
Technological Restructuring During COVID-19 Pandemic

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Abstract:

Purpose: The main research problem of this paper is to present the use of the restructuring process as a way of improving the situations of enterprises on the market with the use of technology. The paper's primary goal is to investigate whether or not companies were prepared for the COVID-19 crisis in terms of technology. The auxiliary aim of the paper is to indicate the directions of any changes that enterprises take when under the influence of a turbulent environment and, with the use of a restructuring process, help control crises. The results of surveys and numerous analyses or reports that have been prepared before and during such crises as the Black Swan and Gray Rhinoceros will be used in the search for answers to these goals.

Design/Methodology/Approach: The article will use the following research methods to fully present the issues of companies' struggling with a crisis: a literature analysis, questionnaire research, a review of reports, and comments.

Findings: As an outcome of the paper, it shall be indicated that any problems related to the impact of the COVID-19 crisis can be solved by restructuring through the use of digital technology.

Practical Implications: The use of these solutions enables better communication in B2B and B2C, which coincides with the Fourth Industrial Revolution based on the systematic connection of all entities by technical means.

Originality/Value: The paper is an initial effort with a high level of novelty based on current economic situation cases.

Keywords: Restructuring, technology, pandemic COVID-19.

JEL classification: D22, D81, L21, O33.

Paper Type: Research paper.

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1. Introduction

In Poland, the Minister of Health announced the state of the epidemic in March 2020 (Journal of Laws of 2020, Item 491), which means that Poland and the whole world were overwhelmed by the SARS-CoV-2 virus dictated the conditions of functioning. It is believed that, for the first time in history, a pandemic reached everywhere in the world in such a short amount of time. So far, the spread of viruses has been quickly controlled so that it may not endanger human life (www.businessinsider.com.pl, 19/10/2020), although they have had significant adverse effects on our population in the past, such as the Spanish flu epidemic (where the number of victims reached upwards of 100 million people) (Kostyńska, 2020). The current state of affairs has led to a crisis in every country around the world. Decisions were made to protect citizens first, but they also tried to protect the economy. Unfortunately, it was not possible to avoid losses, both in the population and in the financial world. The world is struggling with the crisis that the SARS-CoV-2 virus epidemic has caused; at this point, it is worth asking a research question: what conclusions can (or should) be drawn from this unusual crisis?

When looking for an answer to the question above, it can be noticed that each crisis stimulates detailed research when analyzing the professional literature in economics. This has resulted in a large number of scientific papers. Current events are also such an impulse for scientists, researchers, analysts, and specialists in their research areas to conduct in-depth research due to the changes that were caused by the COVID-19 virus. Usually, each event that causes turbulence in the economy is thoroughly investigated so that the conclusions that result from observations, research, or analyses will allow us to avoid the severe consequences of crises in the future. One may be tempted to say that this is what economists are expected to do - ready-made solutions. Does the conducted research and the conclusions drawn from it protect economies against unusual crises?

At this point, it is worth presenting a slightly different approach that was authored by Professor Nassim Nicholas Taleb (Taleb, 2020). This scholar - a Lebanese-American mathematician, economist, and stock market player - adopted a controversial view on contemporary research due to emerging crises. He believes that too much attention is focused on understanding the ordinary and that attention should be paid to the unpredictable and unexpected phenomena of the present world. The professor is the author of a book on the Black Swan phenomenon and an antidote to this phenomenon - *Antykruchosc* (Taleb, 2013). In his book, he indicates the direction that enterprises should follow to strengthen themselves against unconventional events.

Despite the differences in science, it is worth looking at how entrepreneurs deal with unplanned turning points in the economy in their approaches to crises. One of the processes that help them survive difficult times is the restructuring process (Grajda, 2021; Green and Gleń, 2020; Końska, 2021; Elavarasana and Pugazhendh, 2020).

