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Dataset Analysis of Pandemic Risks and Risk Management Prospects Based on Management and Marketing in Conditions of COVID-19 Recession

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Abstract: The motivation for the research was the suddenness of the COVID-19 pandemic and the unavailability of health measures (well-established treatment and vaccination) at the beginning of 2020, which caused an uncontrollable increase in the incidence of disease worldwide and high mortality. The research aims to conduct a dataset analysis of pandemic risks and risk management perspectives based on management and marketing during the COVID-19 recession. The dataset aggregated the statistics on management, marketing, and morbidity during COVID-19 for most countries worldwide that provide data for international statistics (141 countries). Using the developed methodological approach, the authors evaluate the contribution of management and marketing in the fight against the viral threat. The authors calculated specific indices that reflect the contribution of each management and marketing factor separately to combat the viral threat in the second and third trimesters of 2020. The novelty of this research lies in the fact that the dataset study provides a systemic coverage of international experience and develops a universal economic approach to pandemic risk management. The theoretical significance of the research findings is that they reveal differences in the capabilities of economic risk management of a pandemic as the viral threat changes. The practical significance of the research lies in the fact that the results obtained in the third trimester of 2020 make it possible to adjust the policy of the state and corporate risk management of the COVID-19 pandemic during the subsequent pandemic waves, in the post-pandemic period, and in future epidemics and pandemics. Economic measures fill the existing gap, making up for the lack of risk management measures in the early phases of the COVID-19 pandemic.

Keywords: COVID-19; dataset analysis; pandemic risks; management; marketing; worldwide dataset

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1. Introduction

Economic measures of the fight against the COVID-19 viral threat in management and marketing during public and corporate management are very prospective, along with healthcare measures.

The COVID-19 pandemic has been the most serious global challenge humanity faced at the beginning of the Decade of Action (since 2020). Initially, the route of transmission of coronavirus and effective ways to protect against it were not completely clear (Huang 2022).

This caused the uncontrolled and unpredictable transmission of the virus among humans. Additionally, the treatment of COVID-19 was not perfected: No highly effective drugs were chosen, and there was no vaccine (Robinson et al. 2022).

Therefore, infected people experienced a high probability of serious health damage and required resuscitation, even to the point of being placed on lung ventilation. Given that hospitals were overcrowded and medical workers were overburdened, infected people had limited opportunities to receive the care they needed.

Therefore, the incidence of COVID-19 posed a pandemic risk in 2020. However, it is incorrect to measure this risk statistically since the incidence of the disease has varied greatly and still varies among countries. Therefore, it would be incorrect to argue that large countries with large populations face a greater risk of a COVID-19 pandemic than countries with smaller land areas and populations; namely, the risk of a pandemic must be assessed for each country on a case-by-case basis, considering its characteristics and experience (Wheeler et al. 2021).

Moreover, it is necessary to consider the speed at which the viral threat spreads worldwide. The most accurate and reliable assessment of pandemic risk is achieved by comparing incidence rates at different periods, for example, trimesters.

Therefore, in this research, the authors define pandemic risks as the change in the incidence of COVID-19 in the considered trimester compared to the preceding trimester in relation to the global average increase (Bushman et al. 2022; Di et al. 2022; Famuyiro et al. 2022; Gavurova et al. 2022). The increase in the number of infections in the country, which exceeds the global average increase in the incidence of COVID-19, indicates a high risk of the COVID-19 pandemic. Accordingly, a decrease in the number of infections within a country that exceeds the global average increase in the incidence of COVID-19 demonstrates a low risk of the COVID-19 pandemic.

Although the COVID-19 pandemic is still ongoing (as of the second half of November 2022), its risk component has been significantly reduced. This reduction is due to the mutation of the virus (new strains are less dangerous and infectious), well-established and highly effective treatment regimens, and the availability of vaccines. Mass vaccination has already been carried out in the most advanced countries and is continuing worldwide. The most severe socio-economic consequences (self-isolation and decline in GDP) of the COVID-19 pandemic were most evident in 2020 (Popkova and Sergi 2022).

Pandemic risk emerged in the second trimester of 2020 due to the COVID-19 outbreak, which was not declared a pandemic until March 2020. As early as the fourth trimester of 2020, the risk of the pandemic has been significantly reduced by the advent of vaccines. Russia was the first country in the world to register a COVID-19 vaccine, dubbed Sputnik V, on 11 August 2020. Therefore, from a risk perspective, it is reasonable to study the COVID-19 pandemic in the second and third trimesters of 2020. This determined the time frame for this research (the second and third trimesters of 2020).

This research is motivated by the fact that the 2020 pandemic came as a surprise, and its risk management was spontaneous. To date, all necessary statistics have been collected and calculated, which makes it possible to rethink the implemented risk management practices and select the most effective of them.

This research focuses on economic measures of pandemic risk management. The choice of this focus is explained by the fact that public health measures require consideration of the specifics of each individual disease. Depending on the way the virus is transmitted, restrictions of social behaviour are selected, drugs are selected, and vaccines are created depending on the characteristics of the course of the disease and its impact on the human body. It takes a long time to adjust these processes, which makes the risks of a virus threat very high in the beginning.

In contrast, economic measures are universal. Properly selected, these measures will prove effective in all epidemics and pandemics and become especially useful in the initial stages while public health measures are tested. The relevance of developing economic measures is high since the COVID-19 pandemic is still ongoing, and the world is already threatened by a new infectious disease—monkeypox, which threatens new epidemics and, in the worst case, a new pandemic.

