The 4 Helix Model and Tourism Social Entrepreneurships

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The COVID-19 crisis has promoted innovation, support, and incentives among the four helixes, in which the STEs have benefited. As conclusions, the four helix model is functional to face the adversities of COVID-19 as long as there is planning within the entrepreneurships and the link with said model helix participants.

social tourism entrepreneurships four helix model COVID-19

1. Quadruple-Helix Model

In the environment or field of action of the ventures there are some stakeholders that have a strong influence on the results they obtain, which is explained in a basic way in the triple helix model proposed by Etzkowitz and Leydesdorff [1], in which companies, universities and governments are considered as each helix that develops internally, with the capacity to exchange knowledge, products and services [2]. Sánchez [3] indicates that, in addition to knowledge transfer, the propellers of the model are linked through alliances, support and investment, as well as taxes and incentives, which are some of the core elements of this study, as shown in **Figure 1**.

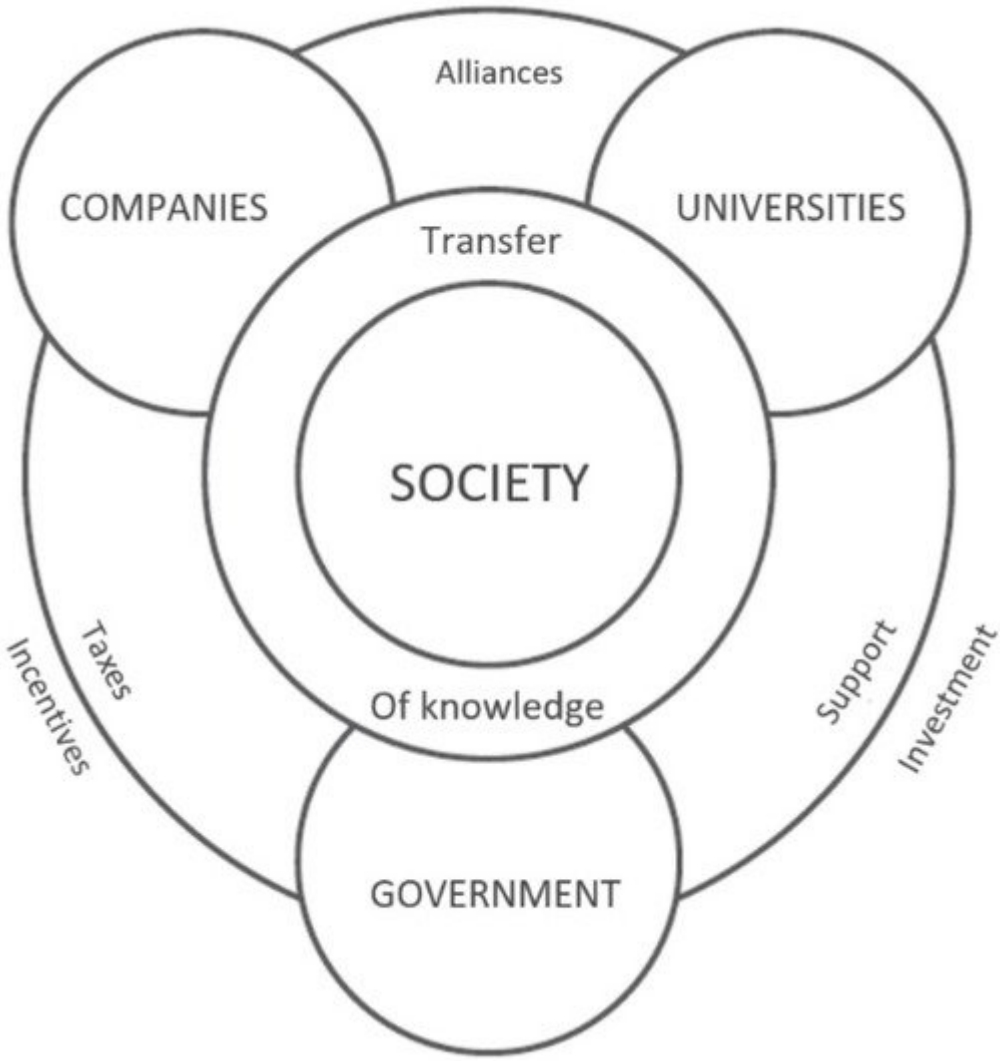

Figure 1. The triple helix model. Source: [3].