Thus, the main research problem of the article is to present the use of the restructuring process as a way of improving the situations of enterprises on the market with the use of technology. The article will use the following research methods to fully present companies' coping with a crisis, a literature analysis, questionnaire research, a review of reports, and comments.

2. Literature Review

The English origin of the word "restructuring" has been recognized in the research literature (Borowiecki and Jaki, 2015; Babcock and Gove (ed.), 1993; Gąsior, 2016), it means the process of rebuilding a structure (Grynchysyn, 2015). Professor Górka (Górka, 2011) defined the restructuring of enterprises as the modernization of their structures and not a return to their old structures (as the prefix "re" would suggest). In his opinion, this modernization of enterprise structures can occur through the following: a) improving techniques and technologies as well as production organization; b) adapting products and services to changing market conditions; c) improving financial management; d) rationalizing labor and employment resources; e) reducing the emission of environmental pollutants to achieve better financial results; and (f) increasing competitiveness.

When considering the restructuring process in the context of solving problems that arise in a turbulent environment, the definition of S.C. Myers (Myers, 1977) fits well: "restructuring is a strategic process that leads to the maximization of the value of an enterprise using actions aimed at improving the condition of a weak enterprise or increasing the value of a strong enterprise." It is worth emphasizing that restructuring is an essential process in Poland (where it began to develop in the 1990s). The change of the political system forced the economy to change using, among other things, the restructuring process. Due to numerous examples of restructuring over the years, many papers on this subject were also created in which original definitions of restructuring were presented (Jasiński, 1992; Kowalczyk-Jakubowska and Malewicz, 1992; Chomański, 1994; Pełka, 1994; Stabryła, 1995; Sapijaszka, 1996; Durlik, 1998; Nalepka, 1998; Gabrusewicz, 1999; Belka and Pietrewicz, 2001; Malara, 2001; Suszyński, 2003; Lachiewicz and Zakrzewska-Bielawska, 2005).

The implementation of restructuring must be considered a permanent process during globalization (Borowiecki and Jaki, 2015). Permanent restructuring is characterized as an effective and creative instrument of significant change in an enterprise; thanks to this, the entity will be successful (Borowiecki and Jaki, 2010). Let us call it "continuity" in implementing restructuring, it responds to the current environment (which should be considered highly turbulent). Moreover, according to N. Taleb, the world has become more complicated since the onset of the Industrial Revolution. Ordinary events that are analyzed, characterized, and attempted to be predicted based on press reports have ceased to occur according to the previous logic. N. Taleb defined the combination of low predictability and significant effects on the

surrounding reality as “Black Swans” (Taleb, 2020: 9).

The term “Black Swan” can be described during the financial crisis of 2007-09, for example. According to the creator of this term, the crisis caused by the spread of the SARS-CoV-2 virus is not this phenomenon. He believes that disease epidemics have occurred in the past and will continue to occur in the future; thus, they are events that humanity should expect and be prepared for (www.businessinsider.com.pl, 03/05/2021). Instead, the current epidemic should be considered a “Gray Rhinoceros,” i.e., an event with an intense impact on the current situation yet definitely predictable (Jarosik, 2021).

3. Research Methodology

The main research problem is to present the use of the restructuring process as a way of improving the situations of enterprises on the market with the use of technology.

The main goal of the paper is to determine whether or not companies were prepared for the COVID-19 crisis in terms of technology.

The auxiliary aim of the paper is to indicate the direction of any changes that enterprises take under the influence of a turbulent environment (and with the use of the restructuring process) to control crises. The results of surveys and the numerous results of analyses or reports obtained as a result of actions during or after the types above of crises (Black Swans and Gray Rhinoceroses) will be used to search for answers to these goals.

First, the partial results of the survey conducted after the financial crisis of 2007-09 (a Black Swan) will be presented-the questionnaire research concerned decision-making by enterprises to implement the restructuring process in a turbulent environment. The research inquired about seven groups of factors that influence economic entities to start the restructuring process. These include economic aspects, political and legal factors, and political and legal aspects on the international market and socio-cultural, technological, international, and ecological aspects.

