

THE SIGNIFICANCE OF ECONOMIC INNOVATION IN THE CONDITIONS OF THE PANDEMIC CRISIS AND RELATED GOVERNMENT ACTIONS

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Purpose: The aim of the article is to analyse the significance of innovation during the pandemic crisis and related government actions. The implementation of social distancing rules and the closure of public spaces by countries became key measures to combat the spread of the SARS-CoV-2 virus (COVID-19).

Design/methodology/approach: The study is based on the analysis of scientific literature, including empirical research, from the period of 1 January 2020 to 31 December 2023. The research process involved systematising knowledge in the area of the research problem. Key economic mechanisms that emerged during the pandemic crisis were identified, and it was demonstrated how governments responded to the effects of the pandemic, aiming to prevent the consequences of COVID-19.

Findings: The analysis revealed that the pandemic crisis exposed both the potential and the limitations of enterprise innovativeness. At the same time, differences in government support strategies significantly influenced the speed and effectiveness of businesses' adaptation to the changes that occurred in the economy.

Research limitations/implications: The study is limited to the analysis of literature and the discussion of research findings from a selected period, which may not account for the full long-term effects of the pandemic crisis. Further research may focus on a detailed assessment of sectoral and regional differences in the creation of innovation during the crisis.

Practical implications: The results show the necessity of building enterprise resilience to crises through investment in innovative technologies and business models. These conclusions can assist policy-makers in designing effective support mechanisms for companies in crisis situations.

Social implications: The study highlights the importance of cohesive public policies that support innovation, which can positively impact quality of life and economic stability during crises. It is also possible to highlight the need for corporate social responsibility in addressing global challenges.

Originality/value: The article demonstrates the significance of innovation during a crisis and emphasises the substantial impact of government actions and legal regulations on the development of innovative solutions. It includes conclusions relevant to enterprises in terms of preparation and response to future global crises.

Keywords: Innovation, Government Action, Coronavirus Crisis, Policy, Corporate Sector.

Category of the paper: literature review, research paper.

1. Introduction

The coronavirus pandemic (SARS-CoV-2) and its rapid spread forced countries to take decisions aimed at curbing the mobility of communities, which in turn translated into changes in the economy. Those government decisions became an exogenous shock for a considerable number of business entities. The coronavirus pandemic brought changes to many industries, characterised by both benefits and losses. However, it is a well-known fact that states of danger such as wars, plagues, cataclysms and crises induce people to come up with unconventional solutions to problems, and above all, intensify creativity and innovation.

The aim of this article is to review and critically analyse the literature, including empirical studies, on the significance of innovation amid the pandemic crisis, as well as the actions taken by governments to counteract this crisis, both from a social and economic perspective. The question is whether such studies have already been carried out, and what their conclusions were? To answer the main question, we should address three auxiliary questions: (1) what happens to the economy, i.e. what changes are taking place in business practices during a pandemic crisis and why innovation is necessary? (2) What were the government actions aimed at supporting the innovativeness of enterprises during the coronavirus crisis? (3) what innovative measures have been taken by companies to sustain business?

In view of the above, by observing real-world conditions and reviewing the literature, a research gap was identified, highlighting the need to systematise knowledge about the significance of innovation amid the pandemic crisis and the related government actions. An analysis of the existing knowledge on this topic can serve as an introduction to broader areas of research. It summarises the current state of knowledge, which can facilitate the understanding of theories and research findings.

In light of the above, the research hypothesis assumes that innovation plays a significant role amid the pandemic crisis, both from a social and economic perspective. It accelerates the implementation of new technologies and business models, as well as reveals human potential in adapting to dynamically changing economic conditions.

The research focuses on illustrating the scale of the coronavirus crisis and the condition of enterprises, consumer behaviour and the ways companies deal with the government restrictions imposed as a consequence of the COVID-19 pandemic. The persisting situation inclined society to reconsider its views on consumption and brands that became less important. At the same time, the DIY idea emerged, which involved unconventional methods of doing things for one's own use, without the assistance of professionals. Individual and social identities have changed, which beyond any doubt affected people's and corporate innovation in a new situation.

