From this analysis, it emerges that the scientific articles are oriented towards the analysis of risks regarding the investment process, they take into account the risks regarding the evolution of markets, financial flows and funds, the evolution of performance, results and effects of investments and the behavior of investors and banks during the implementation of the investment process. In figure number 3, through the words exported from the Web of Science for the 667 articles, with the help of the Wordart program, we graphically highlighted the words with the highest frequency by character size.

Figure 3.

Processed word cloud World Art

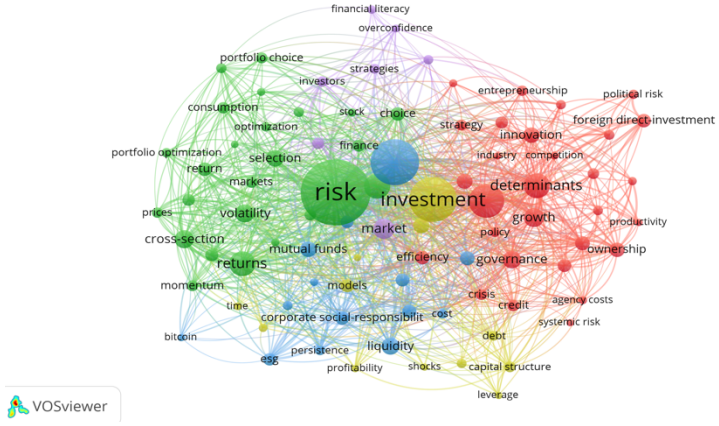


(Source: WOS database (accessed on 15.09.2023) made via https://wordart.com/)

A new analysis regarding the density of phrases or words used in the 667 selected articles was carried out with the help of the VOSviewer program by applying the co-occurrence filter for all keywords having an appearance of at least 10 times. Only 87 words/phrases out of the 3.481 analyzed met this criterion and Figure number 4 shows the distribution and links between words/phrases resulting from the application of the filters.

Figure 4.

Phrase and word density of the 87 words that have at least 10 co-occurrences



(Source: WOS database (accessed on 15.09.2023), made with the VOSviewer software)

After processing the data using the VOSviewer program, the words and phrases that have the highest density are performance, investment, risk, investment decision, impact, uncertainty, information, market, model, behavior, finance, and *investors.* Also, through the VOSviewer program, we have available the classification of words according to total link strength, which is presented in Table number 7.

Table 7

Strength Link between the analyzed articles by Keywords

Keyword	Occurrences	Total link strength
risk	185	618
performance	114	410
investment	110	373
impact	75	253
returns	49	198

determinants	50	185
model	49	149
cross-section	32	136
market	38	127
governance	31	112

(Source: Own conceptualization, data processing from WOS with the VOSviewer software)

From the analysis of the VOSviewer program on the 87 keywords that appear at least 10 times within the 667 articles in the selection, 5 clusters resulted, the composition of which is presented in Table 8. The VOSviewer software defines the cluster as a set of elements included in a bibliometric map, an article belonging to only one cluster. Still, we can also have articles that do not belong to any cluster. Based on the composition of the clusters we will continue the analysis for each one separately, according to the strength of the links of the keywords with the highest density

Table 8.

VOSviewer clusters and related colors

Cluster 1 (29 items)	**Cluster 2 (25 items)**
agency costs	asset allocation
competition	choice
corporate governance	consumption
credit	crisis	cross-section
determinants	equilibrium
efficiency	finance
entrepreneurship	markets
firm	model
firm performance	momentum
firms	optimization
foreign direct - investment	portfolio
governance	portfolio choice
growth	portfolio optimization
impact	industry	portfolio selection
innovation	prices
institutions	return
management	returns
ownership	risk
policy	risk management
political risk	productivity	selection
research –and – development	size
risk – aversion	stock
risk – taking	stocks
socioemotional wealth	valuation
strategy	volatility
systemic risk	

Cluster 3 (14 items)	**Cluster 4 (12 items)**	**Cluster 5 (7 items)**
bitcoin	capital structure	behavior
corporate social – response	debs	financial literacy
cost	covid-19	investment (s)	investors
diversification	leverage	market
ESG	models	overconfidence
financial performance	monetary – policy	prospect – theory

funds information liquidity mutual funds performance persistence sustainability	profitability real option stocks time uncertainty	strategies