The disease continues to spread since it takes a long time for healthcare systems to adapt and respond to it. Therefore, it is important to deeply study the experience of the COVID-19 pandemic as well as to identify the most promising economic measures that will curb the spread of the viral threat and effectively manage the risks of pandemics now and in the future in the Decade of Action and even beyond.

To best capture the international experience and receive the most accurate, valid, and reliable results, the authors conduct a dataset study. This paper strives to fill the literature gap, which is connected with the insufficient development of economic measures for the management of risks of the pandemic. While the measures of healthcare (self-isolation, social distancing, and vaccination) have been studied in detail and elaborated in the existing literature, economic measures have not been studied sufficiently; their contribution to the fight against the viral threat remains uncertain. The research question (RQ) of this paper is as follows: What are the perspectives of economic risk management of the pandemic? The essence of the set RQ is which economic measures contribute the most to the reduction in the incidence of COVID-19.

The goal of this paper is to study the contribution of management and marketing to the management of the risks of the COVID-19 pandemic in the economy. The paper's originality comprises reconsideration of risk management of the COVID-19 pandemic from the position of the economy, which allows for the proposal of a new—marketing—mechanism for this management. This was achieved due to the systemic coverage of international experience with the help of a specially created authors' dataset and its analytics. The theoretical substantiation and scientific evidence are based on the dataset analysis of risk management of the pandemic in the economy in the context of the first three trimesters of 2020, i.e., in the period of the most acute phase of the pandemic.

The tools of management (e-civil society, business's foundation of professional management, and flexibility of state management) are compared with the tools of marketing (buyer sophistication, marketing management of the conflict of interests in business and competition) from the position of their contribution to the reduction in the number of COVID-19 cases. This allowed for the specification of the key subject of risk management of the pandemic in the economy (government, not society and business) and the most preferable mechanism of the risk management of the pandemic in the economy (marketing).

This paper's contribution to the literature and its scientific novelty comprises the improvement of the economic tools of pandemic risk management by supplementing them with prospective marketing measures. The advantage of the recommended marketing measures is that they ensure the required flexibility of risk management of COVID-19—an adaptation of the managerial measures to different phases of the pandemic and high effectiveness of risk management during the entire pandemic. The importance of the results obtained for science and practice of management is that the proposed economic (marketing) measures allow for the supplementation of the measures of healthcare and increasing the effect of fighting the viral threat—ensuring the synergetic effect in the form of a larger decline in the incidence of COVID-19.

2. Literature Review

The research is based on scientific provisions of the concept of pandemic economic risk management. The available literature sufficiently covers the experience of various countries in applying economic measures to manage the risks of the COVID-19 pandemic. The essence of the economic management of the pandemic risks, which comprises the use of the management and marketing tools in public and corporate management to raise the resilience of economic systems and economic subjects to the viral threat and prevent its spread (reduction in the COVID-19 incidence), was studied in the works by Bø et al. (2023); Ekawati et al. (2023); Li et al. (2022b); Metwally and Diab (2022); Oktari et al. (2023); Roumpi (2021); Stepnov et al. (2022); and Tjahjadi et al. (2023).

The specifics of managing the risks of the COVID-19 pandemic in different spheres of the economy were studied in the following publications. Therefore, Hohenstein (2022) revealed strategies and empirical lessons for improving the efficiency of the providers of global logistics services during the COVID-19 pandemic.

Ng and Lo (2022) outlined the risks and opportunities for academic achievement in sustainable adult learning during the COVID-19 pandemic related to gamification and online learning in universities. Bahtilla et al. (2022) noted that online learning for

international students positively mitigates the risks of internationalizing higher education in the face of the COVID-19 pandemic. Li et al. (2022a) found that virtual tourism enables economic risk management during the COVID-19 pandemic in the tourism industry.

Brzeszczyński et al. (2022) pointed out that socially responsible investments (SRI) of companies significantly contribute to risk management during the COVID-19 pandemic. Nayal et al. (2022) proved the important role of artificial intelligence in agricultural supply chain risk management to counter the effects of the COVID-19 pandemic. Podolchak et al. (2022) noted that the transfer of workers to remote employment assists in reducing the risks of effective workforce management in the organizations of the energy sector in relation to the COVID-19 pandemic.

The effects of adopting or not implementing business continuity management systems at the company or government level were also studied in the existing literature. Chatzistelios et al. (2022) offered a novel vision of business continuity in the age of the COVID-19 pandemic—from the position of survival and improvement of the system of quality processes management. Chen and Xu (2022) noted an increased complexity and the necessity to manifest particularly high flexibility during business continuity management and standardisation under the conditions of COVID-19 on the example of Huawei. Dąbrowska-Świder (2022) substantiated the large potential of the ISO 9001:2015 and ISO 22301:2019 standards in the fight against COVID-19 to raise the effectiveness of business continuity management amid the pandemic.

According to the literature review, even though the issues of economic risk management during the COVID-19 pandemic are sufficiently covered by the existing publications, the accumulated knowledge is not properly systematized and remains fragmented. A research gap is identified in the uncertainty of the perspectives of economic risk management during the pandemic. Accordingly, the research question (RQ) is as follows: "What is the perspective of the economic risk management of the pandemic?".

To answer this RQ, it is necessary, first, to identify the key subject of pandemic risk management. According to Chen et al. (2022); Karaman Özlü et al. (2022); and Noh et al. (2022), the key subjects of pandemic risk management are society and business. The researchers noted the feasibility of market deregulation. As an argument, the authors cited the increased demand for corporate social and environmental responsibility as a powerful market incentive for businesses to exercise this responsibility.

Cabrera-Álvarez et al. (2022); Rains et al. (2022); and Thanh and Thanh Tung (2022) note the important role of the government in combating the pandemic. Consequently, the existing scientific knowledge is fragmented and needs clarification and rethinking in terms of risk, which is the purpose of this research.