2. The Research Method and Analysis of the Scale and Effects of the COVID-19 Pandemic

The research method was based on an analysis of national and international subject literature. Significant scientific publications covering the period of the pandemic and its conclusion (2020-2023) were selected for analysis, describing the economic phenomena occurring within this time frame. The changes that took place in economic practices during the pandemic crisis conditions clearly indicate the importance of innovation in adapting to new challenges.

COVID-19 is not the first disease that affected people's health. Over the last decades, virus outbreaks such as SARS (also known as SARS-CoV-1), MERS, swine flu, Zika and yellow fever posed a threat to people's lives globally (Buheji, Ahmed, 2020). Unlike other threats, COVID-19 became a pandemic, requiring global mobilisation and cooperation to bring it under control.

It can be observed that the coronavirus pandemic is one of the largest health crises in modern history. The COVID-19 epidemic has had a profound and potentially lasting impact on all social and economic aspects (Basu, Swaminathan, 2021). The pandemic revealed the consequences of the public health crisis and also showcased public policy programmes (Paananen et al., 2023). Apart from a humanitarian tragedy caused by the COVID-19 pandemic, there is also a threat to local economies as well as the whole, global economy. As documented in history, the time of a crisis brings far-reaching changes within the whole society and economy, and most crisis situations stimulate innovation and technological development.

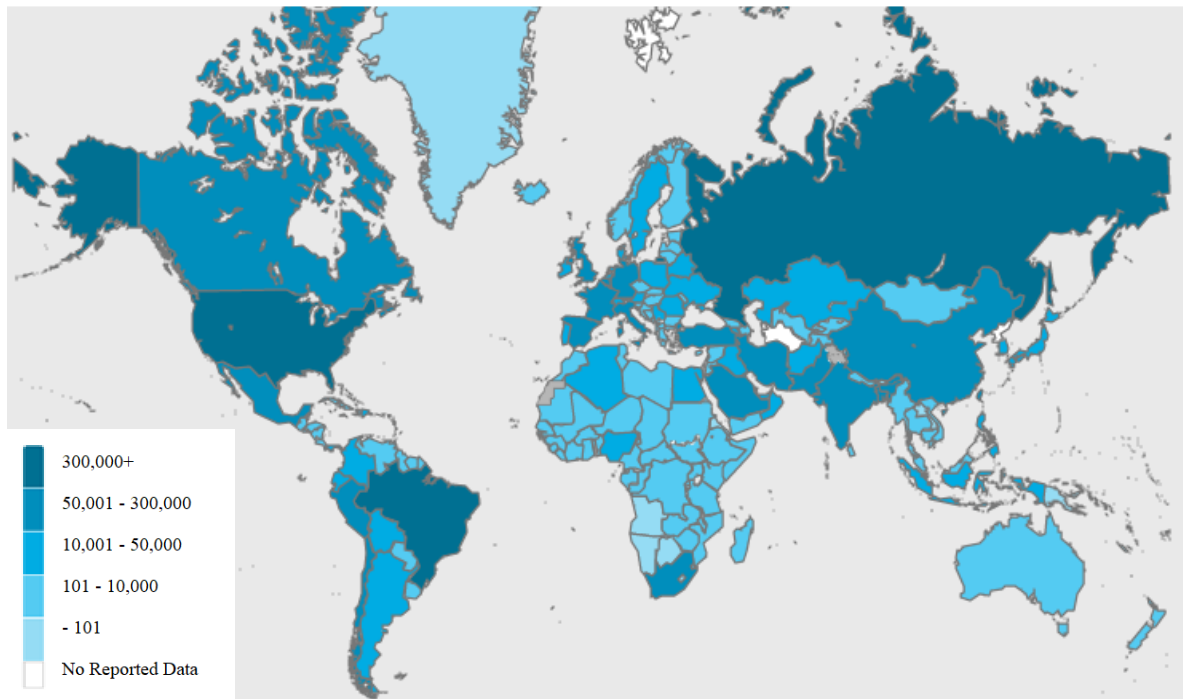
It can also be observed that its conclusion was not clearly defined, as it dissolved and became intertwined with other crises, including the emergence of the Russian-Ukrainian war (Paananen et al., 2023). This conflict contributed to the deepening of economic and political instability worldwide, affecting many sectors of the global economy. As a result, the boundaries between individual crises began to blur.

