



Impact of COVID-19 on selected industries

edited by

Ewa Bojar

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MONOGRAPHIE

Impact of Covid-19 on selected industries

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18. COLLABORATIVE INNOVATION FOR SUSTAINABLE DEVELOPMENT INCORPORATING THE ENVIRONMENTAL PERSPECTIVE IN INNOVATION PROCESSES

Collaborative innovation for socioeconomic development

Today technology advances at a frenetic pace, the generation of new useful knowledge that can be used in the development of innovations is a key competence for the economic growth and competitiveness of companies, regardless of their location. The process of research, development, and commercialization, which translates into the capacity to create technological and scientific advances of various kinds and to commercialize them, is often the result of coordination and cooperation between various research entities, industrialists, and government agencies. In this regard, Etzkowitz and Leydesdorff developed the „Triple Helix” model, with which they attempt to analyze the interactions that take place between universities (generators of knowledge from education and research), companies that produce and market goods and services, and the government, which regulates and encourages the practices of economic agents. This vision incorporates some characteristics of developed countries that are not present in certain underdeveloped regions, such as the existence of intellectual property rights, an adequate legislative framework, the presence of market economies or social market economies, and the conviction that the development of knowledge is positively related to economic development. Etzkowitz and Klofsten proposed that the interaction between industry, universities and government could be a key factor for the economic development of territories, and that its application makes it possible to analyze innovation patterns, using the nation as the unit of analysis. The Triple Helix model is thus proposed as the dynamics derived from an adequate degree of interaction between university, industry, and government, which are three fundamental pillars of the economy. The cooperation between the established „helixes” favors the generation of synergies and the improvement of business results. The triple helix develops in response to the new demands of market demand, which pressures companies to

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continuously increase their competitiveness, being necessary, in most cases, to boost their innovative performance. The collaboration between industry and academia in an appropriate legislative and regulatory context allows improving the innovative performance of companies and favors the socioeconomic development of regions. For their part, Audretsch et al. determine that collaborative networks contribute to increasing the competitiveness of countries and regions by pooling valuable resources and capabilities. The triple helix model is open to new proposals that expand the number of helixes involved in the innovation process, representing a potential source of valuable ideas, information, and knowledge. Due to this, a fourth helix has been developed, representing potential consumers of products and services offered by companies, which is a key stakeholder in the innovation process. According to Arnkil, in the quadruple helix model the user acquires a central role in the innovation process. Thus, all those features belonging to the community, such as culture, art, values, as well as mass media, are implicitly integrated into the innovation process. A proper execution of the quadruple helix model allows establishing a fluid communication between companies and their stakeholders at the regional level in terms of innovation, and thus favoring the transfer of valuable knowledge. Through the application of the quadruple helix model, a key connection is established between companies and their main stakeholders at the regional level, through which to obtain important feedback regarding potential customer needs, which can drive innovation projects suited to demand requirements. This form of cooperation can foster the sustainable economic development of regions, as this is one objective shared by the four propellers of the model.

Quintuple helix: in search of a balance between socioeconomic development and environmental sustainability

The quintuple helix model incorporates the environmental perspective in innovation processes. Sustainable development is a challenge that must be faced jointly by all agents in society. In recent decades, there has been a significant increase in the need to develop new formulas to increase the sustainability of human actions, reducing their impact on the environment. At the same time, civil society has become aware of the environmental impact of maintaining the current lifestyle and development and, consequently, of the need to correct this trend. This has led to an increase in consumer demand from companies for new products, resources, and innovative sustainable solutions, as well as for actions to mitigate the negative externalities they produce in the environment.

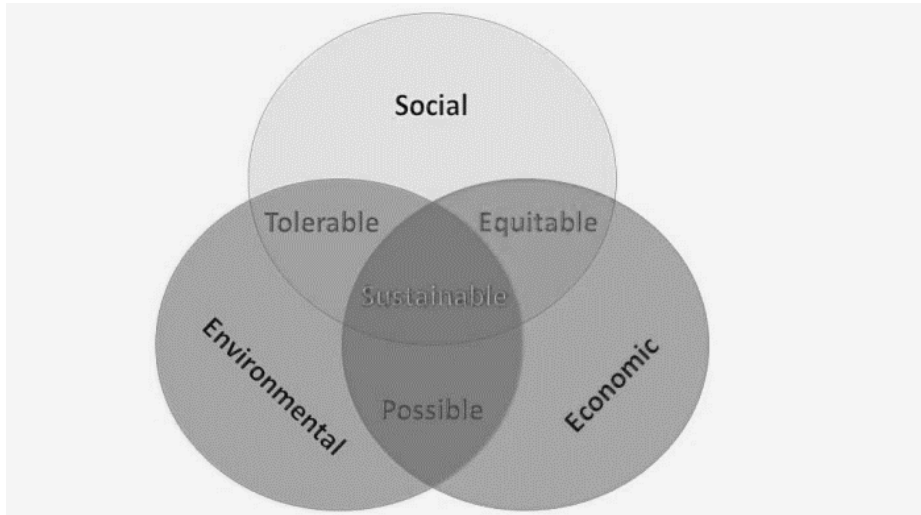


Figure 18.1. Quintuple helix model

Source: Own elaboration based on Theis and Tomkin.