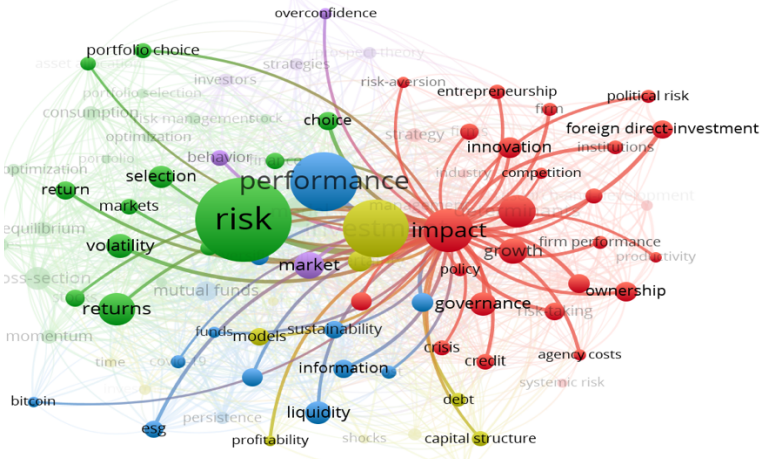
(Source: Own conceptualization, data processing from WOS with the VOSviewer software)

To visualize the clusters in their graphic representation, we chose the words with the strongest links offered by the Vosviewer software like this:

- cluster 1 – "keyword *impact* with link strength 253", (figure 5);
- cluster 2 – "keyword *risk* with link strength 618", (figure 6);
- cluster 3 – "keyword *performance* with link strength 410", (figure 7);
- cluster 4 – "keyword *investment* with link strength 373", (figure 8);
- cluster 5 – "keyword *market* with link strength 127", (figure 9).

Figure 5.

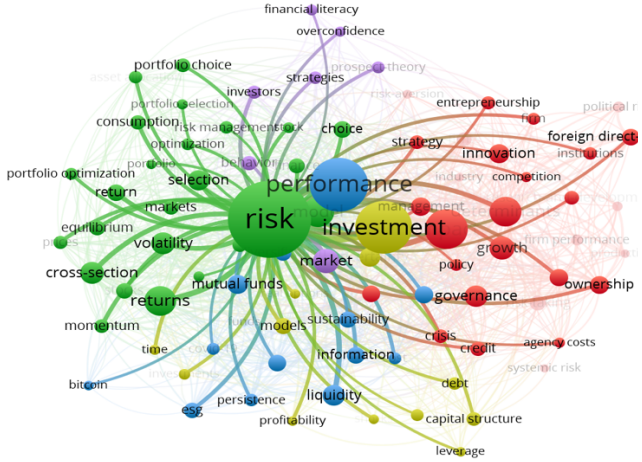
Cluster 1 keyword *impact*



(Source: WOS database (accessed on 15.09.2023), made with the VOSviewer software)

Figure 6.

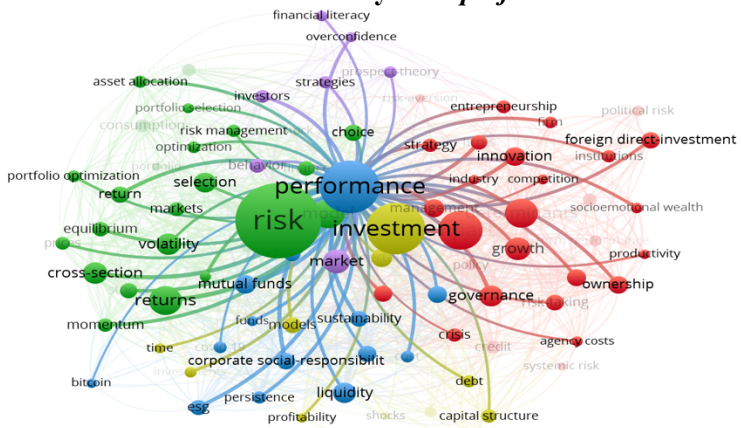
Second Cluster keyword *risk*



(Source: WOS database (accessed on 15.09.2023), made with the VOSviewer software)

Figure 7.

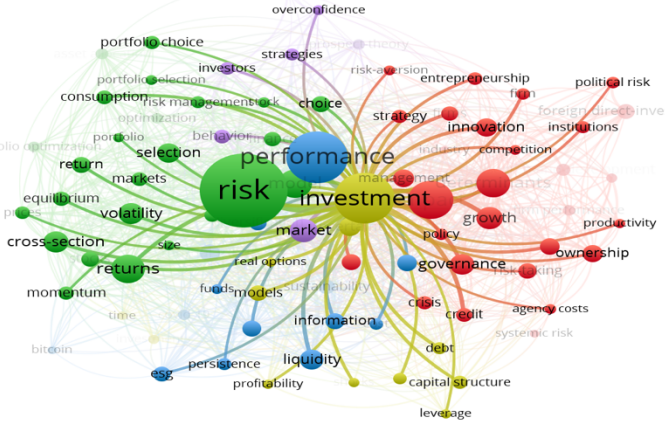
Cluster 3 keyword *performance*



(Source: WOS database (accessed on 15.09.2023), made with the VOSviewer software)

Figure 8.

