



ISSN: 2230-9926

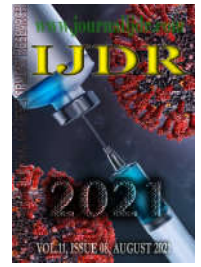
Available online at <http://www.journalijdr.com>

**IJDR**

*International Journal of Development Research*

Vol. 11, Issue, 08, pp. 49376-49380, August, 2021

<https://doi.org/10.37118/ijdr.22524.08.2021>



RESEARCH ARTICLE

OPEN ACCESS

## THE USE OF VOUCHER SCHEMES TO IMPLEMENT OPEN INNOVATION STRATEGIES: THE 4HELIX+ CASE STUDY

\*Fernando C. Gaspar

Santarém, Portugal

### ARTICLE INFO

#### Article History:

Received 28<sup>th</sup> May, 2021  
Received in revised form  
19<sup>th</sup> June, 2021  
Accepted 11<sup>th</sup> July, 2021  
Published online 26<sup>th</sup> August, 2021

#### Key Words:

Innovation, 4 helix innovation,  
Pilot project, Open innovation.

\*Corresponding author:  
Fernando C. Gaspar

### ABSTRACT

In a world where economic blocks dispute the supremacy in innovation, policies that prove to be effective in fostering innovation in a sector and/or region can be extremely valuable. Innovation has been generally seen to be at the heart of economic development and growth. It has also been at the heart of entrepreneurial activity. The garage-based entrepreneur who turns inventions into marketable innovations is a major part of the entrepreneurial dream/myth that has overcome pop culture and business media. However the very nature of how companies and even societies produce innovation has been changing away from the “Doc Emmett Brown” stereotype (in the Back to the Future movies) and to an open innovation environment where businesses find solutions to problems with the help of outside agents (Birkinshaw, Hamel, & Mol, 2008; Petzold, Landinez, & Baaken, 2019). The helices approach has been proposed in the literature (Elias G Carayannis *et al.*, 2016; Elias G Carayannis, Dc, & Campbell, 2009) and clearly supported by the European Union in the calls it opens to fund interterritorial cooperation projects. The Interreg Med 4helix+ is a pilot project that set out to prove the value of such a policy in the Blue Growth sector and it was designed to help 48 startups from 8 Mediterranean regions implement simple innovation projects with the help of actors from the other helices. It took place between 2018 and 2020 and included eight different pilot regions: Lisboa in Portugal, Seville and Barcelona in Spain, Marseille in France, Ancona in Italy, Tirana in Albania, Zadar in Croatia and Thessaloniki in Greece. In each of these regions, six 10 thousand-euro(€10k) vouchers were attributed to innovation projects in the Blue Growth sector, in a total of 48 vouchers and a €480.000 investment. These vouchers were attributed to projects submitted by partnerships of one Blue Growth SME and one Knowledge Provider (KP) from either the Cultural Creative Industry or from other research facilities. The 48 projects came from a wide range of subsectors and contracted very diverse list of services to implement innovative ideas. However, there was larger number of SMEs from the coastal and maritime tourism subsector and a larger number of KPs that delivered new product development services. The participating SMEs claimed to be facing important challenges in the areas of market research, new product development and web site and mobile development. On the other hand, they showed really high expectations about the vouchers in the early days of the process, even if SMEs with previous experiences with EU funds showed slightly lower expectations. In the end, all projects were completed, and the satisfaction of all participants was later analyzed. The results of this pilot project are then discussed on the grounds of how to best communicate and involve citizens in Cohesion Policy.

Copyright © 2021, Fernando C. Gaspar. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Fernando C. Gaspar, 2021. “The use of voucher schemes to implement open innovation strategies: the 4helix+ case study”, *International Journal of Development Research*, 11, (08), 49376-49380.