The fifth helix developed in this model represents the need to incorporate in all phases of the innovation process the new requirements of the demand and the environment in environmental matters, with the aim of developing ecological alternatives that allow boosting economic development with a minimum impact on the natural environment. According to Carayannis and Campbell, the five-helix model is simultaneously inter- and transdisciplinary. Interdisciplinary since it takes into consideration both the needs of the natural environment (the natural sciences), as well as those of society, economics and politics (social sciences). It is transdisciplinary in that it allows the development of an overall vision of needs, based on the analysis carried out in each of the areas taken into consideration, and thus provides decision-makers with a holistic perspective from which to develop solutions in line with the real needs of the socioeconomic, cultural, and natural environment. It should be noted that to develop business models that reduce the environmental footprint, in many cases it is not necessary to apply the latest technologies or develop knowledge-intensive products or services. A good example of this is the work carried out by a Kenyan conservation group called „Ocean Sole” which, using plastic flip-flops discarded by their owners as raw material, designs and builds works of art. Through this initiative, biologist Julie Church has managed to reduce unemployment and pollution in the region (Kiunga National Marine Reserve). The group currently employs more than 90 workers in Kenya and has managed to recycle more than 1,000 tons of discarded flip-flops [<https://oceansoleafrica.com/>]. Entrepreneurship that is partially or totally motivated by social and environmental (as well as economic) purposes can favor the sustainable economic development of regions, as well as

reduce the ecological impact generated by current lifestyles and economic development. In this regard, it can be stated that environmental sustainability is one of the main drivers of today's business environment. According to these researchers, the three pillars on which sustainable development rests are social progress, economic growth, and environmental protection. One of the main consequences of this idea is that research in the field of sustainability should essentially emphasize three areas of knowledge: environmental, economic, and social. Thus, to favor sustainable development, their effective integration is necessary. In addition, there are other far-reaching initiatives developed by international entities, to which numerous governmental bodies are added. This is the case of the „2030 Agenda for Sustainable Development”, adopted by the United Nations General Assembly. This Agenda includes 17 „Sustainable Development Goals” and 169 targets that cover the areas of the quintuple helix (economic, social, and environmental) in an integrated manner, and which set 2030 as the date for their achievement. Although it is likely that many of them will not be achieved within the established timeframe, their high degree of acceptance (the agreement has been signed by 193 countries) favors a transition towards new models of sustainable development [<https://sdgs.un.org/2030agenda>].

Conclusions

Due to the nature of companies, the actions they take must ultimately be linked to maximizing their profits. It would be naïve to think that they will carry out actions altruistically, with no other purpose than to promote sustainable development. However, this situation should not be a problem if it is possible to increase the attractiveness of sustainability for companies in both economic and strategic terms. To this end, it is crucial to raise society's awareness of the importance of reducing the environmental impact of human activity, since, in this way, consumers' appreciation of companies would be conditioned to a large extent by their actions in favor of environmental sustainability. In this respect, companies should include them as a strategic element of success, which would allow them to differentiate themselves from the competition and increase their profit margin and/or market share. In short, social awareness of the importance of reducing the environmental impact of human activity is a key factor in driving change towards a new model of sustainable socioeconomic development. Consumer appreciation of business action in the environmental sphere, and its link with consumption decisions, would place sustainability at the pinnacle of business strategy, influencing all decisions and actions carried out in the course of business. In this respect, the new information and communication technologies can favor consumer awareness of the actions carried out by companies in this area, as well

as product traceability throughout the company's value chain and even throughout the entire value system of an industry or sector.

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Summary

20. In recent decades, the world has experienced socioeconomic development unprecedented in history. However, this development model, although it has allowed companies to create value, is having a negative impact on the environment. It is therefore necessary to promote a change of perspective towards new, more sustainable development models, so that the artificial environment can coexist with the natural environment, allowing its survival and development over time. To achieve this transition, the involvement of the whole society is necessary. In this respect, innovation is postulated as a fundamental tool, as well as the pooling of resources and capabilities by different agents and individuals, in favor of the successful achievement of the innovation processes undertaken. It is concluded that social awareness is essential to promote a change of paradigm, which allows laying the foundations for a new model of sustainable socioeconomic development.

Keywords: Innovation, Cooperation, Sustainability, Development, Awareness.