

# **Sustainable and strategic approach of relationships concerning Quadruple Helix Innovation Model towards regional socioeconomic development.**

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## **Abstract**

The improvement of national innovative capacity has been a challenging issue for worldwide policymakers and has revealed to be a relevant topic in the higher education governance field and in the agenda of Public bodies, national governments, and representative organizations mainly because of its socioeconomic benefits at institutional, regional and national contexts. At the same time, worldwide literature has increasingly recognised the relationships and interconnections between all organizations of the innovation ecosystem as a relevant engine to boost this improvement since their socio-economic benefits. The economic benefits regard the activities related to ‘generation, use, application and exploitation of knowledge and other university capabilities outside the academic environment’ that may be undertaken with the scope of financial vantage at institutional level and the improvement of economic performance at a macro perspective. On the other hand, the social benefits regard a set of services that generate no economic revenue, or at most, has only a partial cost for the end users. Organizational and societal rationales are driving this collaboration, for instance, decreasing levels of funding for HEIs (Higher Education Institutions), low levels of innovation in most business, high rates of unemployment (specially youth unemployment) and lack of competitiveness of many regions and need to create regional innovation ecosystems (Galan-Muros & Davey, 2017). In turn, the Sustainable university concept – SUC - has been recognized by numerous contributions at scientific and doctrinal levels (e.g Thessaloniki Declaration, Cortese, 2003; Marshall et al., 2010) as the guiding principle for Higher education development, taking into consideration its economic, environmental and social roles. Hence, HEIs everywhere have been forced to rethink their role in society and to evaluate the relationships with their stakeholders taking into consideration their expectations towards these benefits (Jongbloed, Enders & Salerno, 2008). This paper aims at contributing to the discussion on the relevance of synergy of the relationships of Higher Education Institutions (HEIs) and other organizations of innovation ecosystem by proposing an analysis of these relationships in the perspective of Quadruple Helix Innovation Model and taking into consideration the assumptions of Sustainable University concept and the Stakeholders Theory premises. For this scope, these premises are briefly presented and linked. For this scope, these premises are briefly presented and linked. Since this is an insufficiently explored perspective in the specialized literature, this paper modestly tries to contribute to the discussion without intending to end it.

**Key words:** Quadruple Helix Innovation Model; Sustainable University Concept; Stakeholders Theory; Regional development.

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## Extended abstract

The improvement of national innovative capacity has been a challenging issue for worldwide policymakers and for all involved organisations and their stakeholders, mainly for Higher Education Institutions (HEIs). At the same time, the fruitful relationships between HEIs and public and private organisations have been recognized in different literature fields (e.g. Innovation Systems, Innovation Management/Policy/Strategy and higher education governance subjects) as a relevant engine for this improvement and, consequently, socio-economic development (see, e.g. Pinheiro, Benneworth & Jones, 2012; Jongbloed, Enders & Salerno, 2008; Galan-Muros & Davey, 2017; Guerrero, Cunningham & Urbano, 2015).

In that sense, literature have contributed with conceptual frameworks to the identification of their facilitators and barriers as well as to the understanding and the measurement of their relevant impact developed by empirical analyses of bilateral/trilateral/quadrilateral configurations of these relationships, namely, University-Industry/Business collaboration and University-Industry/Business-Government and HEIs, Industry and Business organizations, and Government and Civil Society bodies -Triple Helix and Quadruple Helix (e.g. Carayannis & Campbell, 2009; Galan-Muros & Davey, 2017).

However, there is a lack of studies about this issue and there are relevant gaps to be explored, mainly in terms of analysis towards promoting the strengthening of these relationships and empirically based and policy-oriented analyses. For instance, no studies have covered a broader dimension analysis of these relationships, in other words, within a Quadruple-Helix Innovation Model (QHIM) broader perspective of the innovation ecosystem, hence, involving HEIs, Industry and Business organisations, and Government and Civil Society bodies. Moreover, no studies have focused in analysis on the mitigation of their barriers and the reinforcement of their drivers, supported by theoretical approaches of the governance field, taking into consideration the role of key stakeholders and their long-term value creation of these relationships, for instance, the Stakeholder approach Sustainable University Concept (SUC).