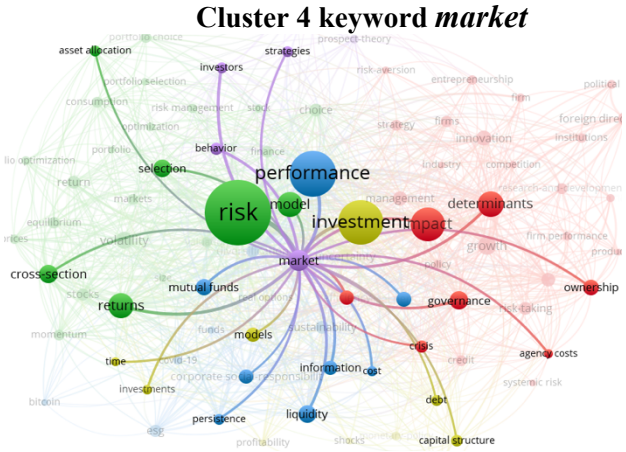
Cluster 4 keyword *investment*



(Source: WOS database (accessed on 15.09.2023), made with the VOSviewer software)

Figure 9

Cluster 4 keyword *market*



Source: WOS database (accessed on 15.09.2023), made with the VOSviewer software

Limitations of the study

A proper bibliometric analysis must also mention the limitations of the research. The analysis of this article used data only from the Web of Science platform. By analyzing other databases, we can have other conclusions. However, we chose this database because it is the most representative of the articles that refer to the analysis of the ricochets manifested in the investment process.

Another limitation was following the application of Web of Science filters that excluded some scientific articles that could have influenced our analysis. We can expand the bibliometric maps within other scientific articles to show other important aspects of the risks manifested within the investment processes.

5. Conclusions

Using several programs that substantiated and supported the bibliometric analysis from a scientific point of view in this paper, we were able to substantiate several aspects regarding the manifestation of risks in the implementation and operationalization of investment processes. Within 5 clusters, we analyzed the density, composition and links of words with an appearance of at least 10 times and drew the following conclusions:

- cluster 1 contains the classification of risks faced by the investment process from a financial point of view. Thus, the articles contained in this cluster focus on the company as the promoter of the investment and describe the risks it may face in the investment process: the administration costs of the investment process, the management, management, and decision processes of the company, competition with other participants to the economic activity or with strong corporations, failure to reach the standards of efficiency and planned economic performance and productivity of the completed investment, the change during the investment in the attitude towards risk of the management of the company making the investment, problems related to attracting financial resources from loans or foreign investments direct, political risk issues through legislative or investment changes at the regional or state level and the emergence of systemic risks or crises that were not foreseen during the investment planning phase.

- cluster 2 contains notions regarding the risk of investment allocation analyzed through the lens of a company's portfolio, based on the collection of specific information from the markets and the analysis of the stocks within the company before and after the completion of the investment, all of which are based on risk management.

- cluster 3 contains a reference to the assessment of the risk of financial investments based on financial performance, the evolution of the movement of funds, especially in the post-pandemic period of Covid 19, and the assumption of financial investment risks based on sustainability, liquidity, and immediate and medium-term financial performance and long.

- cluster 4 contains articles that analyze the environment of risk and uncertainty in which the investment takes place but from the point of view of investment models based on need, necessity, and opportunity. Thus, the financial flows necessary to make the investments must take into account the existing profitability thresholds at the level of the financial markets and at the level of the branches where the investment is made. Investors want a higher rate of return than that existing on the financial market, due to the fact that the risk factors are increasing and diversification in today's market economy [Ilie and Vasiliu, 2023].

- cluster 5, even if it has articles with lower links in strength, contains articles that analyze the market investors' behavior, the degree of financial knowledge of financial flows within the investment process, and the proportionality between the theoretical aspects used and the practical strategies implemented.

If a researcher wants to understand the process, principles, and strategies that underlie the decision to invest taking into account the risk environment in which an investment is made, for a certain field of research, he can have a starting point Keyword emerged in the 5 clusters for bibliometric selections from various databases and thus can respond to the topic of interest. Correlating and commenting on links in words and phrases from different clusters is also possible.

As future research topics, the risk environment of investments can be analyzed, for each cluster separately, highlighting the authors' countries of origin or their affiliation, either from the financial or academic fields.

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