Second, it is necessary to identify the preferable mechanism of pandemic risk management. Khasawneh et al. (2022) suggest management as this mechanism, for example, coordination of transition to remote employment, control of sanitary norms, and organization of social distancing. The alternative or supplement is marketing, which is also reflected by Inshakova et al. (2021); Litvinova (2022); Popkova and Sergi (2021); and Yankovskaya et al. (2022).

Marketing makes it possible to promote the values and practices of corporate social responsibility in the marketplace. It provides a return on responsible investment. The existing literature does not clearly state what mechanisms (or a combination of them) are the most preferable. This research seeks to fill this gap.

Third, it is necessary to identify the opportunities for pandemic risk management. Bertogg and Koos (2022); Goel and Jones (2022); and Wolf (2022) indicate that these possibilities are the same in all acute phases (peaks of risk load) of the pandemic. However, given the serious changes in risk levels and hazards over the course of the pandemic, it appears that the economic capacity to manage the risks of the pandemic may also change. This research seeks to clarify this aspect.

Fourth, it is necessary to develop the most promising approach to pandemic risk management. Choe et al. (2022); Kend and Nguyen (2022); Wei et al. (2022); and Yoo

et al. (2022) suggest a static approach: The same for all acute phases of the pandemic. The argument is that in all acute phases (peaks of risk load) of the pandemic, the same lockdown measures are introduced: Self-isolation, social distancing, remote employment, etc. However, the effects of these measures are not fully disclosed in the existing literature, which leaves the effectiveness of these measures unclear.

To find an answer to the RQ posed, this research conducts a dataset analysis of pandemic risks and risk management perspectives based on management and marketing in the COVID-19 recession.

3. Materials and Methods

3.1. Data Description

The dataset is a Microsoft Excel spreadsheet that contains statistics for 141 countries of the world for 2020. Management and marketing statistics are presented. It is publicly available in the Mendeley Data public repository (Sozinova 2022). The management indicators were E-Participation, reliance on professional management, and the government's responsiveness to change (Table A1, see Appendix A). Selected marketing indicators include buyer sophistication as an incentive to marketing, conflict of interest regulation in marketing, and extent of market dominance (Table A2). The values of these indicators were calculated as compared to the worldwide average values.

The following logic was used to select the indicators for this research. Under the conditions of the pandemic, e-civil society contributes to the risk management of COVID-19 through mass information on coronavirus restrictions and control over their observation; through support for social communications under the conditions of social distancing for the psychological adaptation to the pandemic; through receipt of online public services, including online medical appointments and telemedicine.

Business's foundation on professional management amid the pandemic contributes to the risk management of COVID-19 through the transformation of personnel management to adapt it to coronavirus restrictions and the transfer of employees to remote work; through the organisation of production and sales of products with compliance with the measures of fight against the viral threat. The flexibility of public management amid the pandemic contributes to the risk management of COVID-19 through quick and timely reaction to the change in scale of the viral threat: Increase in coronavirus limitations in the case of the growth of COVID-19 incidence and easing of restrictions in the case of the decline in the incidence.

Buyer sophistication as a stimulus toward marketing under the conditions of the pandemic contributes to the risk management of COVID-19 through consideration of the contribution of business to the fight against the viral threat during decision-making on purchases. Marketing management of the conflict of interests in business amid the pandemic contributes to the risk management of COVID-19 through the determination of consumer preferences and their most effective satisfaction with the flexible manoeuvring between coronavirus limitations of the state and society's needs for goods, services, and healthcare.

Competition, as a measure of state stimulation of marketing amid the pandemic, contributes to the risk management of COVID-19 through businesses borrowing from rivals the successful practices of adaptation to coronavirus restrictions; through the creation and strengthening of natural market stimuli to corporate social environmental responsibility in its new manifestations, aimed at the fight against the viral threat: An increase in the level of sanitation and creation of conditions for social distancing during provision of services; transfer of employees to remote work; and transfer to online sales, where possible.

The COVID-19 incidence statistics are presented for three trimesters of 2020: As of 2 March 2020 (first trimester), as of 18 June 2020 (second trimester), and as of 13 October 2020 (third trimester). An increase in the incidence of COVID-19 was determined in the second trimester of 2020 (compared to the first trimester of 2020) and in the third trimester of 2020 (compared to the second trimester of 2020). The values of an increase in the second and third trimesters were calculated as compared to the worldwide average values (Table A3).

As a result, a unified database of comparable indicators of management, marketing, and growth in the incidence of COVID-19 was formed. For the convenience of reading this research, the tables contain fragments of the dataset for the first ten countries in alphabetical order. The indicators calculated by the author and constituting the originality of the dataset are shown against the grey background in the dataset and, in this paper, are related to the dataset.

The parameters for data collection are as follows. The first parameter is data reliability. Therefore, the data have been drawn from authoritative sources: Materials from the World Economic Forum (2020) and materials of the dataset of the Institute of Scientific Communications (2022) prepared based on the official statistics of the World Health Organization. The second parameter is the comparability of data from our own set. Therefore, management and marketing statistics have been drawn from the same source, similar to the COVID-19 incidence statistics. Third, the presence of the COVID-19 incidence statistics in dynamics in order that these data could reveal the true effect of management and marketing that can only be manifested in dynamic studies.