This phenomenon creates an opportunity for research and, over time, for the systematisation of knowledge about social and economic challenges in the conditions of the pandemic crisis. In such a situation, broadly understood innovations introduced in business organisations are of particular importance. At the same time, social innovations include adaptive measures enabling the resolution of social and economic problems in such circumstances.

Since 2020, the world struggled with the coronavirus (COVID-19) caused by SARS-CoV-2, which suddenly reached pandemic status. The new situation rapidly changed the global economy; almost concurrently, all the countries in the world noted an economic slowdown and a recession. The global economy lost its potential, and the question arose of how businesses should operate to survive in the changed market and new reality. Societies and

economies, including businesses worldwide, experienced an external shock, dealing with an unpredictable situation.

To illustrate this phenomenon, statistical data showing the scale of the phenomenon can be presented. In the second week of June 2020, there were over seven million COVID-19 infections reported worldwide. On 9th June 2020, WHO registered 7,039,918 reported infections, with over 400 thousand deaths due to this illness (on 9th June 2020, the official number of deaths reached 404,396 (WHO, 2020)). The range of coronavirus infections is shown on the map in Figure 1.



Data from: June 09, 2020.

Figure 1. The Map of Coronavirus 2019-nCoV (COVID-19) Infections at the Onset of the Pandemic. Source: Author's own elaboration on the basis of: (WHO, 2020).

For the first time, the World Health Organisation (WHO) announced the strain of coronavirus (SARS-CoV-2) to cause a global pandemic on 11 March 2020 (Yang, Yu et al., 2020). On 14 March 2020, the Polish Republic declared the state of epidemic emergency due to SARS-CoV-2 infections that was lifted on 20 March 2020 by the ordinance of the Minister of Health of 20 March 2020 (Journal of Laws of 2020, section 440). Then, pursuant to the ordinance of the Minister of Health of 20 March 2020 on the announcement of epidemic within the territory of the Polish Republic (Journal of Laws of 2020, sections 491, 522 and 565) from 20 March 2020 until further notice, the state of epidemic was announced due to SARS-CoV-2 infections.

The first observations that were made after announcing a pandemic were on the consumer behaviour. The shopping spree at the end of February and the beginning of March 2020 swiftly turned into panic buying, increasing the expenditure of households. Purchases of toilet paper

skyrocketed by a staggering 845% in comparison to the previous month, household cleaning agents surged by 766%, paper towels by 536%. The buyers swept the shelves clean of toilet paper, disinfectants and cleaning agents, or even drinking water (NCSolutions, 2020). In time, the buyers got used to new conditions and stopped worrying about the deficit of products. It should be noted that such a situation was observed in the developed countries.

Hoarding was attributable to the fear of the unknown, and the information spread by the media was perceived as “preparation for survival in extreme conditions” (Austin, 2020). The emergence of health risks and economic risks began to shape consumer behaviour (Basu, Swaminathan, 2021).

Another phenomenon concerned commerce and production, as many European manufacturers transferred their production to China. Therefore, as emphasised by Yigit Kazancoglu, Esra Ekinici et al. (2023), the degree of global supply chain structures of countries and sectors affected by the pandemic crisis is significant. The most appropriate solutions for managing them can be identified by considering a systems thinking approach.

Global chains of supply are of great importance for the world economy, and production comes mostly from the nascent economies. Shutdown of plants in China affected many industries such as computers and iPhones as well as the automotive industry (Ajami, 2020). In 2019, Asia contributed 35.3% of global export and 33.8% of global import. The industries greatly dependent on Chinese supplies included global production of computers, household appliances and electronics, optical ware, textiles and clothing (Wprost, 2020).