The research was carried out among a group of prominent business entities in 2014. This perspective will allow for a preliminary assessment of which determinants were of the most significant importance for an enterprise in making such a decision during the discussed period and whether the enterprise was prepared for technological factors - especially for new challenges and mobile technologies that were also of great importance during the COVID-19 pandemic. The entities that participated in the study belonged to four primary sectors of the economy (manufacturing, energy production and supply, water supply, and mining). Companies that operated in industrial processing constituted the vast majority of all respondents - more than 88% of the responses.

Referring to the purpose of this paper, a selected group of responses will be presented regarding the assessment of the determinants that influenced the decision to restructure, which will allow us to indicate the directions of the changes (Table 1).

Table 1. *Assessment of impact of determinants on enterprises undertaking restructuring processes within next five years*

Determinants:	Type of restructuring			Total (average value)
	Financial restructuring	Strategic reorientation	Improvement of organizational excellence	
Economic factors	6.45	4.2	2.53	4.39
Political and legal	6.5	5.17	3.8	5.16
Political and legal aspects on international market	6.5	4.1	3.03	4.54
Socio-cultural	6.2	3.52	3.12	4.28
Technological	6.44	5.76	1.8	4.67
International	6.33	3.57	2.17	4.02
Ecological aspects	6.11	4.8	2.82	4.58

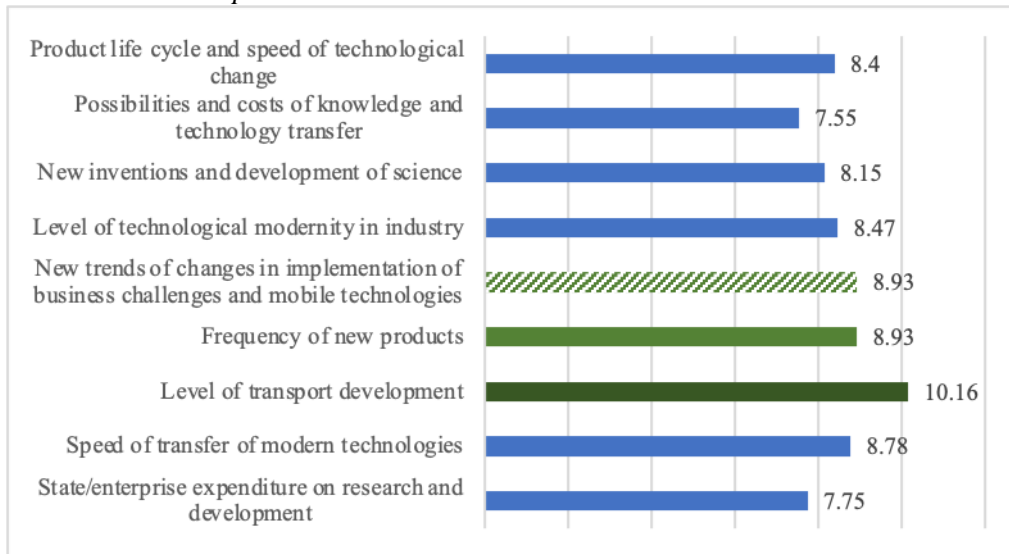
Source: *Own study based on nationwide survey conducted in 2014.*

The data in Table 1 indicates different answers in assessing the factors, with the highest values clearly being the determinants of financial restructuring and the lowest being the improvement of organizational excellence. The most important factors for individual restructuring are as follows:

- Financial restructuring - political and legal; political and legal aspects on the international market;
- Strategic reorientation - technological factors;
- Improving organizational excellence - political and legal aspects.

By selecting only partial information from the survey, attention will be focused on technological factors. In this area, the determinants that characterize technological aspects were assessed, such as state/enterprise expenditures on research and development, the speed of the transfer of modern technologies, the level of transport development, the frequency of new products, new trends of changes in the implementation of business challenges and mobile technologies, the level of technological modernity in industry, new inventions and the development of science, the possibilities and costs of knowledge and technology transfer, and product life cycles and the speed of technological change. The assessment by the representatives of the economic operators is shown in Figure 1.