3.2. Value of the Data

The dataset has combined statistics on management, marketing, and the COVID-19 incidence for most countries in the world that provide data for international statistical accounting (141 countries). Thanks to this, the dataset makes it possible to conduct research based on the global economy as a whole (for a full sample of countries) and based on samples from individual countries according to various criteria, for example, according to the incidence of COVID-19 or the level of maturity of market relations (developed and developing countries). Although management indicators (E-Participation, reliance on professional management, and government's responsiveness to change) and marketing indicators (buyer sophistication as an incentive to marketing, conflict of interest regulation in marketing, and extent of market dominance) are available in electronic format on the official World Economic Forum, these data cannot be processed since they cannot be uploaded to the user's computer in tabular form. To create the dataset, a significant amount of work has been conducted to develop a data sheet that is accessible for computed processing.

The dataset contains not only the initial data measured in different units of measurement, but also the average world values of indicators calculated by the author and the ratio of values of each country to global values. Therefore, a comparable database in the field of management, marketing, and the COVID-19 incidence has, for the first time, been developed in the dataset. This provides ample opportunities for using dataset materials in scientific research on the impact of management and marketing factors on the COVID-19 incidence worldwide and the entire world economy.

The uniqueness and value of the data included in the dataset lie in the fact that the COVID-19 incidence statistics are presented for three trimesters of 2020 rather than under static conditions (for a particular date): As of 2 March 2020 (first trimester), as of 18 June 2020 (second trimester), and as of 13 October 2020 (third trimester). Thanks to this, the dataset is applicable for a wide range of dynamic studies of the development of the COVID-19 pandemic and crisis. Moreover, it makes it possible to completely, accurately, and reliably determine the dependence of the virus threat on management and marketing factors, the contribution of which is manifested exclusively in dynamics since they provide a delayed effect.

The dataset developed a convenient sample of management and marketing indicators. The indicators have been selected according to two criteria. The first criterion is the relation to management (E-Participation, professional management, and government's responsiveness to change) and the relation to marketing (buyer sophistication, conflict of interest regulation in marketing, and extent of market dominance). The second criterion includes consumers (E-Participation and buyer sophistication), business (professional management and conflict of interest regulation in marketing), and the state (government's responsiveness to change and extent of market dominance) that act as the subject of

management or marketing. The advantages of the developed sample of indicators are, first, an equal number of indicators in each category, guaranteeing the most accurate results under any calculations. The second advantage is ample opportunities for the use of dataset materials in scientific research in terms of areas of activity (management or marketing) and in terms of subjects of activity (consumers, business, or state) when comparing them to identify special aspects and common features.

The dataset contains indices showing the contribution of each factor and each logical group of factors to the fight against the virus threat. The indices can be used for case studies in the field of management and marketing amid the COVID-19 pandemic and crisis in 2020, in particular, in the development and implementation of public and corporate management policies to overcome the pandemic and carry out crisis management both amid the pandemic (at least until 2022) and during the post-pandemic period.

3.3. Experimental Design, Materials, and Methods

The methodology of this research is based on a new methodological approach—dataset analysis, in which a specific feature is the dataset creation and analytics (Carchiolo et al. 2021; Khezrimotlagh 2021; Ponce and Martínez-Villaseñor 2020).

The newly-developed methodological approach has been used to assess the contribution of management and marketing to pandemic risk management. Special indices have been calculated to reflect the individual contribution of each management and marketing factor to the pandemic risk management in the second and third trimesters of 2020.

The following formula has been used for the calculation of indices:

$$I_{contribution} = TG_{result}/TG_{factor}, \quad (1)$$

where $I_{contribution}$ is the index that reflects the contribution of a particular factor;

TG_{result} is the increase in result, i.e., the COVID-19 incidence in the considered trimester compared to the previous trimester compared to the average worldwide increase, unit fractions (worldwide average value is considered as one) according to the following formula: "1-Nationwide value/worldwide average value"; the higher the indicator value, the better;

TG_{factor} is the increase in factor (management or marketing as of 30 November 2020) compared to the worldwide average increase, unit fractions (worldwide average value is considered as one); the higher the indicator value, the better.

The factors include, first, individual indicators: E-participation, professional management, government's responsiveness to change, buyer sophistication, conflict of interest regulation in marketing, and extent of market dominance.

Second, the factors include the aggregate contribution of management (arithmetic average of the contribution of E-Participation, professional management, and government's responsiveness to change) and aggregate contribution of marketing (arithmetic average of the contribution of buyer sophistication, conflict of interest regulation in marketing, and extent of market dominance).

Third, the factors include the contribution of consumers (arithmetic average of the contribution of E-Participation and buyer sophistication), the contribution of business (arithmetic average of the contribution of professional management and the regulation of conflict of interest in marketing), and the contribution of government (average arithmetic of the contribution of government's responsiveness to change, and extent of market dominance).

The values of contribution obtained from calculations according to Formula (1) are as follows:

- A value greater than 1 indicates that a factor (management or marketing) significantly contributes to the result (a decrease in the COVID-19 incidence in the considered trimester), that the management of this factor is highly efficient, and that it is expedient to extend the use of this factor during the next trimester. The higher the value obtained

during evaluation using Formula (1), the better—the stronger the impact of the factor and the more significant the management of this factor;

- A value from 0 (excluding 0) to 1 (including) indicates that a factor (management or marketing) makes an insignificant contribution to the result (a decrease in the COVID-19 incidence in the considered trimester) and that the management of this factor is inefficient but can be continued during the next trimester;
- A value equal to 0 indicates that a factor (management or marketing) does not make any (or makes a zero) contribution to the result (a decrease in the COVID-19 incidence in the considered trimester), that the management of this factor is inefficient, and that its use during the next trimester is inexpedient;
- A value less than 0 indicates that a factor (management or marketing) does not make any contribution to the result (a decrease in the COVID-19 incidence in the considered trimester) or impedes the result (the result cannot be achieved) and that the management of this factor is inefficient and inexpedient.