Theoretical and practical reasons endorse these propositions. The relevance of relationships between HEI, Business and Civil Society contexts for the development of societies has been emphasised by the stakeholder's theory in both corporate governance and higher education governance fields. This can be explained resorting both to macro and micro perspectives. The macro perspective is related to the socio-economic development at local, regional and national levels, while the micro perspective emphasises institutional approaches aimed at entrepreneurship and competitiveness in order to increase financial resources (Freeman, 1984; Clarkson, 1995; Mitchell, Agle & Wood, 1997; Garcia-Castro & Aguilera, 2015; Benneworth & Jongbloed, 2010; Berman, Wicks, Kotha & Jones, 1999). In turn, SUC has been established and recognized by numerous contributions at scientific and doctrinal levels as a governance approach which contemplates both stakeholder approach and helix quadruple perspective in order to support HEIs in the accomplishment of their socio-economic role. In that sense, conceptual framework and standard indicators to measure its performance have been developed in different studies (e.g. Cortese, 2003; Velazquez, Munguia, Platt & Taddei, 2006; Lozano, Lukman, Lozano, Huisinigh & Lambrechts, 2013; Mio, 2013).

## References

- Benneworth, P., & Jongbloed, B. W. (2010). Who matters to universities? A stakeholder perspective on humanities, arts and social sciences valorisation. *Higher Education*, 59(5), 567-588.
- Berman, S. L., Wicks, A. C., Kotha, S., & Jones, T. M. (1999). Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance. *Academy of Management journal*, 42(5), 488-506.
- Bruneel, J., d'Este, P., & Salter, A. (2010). Investigating the factors that diminish the barriers to university–industry collaboration. *Research policy*, 39(7), 858-868.
- Clarkson, M. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of management review*, 20(1), 92-117.
- Cortese, A. D. (2003). The critical role of higher education in creating a sustainable future. *Planning for higher education*, 31(3), 15-22.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*: Cambridge University Press.
- Davey, T., Baaken, T., Galan Muros, V., & Meerman, A. (2017). The State of European University-Business Cooperation. Part of the DG Education and Culture Study on the cooperation between higher education institutions and public and private organisations in Europe.
- D'Este, P., & Patel, P. (2007). University–industry linkages in the UK: What are the factors underlying the variety of interactions with industry? *Research policy*, 36(9), 1295-1313.
- Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: from National Systems and “Mode 2” to a Triple Helix of university–industry–government relations. *Research policy*, 29(2), 109-123.
- Garcia-Castro, R., & Aguilera, R. V. (2015). Incremental value creation and appropriation in a world with multiple stakeholders. *Strategic Management Journal*, 36(1), 137-147.
- Galan-Muros, V., & Davey, T. (2017). The UBC ecosystem: putting together a comprehensive framework for university-business cooperation. *The Journal of Technology Transfer*, 1-36.
- Galán-Muros, V., & Plewa, C. (2015). What drive and inhibit university-business cooperation in Europe? a comprehensive assessment of barriers and drivers.
- Galan-Muros, V., & Davey, T. (2017). The UBC ecosystem: putting together a comprehensive framework for university-business cooperation. *The Journal of Technology Transfer*, 1-36.
- Guerrero, M., Cunningham, J. A., & Urbano, D. (2015). Economic impact of entrepreneurial universities' activities: An exploratory study of the United Kingdom. *Research Policy*, 44(3), 748-764
- Jongbloed, B., Enders, J., & Salerno, C. (2008). Higher education and its communities: Interconnections, interdependencies and a research agenda. *Higher Education*, 56(3), 303-324
- Lozano, R., Lukman, R., Lozano, F. J., Huisingh, D., & Lambrechts, W. (2013). Declarations for
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sustainability in higher education: becoming better leaders, through addressing the university system. *Journal of Cleaner Production*, 48, 10-19.

Mio C (2013). *Towards a sustainable university: The Ca' Foscari experience*, Palgrave Pivot.

Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of management review*, 22(4), 853-886.

Pinheiro, R., Benneworth, P., & Jones, G. A. (Eds.). (2012). *Universities and regional development: A critical assessment of tensions and contradictions*. Routledge.

Velazquez, L., Munguia, N., Platt, A., & Taddei, J. (2006). Sustainable university: what can be the matter? *Journal of Cleaner Production*, 14(9-11), 810-819