This triple helix model, driven by the need for innovation, is associated with academic entrepreneurship, since it defines a new dimension of entrepreneurship for universities, in which these and other knowledge-producing organizations play a decisive role [4][5].

The triple helix theory emphasizes the role played by universities, as it considers a proactive participation in open networks and in the generation of innovation that integrates government and industry, which has changed in contrast to the past in which it was limited only to creating knowledge infrastructure and instruments [1][6].

In order to better study development and innovation, the triple helix model evolves by adding a fourth helix representing society, combining among this group of participants the generation of policies, co-creation of knowledge and value, applicable to all types of economies [7][8][9][10] where the core elements of alliances, support and investment, taxes and incentives are maintained, and society moves from a central point to a position at a balanced level with the other helixes. At this point, it is possible to ask, what is the relationship between the four helix model with tourism and the STEs? A particular and novel branch of tourism called permatourism is

responsible for analyzing the relationship between the actors of the tourism dynamics, both formal and informal, through the creation and promotion of meaningful and functional relationships between them [11][12], and these relationships can be seen from the perspective of the sustainability and the model of the four helixes through the central elements described above. This research is also related to sustainable tourism, since it deals with an ejido that migrates from natural resource depredation activities to their preservation, which is part of its tourism offer that generates economic benefits for the community [13][14].

1.1. Companies

In order to identify the role played by companies in the quadruple helix model, it should be noted that they exist in different sizes, and their role with society, government and universities is manifested accordingly. Large companies traditionally rely significantly on internal R&D to create new products and services [15][16], therefore, they must constantly collect information from society to generate business knowledge.

This flow of knowledge in the company includes consumer co-creation, information networking, university research grants, contracting with external R&D service providers, IP licensing and crowdsourcing, all leading to innovation, which refers to knowledge flowing through the company through sales, participation in public standardization, corporate business incubation and entrepreneurship, intellectual property licensing, patent sales, and spin-offs [9], elements in which the other helixes of the model can participate through alliances, cooperation and joint ventures [17].

This shows the dependence of large companies on innovation and knowledge generation, so they seek to facilitate these processes, which is not easy for SMEs that have limited resources that can generate difficulties in exchanging external resources [18]. However, alliances, cooperation and networking are common phenomena in SME's, which facilitate their access to downstream markets in the technological field [19]. In general, whether in large companies or in SME's, the literature agrees that establishing alliances and cooperation with the actors of the propellers helps companies to obtain benefits and develop their substantive functions.

1.2. Government

Through government involvement, collaboration between companies can result in knowledge, products and economic sustainability, because in the past, government functions were limited to regulation, control and standardization, whereas today these functions are shifting to facilitating collaboration between universities, industry and society [9].

The role that governments assume under a joint system with universities, companies and society is in principle to provide the infrastructure that allows the interaction of the different participants for joint innovation, and as an example of this are the intellectual property rights and transactions to share technology [20]. Second, governments stimulate demand and encourage the creation of new markets by building marketing channels, industrial clusters, incubators and strategic alliances with high-tech companies and emerging industries, as well as influencing knowledge through fiscal policies, science and technology policies and capital markets [9][20].

1.3. Universities

Some studies [21][10] indicate that collaboration between entrepreneurship and co-working fosters and accelerates innovation, bringing mutual benefits to the participating members, and studying these collaborative relationships with the business environment is essential for educational institutions to organize extracurricular learning activities, valuable for students and teachers. The connection with the needs and expectations of the companies, given that it is the supply connection of human capital developed according to the standards of their labor sector, as well as entrepreneurial education and practice can be incentives in the adoption of cultural changes necessary to create new sustainable enterprises.

The traditional contributions that universities make are those of education and fundamental research, knowledge transfer, research and development, according to what society needs [22]. Typical channels of knowledge transfer include publications, conferences and meetings, research, graduate student co-supervisions, consulting, collaborative research [23], patent development, informal communication [24], staff mobility and training [25].