The tourist industry became the fastest and most extensively affected by the COVID-19 pandemic. Many tourists were forced to cancel their trips as public space was shut down by the local authorities. This sector is closely linked to the hospitality industry, which also significantly felt the effects of the pandemic crisis. As noted by Justyna Łukomska-Szarek, Agnieszka Wójcik-Mazur et al. (2023), during the COVID-19 pandemic, many governments imposed strict restrictions on travel and mobility, as well as temporary bans on accommodation providers. Lockdowns, the necessity to close hotels, or guest occupancy limitations resulted in a decline in bookings or the cancellation of already agreed-upon stays. The financial situation of many operators deteriorated significantly, and some entities were forced to cease operations as they could no longer run profitable businesses.

In order to contain the pandemic COVID-19 and ensure safety to their staff, some companies, where possible, transitioned to remote work (work from home–WFH). That made an impact on the hotel industry and transportation (Hadi, 2020). This change led to a decline in demand for services related to business travel. As Toshihiro Okubo (2022) observed, telework was occasionally used before the coronavirus pandemic to enable better working styles. However, as COVID-19 infections spread, telework became a necessity for most companies across various industries. The government requested that employees exercise self-discipline by staying at home and actively sought to promote telework. Some entities were forced to shut down because they could no longer operate profitably.

Transport turned out to be the industry most vulnerable to the coronavirus crisis. Airlines grounded 75% of their fleet due to domestic and international air travel limitations, following the decisions of governments striving to contain the virus. In line with the information provided by the International Air Transport Association (IATA), it was forecasted that the revenue of this sector would decrease by one-third of a trillion dollars USD, with 25 million possible redundancies (Kotoky, Stringer, Saxena, 2020). Tourism, as an industry “most vulnerable to a pandemic”, came to a grinding halt due to social distancing restrictions and a halt in travel (Jamal, Budke, 2020).

3. Research Results

3.1. Government Actions Amid the Pandemic Crisis

Due to the threat to health and life of COVID-19, the governments decided to ban the movement of people, which slowed down the global economy and put many companies out of business. The imposed restrictions on mobility and the closures of service sectors significantly affected the operations of tourism, gastronomy, hospitality, and transportation companies. At the same time, many enterprises had to adapt to the existing situation by investing in information and communication technologies (ICT), which enabled them to conduct business under conditions of social isolation.

In view of the high contagion rate of SARS-CoV-2, enforcing social distancing proved to be the only effective solution to limiting infections within the communities (Fong, Gao et al., 2020). It should be noted that while government decisions aimed at increasing security improved well-being for people, they resulted in unpredictable results for the economy. In view of the current crisis of the world economy and the impact made by COVID-19 on innovation, keen attention should be brought to the impact made by government actions on companies. Again, Keynesian economics makes sense by calling for state intervention. A free-market mechanism does not provide any solutions to complex problems that emerge in the economy.

At this point, it is possible to attempt to answer the posed questions: What happened to the economy, what changes occurred in it as a result of the pandemic crisis, and why did innovations prove to be necessary? What steps have been taken by governments to support corporate innovation in a time of a pandemic? What innovations did companies implement to survive in the market?

Selected results of the research were analysed to answer the posed question. One of the surveys was structured on the interviews conducted with the people connected with the entrepreneurship ecosystem in Germany. The purpose of the interviews was to find people’s reactions to the coronavirus crisis and discuss their opinions on the resources allocated by the

government to ease the consequences of the economic downslide. The surveys showed that during the pandemic the resources were targeted by the government on the protection of large companies, single entrepreneurs and the entrepreneurs affected by COVID-19. The aid that was rendered includes tax support, other forms of financial assistance by Liquidity Guarantee Funds (that fund provides guarantees for medium and large companies affected by COVID-19) as well as the loans and special programmes provided by KfW (*Kreditanstalt für Wiederaufbau*) i.e. German state bank for development (KfW, 2020).

Nonetheless, many allocated resources, such as KfW loans, were not available for innovation start-ups (particularly in their inception stage) since they did not meet the basic criteria prerequisite for qualifying for the support (Kuckertz et al., 2020). Germany is not the only case; the same situation is to be observed in other countries. A majority of political initiatives taken to protect the economies during the pandemic crisis were addressed to the functioning corporations, industrial sectors and economies in general. By this token, those resources have been intended to protect employment and sustain the necessary economic activity.