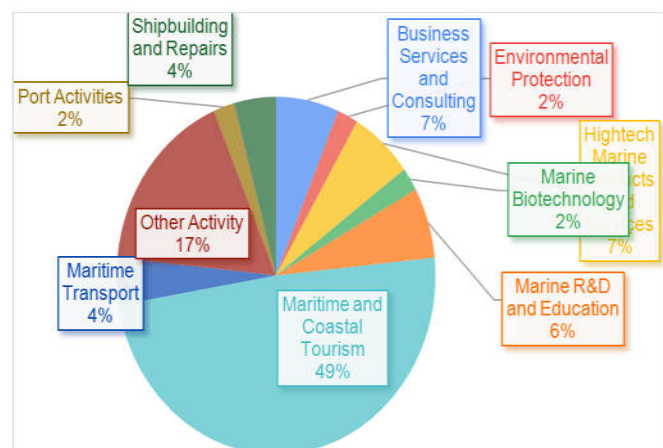
## INTRODUCTION

**4 helix open innovation strategies:** Innovation is a word multiple times published in the management literature, and it corresponds to companies’ wishes to either launch products and services the competition cannot match or to introduce management innovations that will allow them to be more competitive than their competitors (Birkinshaw *et al.*, 2008). For a long time, the image of innovation was the laboratory where great things were being secretly developed by one or a small group of scientists. Often that never resulted in saleable products or services. Hollywood immortalized the image of Doc Brown, the mad scientist in the Back to the Future movies as a symbol of that idea of innovation. Then came the idea of the “university-business” collaboration, that should

result in innovations the later would deliver to the market. There were some good examples of this collaboration, but in a reduced number. The Triple Helix Model was introduced in 1995 (Elias G Carayannis *et al.*, 2016) by adding to the equation another actor: the government, which should define a top-down approach to increment the interactions with the university and the industry, to produce innovation (Li, He, & Zhao, 2019). Later (E. G. Carayannis & Campbell, 2006) the Quadruple Helix Model was introduced, adding a bottom-up approach provided by the fourth actor: civil society, “media-based and culture-based public” (Elias G Carayannis *et al.*, 2009, p. 6). The interactions of the quadruple model were supposed to result in the production of knowledge and, from there, innovation. This meant an evolution from the “closed lab, lone (and mad) scientist” approach to strategies of open innovation, where businesses develop innovation with the involvement of knowledge producers

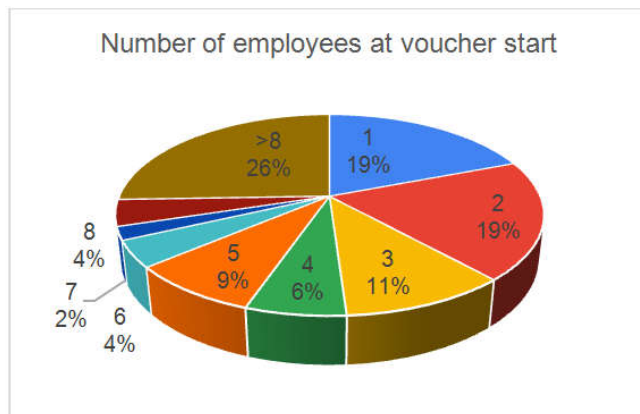
(universities), policy producers (government) and the potential users of the future innovation (civil society). This corresponds with the popular concept of open innovation (Chesbrough & Appleyard, 2007), where businesses with a problem to solve or an innovation idea to execute reach out to the society for help to solve the problem or execute the idea and after a selection process adopts the inputs received and develops it (generally with the participation of the selected ones) into a final solution. The creation of innovation ecosystems then becomes a strategic necessity for businesses, including the extra advantage of sharing the costs of knowledge production with the entire ecosystem, while upgrading the firm’s capabilities (Guo & Zheng, 2019; Lyu, He, Zhu, & Li, 2019; Mei, Zhang, & Chen, 2019). This open innovation concept may have started with large businesses involved but has since been demonstrated to work equally for SMEs (Bertello, Ferraris, De Bernardi, & Bertoldi, 2021; Kraus, Kailer, Dorfer, & Jones, 2020). The European Union and particularly the Committee of the Regions clearly adopted this 4 helix approach as it suited its S3 Regional development strategies and contributed to regional development (Simona Cavallini, Rossella Soldi, Julia Friedl, 2016; Švarc, Dabić, & Daim, 2020), in part because it reveals itself to be much more prone to create social innovation (Elias G. Carayannis, Grigoroudis, Stamati, & Valvi, 2021).