4. Results

The obtained results of the contribution of individual indicators in the second trimester are shown in Table A4. The results of the contribution of a set of factors in the second trimester are shown in Table A5. The results of the contribution of individual indicators in the third trimester are shown in Table A6. The results of the contribution of a set of factors in the third trimester are shown in Table A7.

The aggregate (average) results of the assessment of the contribution of all factors for the entire sample of 141 countries of the world in the second trimester are shown in Figure 1; the results in the third trimester are shown in Figure 2.

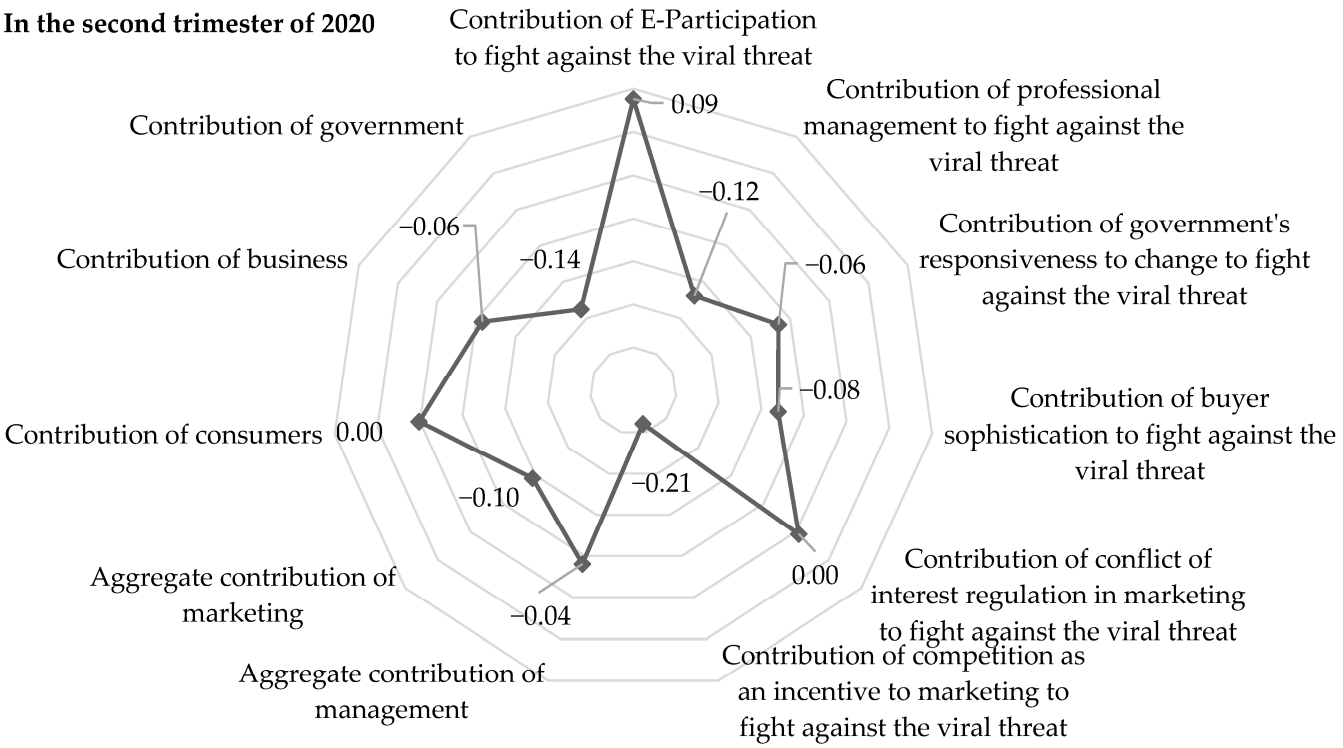

Figure 1. Contribution of management and marketing factors to the pandemic risk management in the second trimester of 2020. Source: Calculated and developed by the authors according to the dataset (Sozinova 2022).