During the pandemic crisis, the focus was placed on protecting the present, while the future of the economy seemed to be of lesser importance. It should be noted that there are, among others, innovation start-ups whose role is to shape the economy of the future. During this time, they were left without government support and yet remained the most vulnerable to the impacts of the coronavirus crisis.

The change in the situation that affected all branches of the economy necessitated the action of the governments aimed at alleviating the negative consequences of the pandemic crisis. The recovery policy was targeted at supporting the industries that were most vulnerable. Regrettably, that action has not included support for innovation that would facilitate the introduction of new solutions, following the much-wanted handling of the COVID-19 pandemic.

It can be observed that the European Union committed to supporting innovation by funding scientific research and innovation in key areas of the economy; however, these efforts were limited to selected sectors of the economy. In April 2020, it expressed support for the first action plan under the European Research Area, called ERA vs Corona, which aimed to counteract the effects of the coronavirus crisis (Sharma et al., 2022). It can be noted that funding was provided for projects primarily related to the development of diagnostics, vaccines, treatment, epidemiology, mental health, as well as support for ICT technologies (Pleśniarska, 2022).

3.2. Economic Changes

The situation attributable to the coronavirus had an impact on all industries owing to the dramatic changes in demand and supply (Mention, Ferreira, Torkkeli, 2020). The industries that were more vulnerable to losses, and those that might benefit from the coronavirus crisis, are presented in Figure 2.

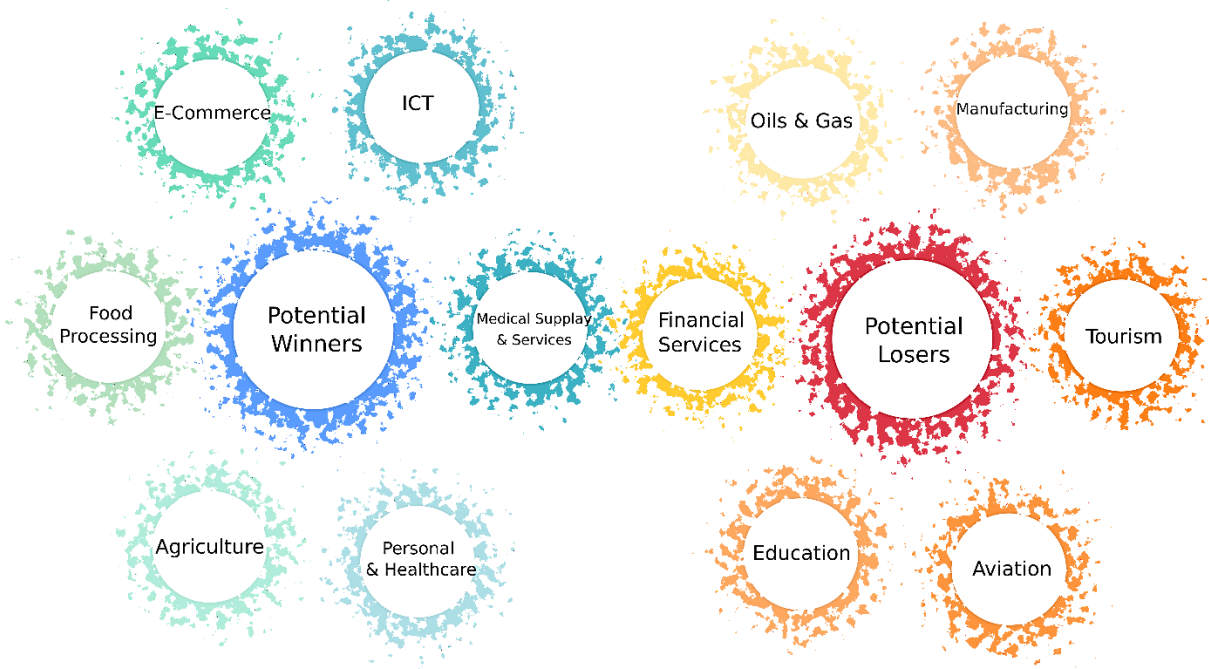


Figure 2 Vulnerable industries and those with the prospects for rapid development in the time of coronavirus crisis.