**The Interreg MED 4helix+ project:** The Interreg Med 4helix+ is a pilot project that took place between February 2018 and October 2020. It was meant to prove the value of using vouchers in the Blue Growth sector to increase open innovation. For that purpose, a pilot was setup to help 48 startups from 8 Mediterranean regions implement simple innovation projects with the help of actors from the culture and creative industries, from the university and research institutions, from “modern” innovation actors (FabLabs, makers spaces, incubators, accelerators, ...) and from entrepreneurship support organizations. It thus implemented an open innovation strategy calling inputs from all 4 helices, namely Blue Growth startups and SMEs (helix 1), traditional and new research institutions (helix 2), public authorities (helix 3) and civil society, namely culture and creative industries (helix 4). It was implemented in eight different pilot regions: Lisboa in Portugal, Seville and Barcelona in Spain, Marseille in France, Ancona in Italy, Tirana in Albania, Zadar in Croatia and Thessaloniki in Greece and in each of them, six 10 thousand-euro vouchers were attributed to innovation projects in the Blue Growth sector, in a total of 48 vouchers and €480.000 investment. These vouchers were attributed to projects submitted by partnerships of one Blue Growth SME and one Knowledge Provider (KP) from the Cultural Creative Industry or from other research facilities. They then had a six-month period to implement the project. These were small (€10k) and fast (6 months) vouchers applied to SMEs in the Blue growth sector of 8 out of 2 regions in 7 countries, 6 belonging to the UE and 1 pre-adhesion country (Albania). The 48 projects came from a wide range of subsectors and contracted a very diverse list of services from the KPs. However, there was larger number of SMEs from the coastal and maritime tourism subsector.

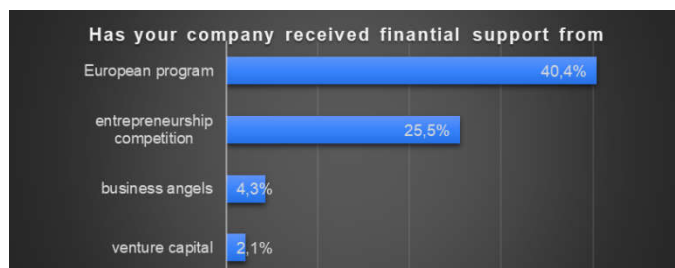


## METHODS AND DATA

Data was gathered by administering two online surveys to all 48 voucher winners, using google forms. The first survey was administered immediately after the vouchers were awarded, between June and August 2019. The second survey immediately after the voucher execution period ended, between December 2019 and February 2020, barely escaping the pandemic. Forty-five valid answers were obtained for both surveys, because one startup answered only the second survey and two startups answered only the first. These three were not considered. The startups participating in the project were mostly SMEs, with a low number of employees. In fact 74% had less than 9 employees.



At the beginning of the voucher execution, only one of the voucher awarded SMEs had ever received support from venture capital companies or business angels and only a very small part had received awards from entrepreneurship competitions. Financial support from other EU programs was more common, mostly among the SMEs in the Maritime and Coastal Tourism subsector.

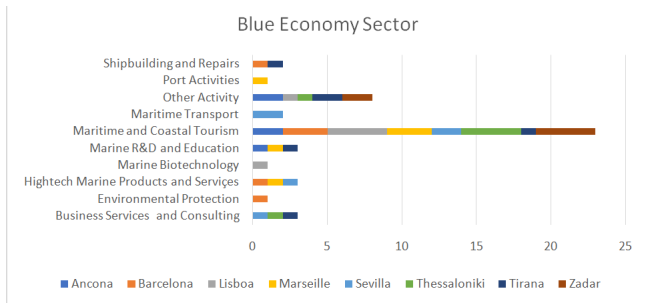


Data gathered from these voucher awarded projects was then analyzed.

## RESULTS

The initial survey pretended to characterize the voucher winner SMEs and the submitted projects, while assessing the challenges that worried them and their expectations about the voucher results. The second survey was meant to assess the levels of satisfaction the SMEs got from their participation and the contribution the whole project made to the introduction of innovations. It also collected information about the satisfaction with specific parts of the project (from the online application process to the administrative burden) which is not considered relevant and is kept out of this paper.