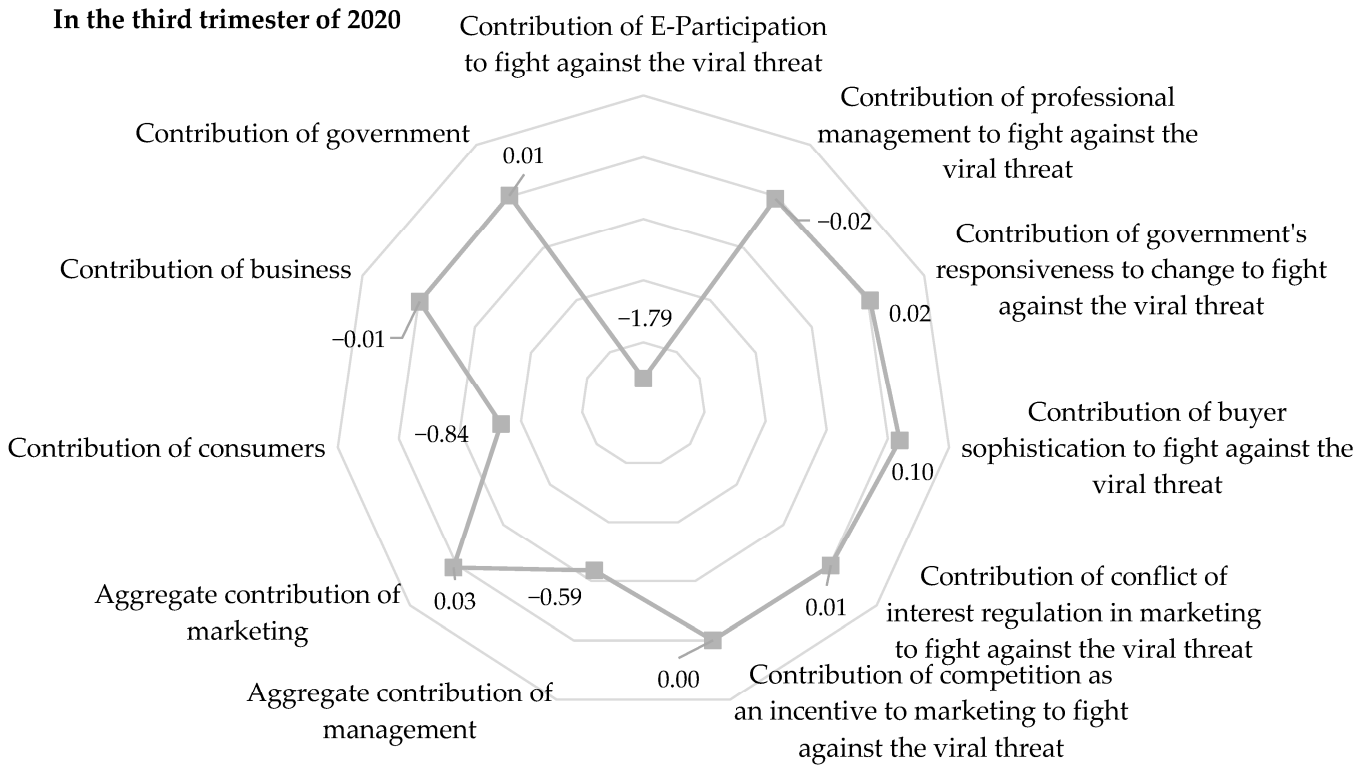

Figure 2. Contribution of management and marketing factors to the pandemic risk management in the third trimester of 2020. Source: Calculated and developed by the authors according to the dataset (Sozinova 2022).

As can be seen from Figure 1, in the second trimester of 2020, only E-Participation (0.09) made a moderate contribution to the global pandemic risk management for the entire world.

As can be seen from Figure 2, in the third trimester of 2020, the government's responsiveness to change (0.02), buyer sophistication (0.10), and conflict of interest regulation in marketing (0.01) were key individual factors in management and marketing, which make a moderate contribution to the global pandemic risk management for the entire world. In particular, significant sets of factors include the aggregate contribution of marketing (0.03) and the contribution of government (0.01).

5. Discussion

The contribution of the research to the literature consists of developing scientific provisions of the concept of pandemic economic risk management by systematizing the accumulated international experience in implementing economic measures of pandemic risk management and identifying the most effective of these measures. The new scientific results obtained are compared with the available literature in Table 1.

According to Table 1, in contrast to Chen et al. (2022); Karaman Özlü et al. (2022); and Noh et al. (2022), this research substantiates that the key subject of pandemic risk management is not society and business, but the state. It is necessary to conduct tighter regulation rather than deregulation. While society does have a high demand for corporate social responsibility, it needs strict government oversight. Only with sufficiently complete state monitoring will the norms and requirements for self-isolation and social distancing be met.

In contrast to Khasawneh et al. (2022), the authors prove that the most preferred mechanism for pandemic risk management is marketing, not management. This means that it is significantly more important to promote the values of corporate social responsibility in the business environment and the fight against the viral threat in society than to implement

management measures that are not backed up by sufficient support from stakeholders (e.g., consumers and employees). The economic measures of pandemic risk management are effective only with social support achieved through marketing.

Table 1. Comparison of new scientific findings with existing literature.

Comparison Area	Existing Literature		New Scientific Results Obtained
	Provisions	References	
Key subject of pandemic risk management	Society and business (expedient market deregulation)	Chen et al. (2022); Karaman Özlü et al. (2022); and Noh et al. (2022)	The state (tighter regulation is necessary)
Preferred pandemic risk management mechanism	Management (management, coordination, and control)	Khasawneh et al. (2022)	Marketing (market promotion)
Pandemic risk management opportunities	The same in all acute phases (peaks of risk load) of the pandemic	Bertogg and Koos (2022); Goel and Jones (2022); and Wolf (2022)	Unique to each pandemic phase, increasing as the market adapts to the overall risk load of the pandemic
A promising approach to pandemic risk management	Static: The same in all acute phases of the pandemic	Choe et al. (2022); Kend and Nguyen (2022); Wei et al. (2022); and Yoo et al. (2022)	Dynamic: Flexible, changing from phase to phase

Source: Compiled by the authors.

In contrast to Bertogg and Koos (2022); Goel and Jones (2022); and Wolf (2022), it is substantiated that the possibilities of pandemic risk management are not the same; they differ, being unique to each phase of the pandemic. These opportunities increase as the market adapts to the overall risk load of the pandemic. A dataset analysis of the international experience with the COVID-19 pandemic showed that there was virtually no visible effect of the implementation of economic measures of pandemic risk management in the second trimester. However, already in the third trimester, this effect was significantly more clearly expressed and serious.

In contrast to Choe et al. (2022); Kend and Nguyen (2022); Wei et al. (2022); and Yoo et al. (2022), it has been proven that the most promising approach to pandemic risk management is dynamic rather than static management. A flexible, phase-shifting approach to pandemic risk management is needed. As the pandemic phases change, the overall effect and the private effect of individual risk management measures change. For example, e-civil society generated the greatest effect in the second trimester of 2020, but in the third trimester of 2020, its effect was reduced to zero, and the most effective economic measure of pandemic risk management was demanding consumers.