Source: Own study based on (Dcode, 2020).

In the short-term perspective, it is apparent that the pandemic crisis has brought not only threats but also opportunities. The industries that benefited at that stage of the pandemic include medicine, the food industry, the chemical industry, ICT, e-commerce, and farming.

ICT proved to be most useful. It served not only for human interaction, but also for social contacts and communication with next of kin (Kirk, Rifkin, 2020). These technologies bridged the gap created by physical distancing, enabling people to stay in touch, share experiences, and provide emotional support despite being apart. Moreover, ICT played a key role in sustaining educational and professional activities, enabling remote learning and telework, which allowed society to function under new conditions.

Co-creation, innovation, and ingenuity developed alongside the acquisition of new skills by DIY methods, where even people unfamiliar with the technology learned some new applications (Kirk, Rifkin, 2020). A major role was played by ICT, including e-commerce. At the same time, an increase in the importance of social media platforms as tools for knowledge exchange and support in the process of learning new skills was observed.

Social media were used for the exchange of information in the home improvement area (house refurbishments, landscaping) that boosted retail e-commerce sales. As noted by Meheli Basu and Vanitha Swaminathan (2021), threats such as pandemics, recessions, and other social crises alter consumers' regular lifestyle choices. This is mentioned by Katarzyna Witczyńska (2022), who notes that the global coronavirus pandemic affected consumer behavior worldwide. Consumers began spending more time at home, leading them to purchase products from online stores.

As a result of the COVID-19 pandemic, the shift from in-person learning and work to remote formats was revolutionary in nature. It should be noted that universities were the foremost beneficiaries of ICT, reaping its technological potential during the pandemic. Chinese universities were the first to apply distant learning online via the internet. At the same time, to prevent the backlog in education, Chinese universities, headed by the Ministry of Education of China, launched educational platforms so that faculty could lecture online. As noted by Iwona Chomiak-Orsa and Klaudia Smoląg (2022), the COVID-19 pandemic contributed to the widespread adoption of remote learning. At the very beginning of the pandemic, the transition from in-person processes to remote ones was revolutionary. Teachers and students had to switch "overnight" from traditional teaching and learning methods to remote learning.

Many leading universities participated in an exceptional social initiative by sharing with the community, free of charge, several tens of thousands of high-quality training materials and teaching platforms. The universities that excelled in this area include, among others, the University of Peking (the oldest and most renowned university in China), the online school at Tsinghua University, and the foreign language teaching platform in Peking (Wang, Cheng et al., 2020).

As noted by A. Kuckertz and L. Brändle (2020), the experience gained following the Katrina hurricane and the tornadoes in Tuscaloosa, Alabama, and Joplin, Missouri, shows how entrepreneurs continue to bring the economy back on its feet by providing the victims of these catastrophes with necessary resources while utilizing social capital. Such highly motivated individuals achieve both commercial and social goals. As noted by Rachael Behr and Virgil H. Storr (2022), necessity entrepreneurs are also highly resilient, as they face difficult circumstances and yet manage to persevere.

4. Types of Innovation Activity – Discussion

As shown by history, pandemics such as the Black Plague in the Middle Ages (the 15th century) and the Spanish Flu at the beginning of the 20th century triggered social innovation (Kirk, Rifkin, 2020). It should be noted that there is also organizational innovation, which involves embracing work processes, technical advancements, and technological innovations (Chlebowski, 2020). Knowledge, the ability to learn by adapting to a new environment, and innovation are commonly considered prerequisites for the functioning and development of both individuals, organizations, local communities, regions, and entire countries globally.

Innovation is a prerequisite since innovative companies have the ability to predict and adapt constantly to a wide range of crises (Kuckertz, Brändle et al., 2020). This refers to broadly understood innovations introduced in organizations engaged in economic activities. Such

innovations include new technologies, processes, and business models aimed at enhancing efficiency and adaptability.