**Initial survey:** Although there was a clear prevalence of Maritime and Coastal Tourism SMEs, which should not be a surprise considering the participating regions, that prevalence was higher in Zadar, Lisboa and Thessaloniki.

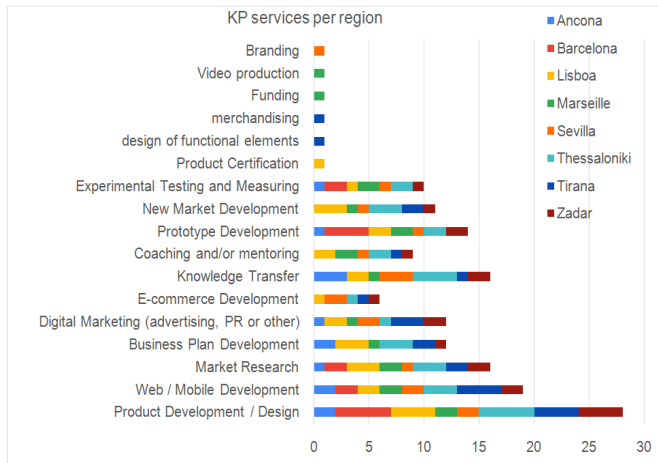


Services acquired with the vouchers:

KP services more frequently included in the awarded vouchers covered a reasonably wide range of areas, but a few were more frequent:

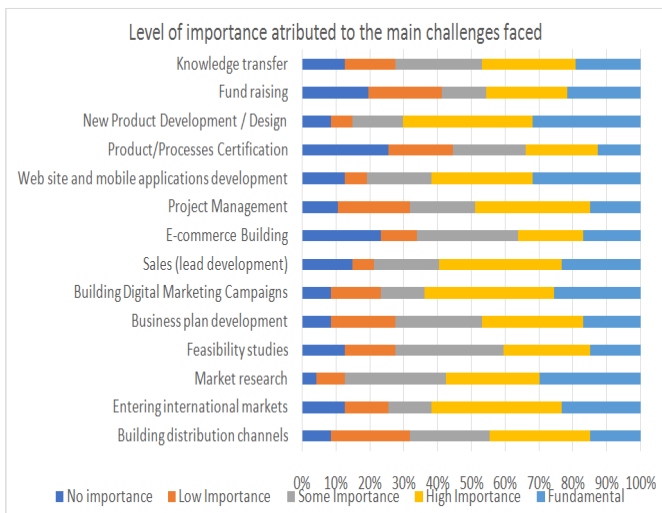
1. Product development/design
2. Web/Mobile development
3. Market research
4. Knowledge transfer

In fact, KP services included in the vouchers were different in different regions, but these four were the most frequent.

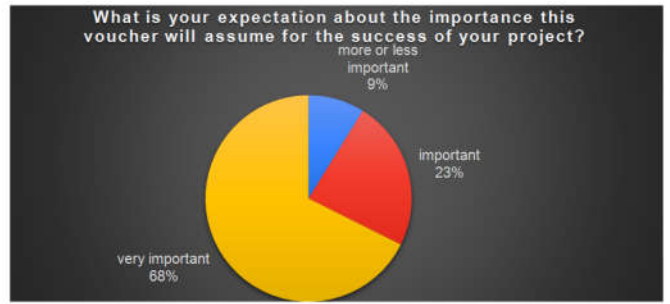


Market research was the challenged considered more important, followed by new product development and web site and mobile.

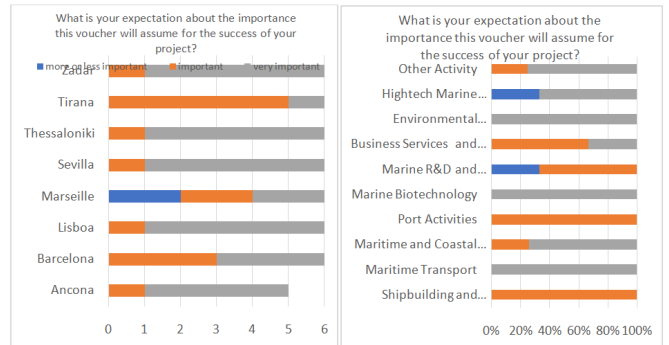
Classificar preocupações: knowledge, funding/feasibility, new product, emarketing, distribution



The SMEs were also asked about their expectations for this pilot vouchers. And those expectations were high...