6. Conclusions

In this paper, the dataset study provided a systemic coverage of international experience and developed a universal economic approach to pandemic risk management. In the developed approach, the key subject of pandemic risk management is the state; tighter regulation of society and the economy is assumed.

The approach relies on the marketing mechanism of a pandemic risk management that promotes the values of combating the viral threat, builds support for these values, and ensures commitment to these values by society and business. Moreover, the approach assumes a high degree of flexibility and change in the measures of economic risk management of the pandemic as the viral threat changes and society, business, government, and the health care system adapt to the viral threat.

The theoretical significance of the findings lies in the fact that they reveal differences in the capabilities of the economic risk management of the pandemic as the viral threat changes. The effect of economic measures is largely determined by the degree of social and business support for these measures.

The example of COVID-19 clearly demonstrated that the resistance of society and businesses against the introduction of mask requirements, social distancing, and self-isolation was initially great. As a result, in the second trimester of 2020, the effect of economic risk management measures of the pandemic was very weak. Nevertheless, thanks to full-scale marketing support, there was already a significantly stronger pandemic risk management effect from economic measures in the third trimester.

The practical significance of the research lies in the fact that the results obtained in the third trimester of 2020 make it possible to adjust governmental and corporate risk management policies during the subsequent pandemic waves, in the post-pandemic period, and in the conditions of future epidemics and pandemics.

The social significance of the author's conclusions and recommendations is that they make it possible to mitigate the viral threat and reduce the risks of a pandemic in its initial stages while the healthcare system is adapting to the new viral threat. In this way, economic measures fill the gap, making up for the lack of risk management measures in the early phases of the pandemic.

7. Limitations and Prospects for Future Research

Nevertheless, it should be noted that even economic risk management measures need some preparation and do not work immediately. Nevertheless, the effect is achieved significantly faster than public health measures since it takes considerably longer to create or select drugs and develop vaccines. The weak effect of economic measures of pandemic risk management at the earliest stage (in the second trimester of 2020) indicates that the ability to benefit from these measures is limited.

The continued uncertainty of what measures to apply at the outset of the pandemic to manage its risks is a research limitation. From COVID-19, it is possible to summarize that health measures (well-established treatment and vaccination) began to have an effect in the fourth trimester of 2020. Economic pandemic risk management measures are recommended in the third trimester.

It remains unclear what measures would have a pronounced effect in the earliest second trimester of 2020. In this regard, the scientific search must continue. Further research is recommended to focus efforts on finding early pandemic risk management measures (e.g., in the second trimester of 2020) that can immediately reduce the risk component of future pandemics.

In this paper, the data on 141 countries were analysed, which is a limitation of the research. The experience of many other countries, which did not make it in the sample due to the absence of standardised statistics, also deserves attention and scientific study. Future scientific works should elaborate on the research on the example of other countries based on national statistics and alternative data (e.g., materials of sociological surveys and corporate statistics).

Moreover, it would be interesting if future studies performed a test based on the data on developed and developing countries. COVID-19 is raging again, and it would be expedient to continue the series of research on how to prevent the risks of the pandemic given the accumulated experience and new factors.

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Appendix A

Table A1. Management statistics in 2020.

Country	E-Participation		Reliance on Professional Management		Government's Responsiveness to Change	
	Value, Points 1–100	Value Compared to the Worldwide Average	Value, Points 1–100	Value Compared to the Worldwide Average	Value, Points 1–100	Value Compared to the Worldwide Average
Australia	98.31	1.49	81.00	1.45	52.90	1.17
Austria	82.58	1.25	73.90	1.32	58.00	1.28
Azerbaijan	67.98	1.03	63.90	1.14	75.40	1.67
Albania	75.84	1.15	57.40	1.02	42.80	0.95
Algeria	20.22	0.31	41.70	0.74	48.20	1.07
Angola	43.26	0.65	26.60	0.47	31.40	0.70
Argentina	62.36	0.94	55.10	0.98	41.80	0.93
Armenia	56.74	0.86	54.60	0.97	50.60	1.12
Bangladesh	80.34	1.21	49.40	0.88	46.30	1.03
Barbados	62.36	0.94	54.30	0.97	48.00	1.06

Source: Fragment of the dataset (Sozinova 2022).

Table A2. Marketing statistics in 2020.

Country	Buyer Sophistication		Conflict of Interest Regulation		Extent of Market Dominance	
	Value, Points 1–100	Value Compared to the Worldwide Average	Value, Points 1–100	Value Compared to the Worldwide Average	Value, Points 1–100	Value Compared to the Worldwide Average
Australia	51.10	1.18	60.00	1.03	54.60	1.16
Austria	47.90	1.11	57.00	0.98	67.30	1.43
Azerbaijan	59.10	1.37	77.00	1.32	62.00	1.32
Albania	34.50	0.80	77.00	1.32	32.00	0.68
Algeria	46.40	1.07	33.00	0.57	52.50	1.11
Angola	29.50	0.68	53.00	0.91	19.60	0.42
Argentina	41.40	0.96	50.00	0.86	42.60	0.90
Armenia	51.60	1.19	67.00	1.15	59.60	1.27
Bangladesh	38.50	0.89	67.00	1.15	33.60	0.71
Barbados	41.30	0.95	37.00	0.64	28.00	0.59

Source: Fragment of the dataset (Sozinova 2022).

Table A3. COVID-19 incidence statistics for each trimester of 2020.