The use of videoconferencing technologies surged during the pandemic crisis, and ZOOM™ evolved from a little-known brand into a product recognized in many countries. Digital technologies help reduce social distance, yet nothing demonstrates that virtual contacts can replace face-to-face encounters or physical contact between people. Research shows that customers are becoming fatigued with ZOOM™, which may be attributable to challenges involved in using this virtual communication technology. Communication via video tools (compared to face-to-face contact) requires focusing on the faces presented on the screen, and it lacks feedback from noticing and interpreting non-verbal elements (Kirk, Rifkin, 2020). Additional research was conducted to examine the strengths and weaknesses of the Zoom application, its role within the community, and its new uses. Another analysis was carried out showing how a company can retain its customers and sustain its growth rate once the crisis subsides (Kominers, Gonzalez, 2020).

Even though face masks have been relatively common in China, they were rarely used in Western cultures before the COVID-19 pandemic. Yet, with the advent of the pandemic, all kinds of face coverings, designed to protect both the wearer and others, became standard. At the same time, many consumers have started treating textile masks as fashion accessories, adorning them or making them from special fabrics in matching patterns or colours (Kirk, Rifkin, 2020). A good example of this innovation is a “trikini”, which is a bikini with a third textile part added whose function is to cover the face (thus replacing the traditional face mask). In other words, a trikini is a three-piece bathing suit.

There is a negative perception of the pandemic situation; yet, paradoxically, it may bring positive aspects to businesses and create new opportunities. The situation promotes learning to cope with new circumstances and fosters innovation (Tan, 2020). The pandemic crisis has caused disruptions in daily life and livelihoods worldwide, but human ingenuity and resilience are manifested in the form of innovation (Sharma et al., 2022).

The new circumstances make people aware of the need to promote sustainable business (Mention, Ferreira, Torkkeli, 2020). L. Boone, the chief OECD economist, noted (2020) that governments should support sustainable development policies. He said, “The economic and social prospects for the approaching decade depend on the policies we implement today. Rebuilding the economy needs an additional drive in the form of global cooperation. Governments must seize this opportunity to create a more just and sustainable development. Building prosperity is the consequence of dialogue and cooperation at the level of states and globally, through mutual trust”.

Despite the fact that the foregoing presents the situation in developed countries, it must not forget about the famine caused by the COVID-19 pandemic, which could lead to global starvation, particularly in light of the growing numbers of people in need of food across Europe (Cattivelli, Rusciano, 2020). D. Beasley, the Head of the World Food Programme (2020),

presented the results of an analysis during a session of the UN Security Council. The results show that extreme starvation could affect 265 million people worldwide. In 2020, this number grew by 130 million compared to the figure from the previous year. He stressed the fact that the world is “on the verge of a starvation pandemic”. As noted, the pandemic crisis has led to widespread food insecurity, particularly in low-income regions, which has further deepened inequalities. This has made it increasingly difficult for many to access food that would meet their needs.

5. Conclusions

Having considered the fact that the world has not experienced a pandemic of such magnitude for over a century, little research has explained the emerging situation and the effects taking place in both social and economic, as well as political and economic spheres. There is no research available on this subject, and the publications that urgently came out in the studied years are still open to discussion. A new crisis situation, not just in the health sphere, but also in social, political, and economic aspects, has not yet been fully documented by scientific sources. Those publications that have already been printed provide just some insights into the state that has emerged.

The results of the research present observations based on practice, providing some explanation of the current situation of companies and forecasting the outcomes for the future. The analysis provided by this article may partially fill the gaps in the literature within this area. It also allows for answering the posed questions while supporting the hypothesis that economic innovations play a significant role in the pandemic crisis, both from a social and economic perspective.

The results highlight the necessity of building enterprise resilience to crises through investments in innovative technologies and business models. These findings can assist policymakers in designing effective support mechanisms for businesses in crisis situations. Further research may focus on a detailed assessment of sectoral and regional differences in innovation creation during crises.

Most likely, new pandemics will become a threat in the future. Therefore, it is important to remember that innovation allows us to cope with crisis situations. Moreover, innovation enables the shaping of future enterprises. In such extreme circumstances, research on corporate innovation, which allows companies to survive and develop, is crucial. Knowledge of how to cope with such situations is essential for political and business decision-makers. The article has raised issues that substantiate further research.

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