Other authors mention that universities can participate in the role of intermediaries, to bring knowledge producers and users closer together, which generates relationships of trust and commitment [26][27]. Other exploratory studies indicate that a new role for universities is that of trusted intermediaries or centers of open innovation [23]. In addition, universities participate in the success of ventures through the transfer of know-how, business education, and especially assistance to entrepreneurs [28].

Universities benefit from the four helix model and benefit other participants when they manage to consolidate entrepreneurial education, which does not only refer to specific contents within the study programs or the way in which the content is offered; this concept implies a broader context in which the development and accumulation of skills for life and the way in which these contribute to the quality of life must be taken into account, generating the human and social capital necessary for the transfer of knowledge to take place, with collaboration between the helixes as a key factor [29], as mentioned above, in the study site there are some documented approaches of the university to entrepreneurship to solve problems and address areas of opportunity, which highlights the linkage work required of this type of institutions today [30][31][32][33][34][35][36][37].

1.4. Society

One of the ways of looking at the participation of society and consumers in society in innovation is through crowdsourcing [9]. For the public sector, governments can use online platforms to gather citizen input and ideas [38], and this technique can be used by companies to feed the information needs of their projects from networks of people through open calls for proposals [39], contributing to decision making related to product development or consumer outreach activities [40].

This indicates that society as seen from the four helix model can be found in consumers, whose role is no longer limited only to purchasing, but who take part in product development [41][42] by providing the necessary information for its creation and development.

On the other hand, society manifests itself in the quadruple helix model as civil society, which includes the media, users, agencies and culture, all as means to drive the innovation process [43]. This model from a sustainability approach applied in the collaboration between industries, governments, universities and society can be used for the design of strategies to achieve a green economy [44]. In the study region, the possibilities in terms of tourism are diverse, since this well-planned activity benefits society, due to the fact that new and differentiated tourism products are possible, where intelligent tourism can be developed, in such a way as to promote development through collaborative participation for greater equity and sustainability [45].

2. Aspects of Sustainability

Nowadays, sustainability has become a critical issue due to a worldwide concern for the impact of companies on natural resources, the environment and the society that is affected by these repercussions, where three main axes can be appreciated: economic, environmental and social [46].

From this arises a new entrepreneurial perspective in which sustainability and the four helix model can generate sustainable ventures for the academic sector [47], as each participant has multiple and simultaneous roles. Therefore, the need for innovation that gives rise to the quadruple helix model implies that the public sector, academia, industry and the social sector collaborate to generate structural changes beyond those that can be achieved individually [10].

Both the field of sustainability and its factors and the four helix model are closely related aspects, with a limited number of practical research that manages to combine both models for the study of the conditions in which enterprises operate, which is of utmost importance in a crisis scenario, so that the flexible, dynamic and open collaboration between the helixes in a sustainable way brings new possibilities in terms of social needs, culture creation, political support, green economy, responsibility and technological advancement [9].

For the present research, the five dimensions of sustainability at the operational level proposed by [48] are considered, as follows:

- Social: it aims at improving the quality of life, including participation in decision-making processes, and activities related to the assistance to people.
- Economic: through growth with equity and efficiency, involving activities that generate economic values or monetary repercussions.
- Ecological: in terms of ecosystem conservation and integrity, including activities and efforts to preserve and restore the environment.
- Cultural: out of respect for diversity, as well as the preservation and promotion of traditions, folklore and gastronomy.

- Territorial: the search for spatial balance in development, and actions that have an impact on the use, control and exploitation of space and infrastructure.

As observed above, sustainability applied to the participants of the model of the four helixes allows explaining some of its functions at a theoretical level, which may be different when it is landed in the practical field, affecting the STEs, therefore, again the question that guides the present study is posed as follows: What are the contributions of governments, businesses, universities and society from the approach of the model of the four helixes and sustainability to the STE in Puerto Vallarta and Bahía de Banderas during COVID-19? The context of application of the study and the methodology by which information was collected from representatives of each of the helixes of the quadruple helix model is explained below.

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