Country	The Number of COVID-19 Cases			Increase in the Incidence Rate/Increase in the Mortality Rate			
				In the Second Trimester of 2020 (Compared to the First Trimester of 2020), %		In the Third Trimester of 2020 (Compared to the Second Trimester of 2020), %	
	As of 2 March 2020	As of 18 June 2020	As of 13 October 2020	Value, %	Value Compared to the Worldwide Average	Value, %	Value Compared to the Worldwide Average
Australia	5314	7391	27,285	39.09	0.99	269.17	0.79
Austria	11,171	17,223	55,319	54.18	0.99	221.19	0.83
Azerbaijan	400	10,991	41,982	2,647.75	0.55	281.97	0.78
Albania	277	1788	15,399	545.49	0.91	761.24	0.42
Algeria	986	11,268	53,072	1042.80	0.82	371.00	0.72
Angola	8	155	6,366	1837.50	0.69	4007.10	−2.06
Argentina	1265	35,552	903,730	2710.43	0.54	2441.99	−0.86
Armenia	663	18,698	56,451	2720.21	0.54	201.91	0.85
Bangladesh	61	102,292	379,738	167,591.80	−27.28	271.23	0.79
Barbados	46	97	208	110.87	0.98	114.43	0.91

Source: Fragment of the dataset (Sozinova 2022).

Table A4. Contribution of individual management and marketing factors to the pandemic risk management in the second trimester of 2020.

Country	Contribution of E-Participation to Pandemic Risk Management	Contribution of Professional Management to Pandemic Risk Management	Contribution of Government's Responsiveness to Change to Pandemic Risk Management	Contribution of Buyer Sophistication to Pandemic Risk Management	Contribution of Conflict of Interest Regulation in Marketing to Pandemic Risk Management	Contribution of the Extent of Market Dominance to Pandemic Risk Management
Australia	0.67	0.69	0.85	0.84	0.96	0.86
Austria	0.79	0.75	0.77	0.89	1.01	0.69
Azerbaijan	0.54	0.49	0.33	0.40	0.42	0.42
Albania	0.79	0.89	0.96	1.14	0.69	1.34
Algeria	2.70	1.11	0.77	0.77	1.45	0.74
Angola	1.05	1.45	0.99	1.01	0.76	1.66
Argentina	0.58	0.55	0.59	0.57	0.63	0.60
Armenia	0.63	0.56	0.48	0.45	0.47	0.43
Bangladesh	−22.46	−30.95	−26.61	−30.65	−23.71	−38.24
Barbados	1.04	1.01	0.92	1.03	1.54	1.65

Source: Fragment of the dataset (Sozinova 2022).

Table A5. Contribution of a set of management and marketing factors to the pandemic risk management in the second trimester of 2020.

	Aggregate Contribution of Management	Aggregate Contribution of Marketing	Contribution of Consumers	Contribution of Business	Contribution of Government
Australia	0.73	0.89	0.75	0.83	0.85
Austria	0.77	0.87	0.84	0.88	0.73
Azerbaijan	0.45	0.41	0.47	0.45	0.38
Albania	0.88	1.05	0.97	0.79	1.15
Algeria	1.53	0.99	1.73	1.28	0.76
Angola	1.17	1.14	1.03	1.11	1.32
Argentina	0.57	0.60	0.57	0.59	0.59
Armenia	0.56	0.45	0.54	0.51	0.46
Bangladesh	−26.68	−30.87	−26.56	−27.33	−32.43
Barbados	0.99	1.41	1.03	1.28	1.29

Source: Fragment of the dataset (Sozinova 2022).

Table A6. Contribution of individual management and marketing factors to the pandemic risk management in the third trimester of 2020.

Country	Contribution of E-Participation to Pandemic Risk Management	Contribution of Professional Management to Pandemic Risk Management	Contribution of Government's Responsiveness to Change to Pandemic Risk Management	Contribution of Buyer Sophistication to Pandemic Risk Management	Contribution of Conflict Of Interest Regulation in Marketing to Pandemic Risk Management	Contribution of the Extent of Market Dominance to Pandemic Risk Management
Australia	0.53	0.55	0.68	0.67	0.77	0.69
Austria	0.67	0.63	0.65	0.75	0.85	0.58
Azerbaijan	0.76	0.69	0.47	0.57	0.59	0.60
Albania	0.37	0.41	0.44	0.53	0.32	0.62
Algeria	2.34	0.96	0.67	0.67	1.27	0.64
Angola	−3.15	−4.34	−2.96	−3.02	−2.26	−4.95
Argentina	−0.92	−0.88	−0.93	−0.90	−1.01	−0.95
Armenia	0.99	0.87	0.76	0.71	0.74	0.67
Bangladesh	0.65	0.90	0.77	0.89	0.69	1.11
Barbados	0.97	0.94	0.86	0.96	1.44	1.54

Source: Fragment of the dataset (Sozinova 2022).

Table A7. Contribution of a set of management and marketing factors to the pandemic risk management in the third trimester of 2020.

Country	Aggregate Contribution of Management	Aggregate Contribution of Marketing	Contribution of Consumers	Contribution of Business	Contribution of Government
Australia	0.59	0.71	0.60	0.66	0.68
Austria	0.65	0.73	0.71	0.74	0.61
Azerbaijan	0.64	0.59	0.67	0.64	0.53
Albania	0.41	0.49	0.45	0.36	0.53
Algeria	1.33	0.86	1.51	1.11	0.66
Angola	−3.48	−3.41	−3.08	−3.30	−3.95
Argentina	−0.91	−0.95	−0.91	−0.94	−0.94
Armenia	0.87	0.70	0.85	0.80	0.71
Bangladesh	0.78	0.90	0.77	0.79	0.94
Barbados	0.92	1.31	0.96	1.19	1.20

Source: Fragment of the dataset (Sozinova 2022).

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