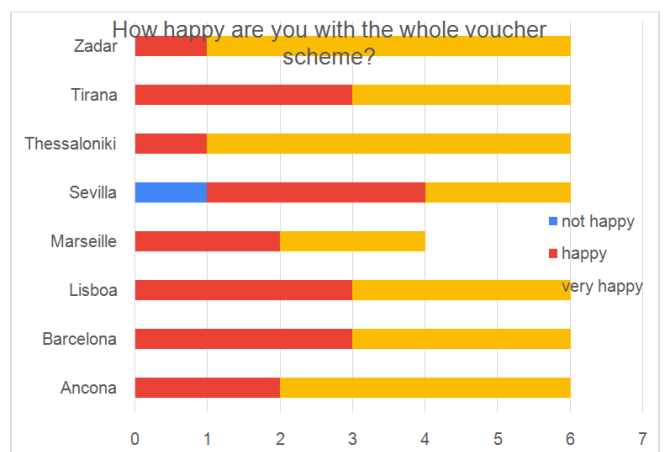
The expectations were high everywhere but, nevertheless, lower in Tirana and Marseille. And lower among companies resorting to Business services and consulting KP services.



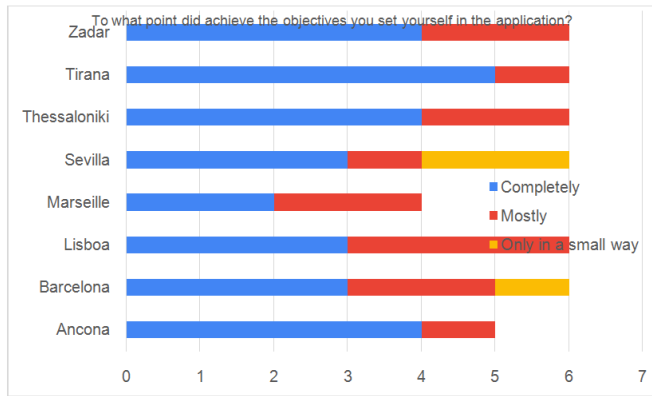
Finally, expectations were also lower among companies previously supported with entrepreneurship competition awards.



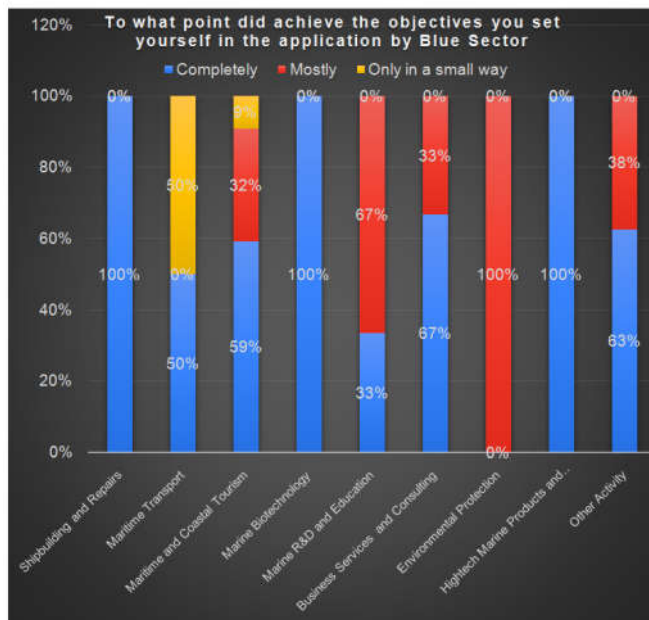
After project survey: Overall, the participants were pretty much happy with the voucher scheme, only one chose "not happy" in the survey.