Figure 1. Assessment of technology-related factors that influenced decision to restructure in enterprises



Source: Own study based on nationwide survey conducted in 2014.

The data presented in Figure 1 show that of all the factors mentioned above, the most critical factors for the restructuring processes after the financial crisis are level of transport development (the highest impact assessment) (more in Gąsior, 2016), new trends of changes in the implementation of business challenges, mobile technologies, as well as the frequency of new products.

Of the results achieved, great importance has the factor - considering the current crisis, which is the COVID-19 pandemic (Gray Rhinoceros) -related to new trends of changes in the implementation of business challenges and mobile technologies. Enterprises took this factor into account as influencing their restructuring decisions. In the context of the current challenges for enterprises caused by the COVID-19 pandemic and the changes caused by the closure of economies and societies, it should be noted that the entities also took the technological factor into account in their current activities protecting business continuity. By analyzing this determinant, one can find many similarities between the current socio-economic situation and the technological aspects that caused restructuring. The correspondences are presented as follows:

- new trends related to the need for enterprises to switch to larger virtual activities (Minevich, 2020; Matulewicz, 2020);
- the emergence of new challenges in virtually every aspect of the functioning of enterprises - regarding the new realities of running a business (Oblój, 2021);
- the increasing level of digitization as a way of coping with the effects of the pandemic (COVID drives digitization, 2021);

- the increasing importance of mobile technologies, in particular visible in the sphere of communication, as well as remote work (virtualization of office work in a wide range), group work, training, etc., (Rajavel, 2021);
- growing share of virtual sales with the use of mobile technologies to meet the needs of consumers (submitting offers, sales, communication, product delivery, etc.) (Ćwiertnia, 2020);
- preparation for the next phase of globalization - global supply channels, building local wholesalers, close connection with delivery points, etc. (Girod, 2020; Marchenko *et al.*, 2021).

As a result of the pandemic, business and social life have changed significantly through digital technologies that have become the norm. As previously mentioned, the current COVID-19 pandemic has hit most sectors of the global economy. It was an impulse for digital restructuring that resulted from conducting transactions in the online environment. Such changes toward a digital economy of actors were evident before the pandemic but were accelerated during the pandemic due to the need to do business online (Jamal and Budke, 2020).

As a result, companies had to undertake changes in their ways of operating in the short term to survive this difficult time; these included innovation (especially in terms of digital opportunities). The intensification of these business activities sometimes helped them survive and helped stimulate growth (even under unfavorable economic conditions) (Korsgaard *et al.*, 2020). During this crisis, the digitally enhanced restructuring of operations allowed them to improve their products and services and develop new technologies. This is a source of dynamism and ensures that competitiveness is maintained (Ratten and Usmanij, 2020).

Therefore, the problems related to the impact of the COVID-19 crisis can be solved by restructuring through the use of digital technology. The use of these solutions enables better communication in B2B and B2C spheres, which coincide with the Fourth Industrial Revolution based on the systematic connection of all entities by technical means. By combining the necessary changes with innovations related to digital transformation, entrepreneurs also transformed their awareness of how to conduct business in the Internet environment.

4. Conclusions

Each industry sector in the economy has its way of dealing with a crisis (including different actions). Most companies are trying to restructure through digital transformation, focusing on leveraging the available digital tools and platforms. Shifting the way products and services are offered to a digital business model is just how business restructuring is manifested. This includes digital communication, marketing, day-to-day operations, decision-making, and people's behavior. It also enables companies to disseminate information in a new way in an online format. Such changes allow for the flexibility of companies to adapt and be proactive during

times of crisis. It should also be expected that these activities will be the basis for the further modernization of the structures of enterprises in the post-COVID world.

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