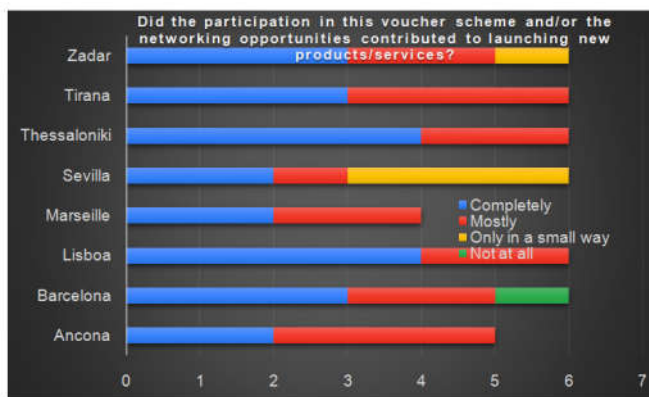
The main reason for that happiness came from the fact they considered the objectives set out in the beginning were completely of mostly achieved.



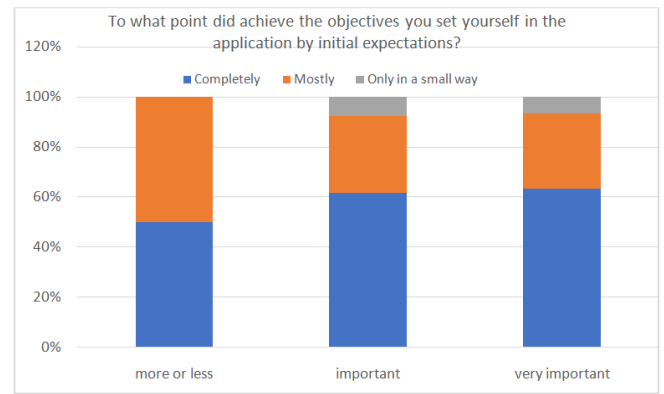
Looking by subsector, it seems clear that maritime transport had by far the largest difficulty in achieving the objectives set at the beginning.



From the point of view of the 4helix+ project management it was satisfying to find out the vouchers had positively contributed for the launching of the products/services.



Finally, the data from both surveys has combined to realize whether those with higher level of expectations in the beginning had achieved the voucher's objectives more. They did not. In fact, there was only a small difference among the ones who started with lower expectations, for whom the objectives were very slightly less realized.



## DISCUSSION

These results show that these companies had great concern with the challenges they were facing, particularly in the product development area. The vouchers included a wide range of KP services, but there is some concentration on the services that focus on the challenges being cited by the SMEs. Initial expectations among participants in this voucher scheme were quite high and the afterwards satisfaction levels also proved to be quite high. The variability in the services acquired with the vouchers indicated a large range of knowledge providers, some from the cultural and creative industries, some from research institutions, some from the marketing services sector.

## CONCLUSIONS

All in all, the 4helix+ project promoted innovation in the Blue Growth sector and was considered a positive experience by all actors. These surveys show the voucher scheme in the 4helix+ project was effective in promoting innovation and new product introduction in the markets in the blue growth sector. It involved agents from all 4 helices in an open innovation strategy that started with SMEs looking for solutions for their challenges. They found those solutions in some Knowledge Provider, either from the cultural and creative industries, from the research institutions (traditional or "modern") or from the marketing services sector and applied for a voucher. After an 8-region wide (online) selection process, 48 vouchers were awarded and executed. In the end, the results proved new products were presented to the market, innovations were introduced in the Blue Growth sector and the involved SMEs were happy about the whole process, making the 4helix+ project a positive promotion for European cooperation projects. It was also good to note that the level of final satisfaction with the participation did not seem to be related with the initial level of expectations. Levels of satisfaction varied only slightly among SMEs with different levels of initial expectations. This research was obviously limited by the short sample, the limited time for voucher execution and the short number of regions where the 4helix+ project took place: 8 out of 2 regions in 7 countries.

**Acknowledgments:** The Interreg Med 4helix+ project was funded by the EU's Interreg Med 2014-2020 program.

## BIBLIOGRAPHY

Bertello, A., Ferraris, A., De Bernardi, P., & Bertoldi, B. (2021). Challenges to open innovation in traditional SMEs: an analysis of pre-competitive projects in university-industry-government collaboration. *International Entrepreneurship and Management Journal*. <https://doi.org/10.1007/s11365-020-00727-1>

Birkinshaw, J. M., Hamel, G., & Mol, M. J. (2008). Management innovation. *Academy of Management Review*, 33(4), 825–845. Retrieved from <http://dx.doi.org/10.5465/AMR.2008.34421969>

Carayannis, E. G., & Campbell, D. F. J. (2006). Mode 3: meaning and implications from a knowledge systems perspective, in

- Knowledge Creation. In *Knowledge Creation, Diffusion, and Use in Innovation Networks and Knowledge Clusters* (pp. 1–25). Westport.
- Carayannis, Elias G., Grigoroudis, E., Stamati, D., & Valvi, T. (2021). Social Business Model Innovation: A Quadruple/Quintuple Helix-Based Social Innovation Ecosystem. *IEEE Transactions on Engineering Management*, 68(1), 235–248. <https://doi.org/10.1109/TEM.2019.2914408>
- Carayannis, Elias G, Barth, T. D., Campbell, D. F. J., Leydesdorff, L., Simona Cavallini, Leydesdorff, L., ... Desarrollo, B. I. De. (2016). *Using the Quadruple Helix Approach to Accelerate the Transfer of Research and Innovation Results to Regional Growth*. <https://doi.org/10.2863/408040>
- Carayannis, Elias G, Dc, W., & Campbell, D. F. J. (2009). 'Mode 3' and 'Quadruple Helix': toward a 21st century fractal innovation ecosystem. *International Journal of Technology Management*, 46(3/4), 201–234.
- Chesbrough, H. W., & Appleyard, M. M. (2007). Open Innovation and Strategy. *California Management Review*, 50(1), 57–77. <https://doi.org/10.1002/sml.201000755>
- Guo, Y., & Zheng, G. (2019). Technological Forecasting & Social Change How do firms upgrade capabilities for systemic catch-up in the open innovation context? A multiple-case study of three leading home appliance companies in China ☆. *Technological Forecasting & Social Change*, 144(July 2018), 36–48. <https://doi.org/10.1016/j.techfore.2019.04.001>
- Kraus, S., Kailer, N., Dorfer, J., & Jones, P. (2020). Open innovation in (young) SMEs. *International Journal of Entrepreneurship and Innovation*, 21(1), 47–59. <https://doi.org/10.1177/1465750319840778>
- Li, M., He, L., & Zhao, Y. (2019). The triple helix system and regional entrepreneurship in China. *Entrepreneurship and Regional Development*. <https://doi.org/10.1080/08985626.2019.1666168>
- Lyu, Y., He, B., Zhu, Y., & Li, L. (2019). Network embeddedness and inbound open innovation practice: The moderating role of technology cluster. *Technological Forecasting and Social Change*, 144(2), 12–24. <https://doi.org/10.1016/j.techfore.2019.03.018>
- Mei, L., Zhang, T., & Chen, J. (2019). Exploring the effects of inter-firm linkages on SMEs' open innovation from an ecosystem perspective: An empirical study of Chinese manufacturing SMEs. *Technological Forecasting and Social Change*, 144(April), 118–128. <https://doi.org/10.1016/j.techfore.2019.04.010>
- Petzold, N., Landinez, L., & Baaken, T. (2019). Disruptive innovation from a process view: A systematic literature review. *Creativity and Innovation Management*, 28(2), 157–174. <https://doi.org/10.1111/caim.12313>
- Simona Cavallini, Rossella Soldi, Julia Friedl, M. V. (2016). *Using the Quadruple Helix Approach to Accelerate the Transfer of Research and Innovation Results to Regional Growth*. <https://doi.org/10.2863/408040>
- Švarc, J., Dabić, M., & Daim, T. U. (2020). A new innovation paradigm: European cohesion policy and the retreat of public science in countries in Europe's scientific periphery. *Thunderbird International Business Review*, 62(5), 531–547. <https://doi.org/10.1002/tie.22166>

\*\*\*\*\*