



The Role of the Productive Sector in the Internationalization of Higher Education

1. INTRODUCTION

- The productive sector plays a crucial role in the process of internationalization, as it exerts a direct influence on the planning of development policies at both micro and macro levels. In order to address the needs of this sector, various actors such as government agencies, companies and industries, research centers, and educational institutions must strengthen their collaborative ties and establish an action strategy that promotes competitiveness and innovation and is oriented toward the creation of alliances.

2. KEY IDEAS

- Although graduate employability is not the only axis around which the academia-industry relationship revolves, it is worth noting that it is a fundamental area that stems from the very motivation of many students to pursue higher education. Nevertheless, it is important to point out that the relationship with the productive sector is also of great interest to governments (as the main sources of funding for public Higher Education Institutions).
- Governments expect that public spending on higher education will result in the development of competencies that foster productivity and innovation to the benefit of companies, by training professionals who meet the specific needs of industry, and that, in the long term, contribute to a significant improvement in the standard of living of their citizens.
- Therefore, Higher Education Institutions (HEIs) and the productive sector must maintain constant dialogue to jointly construct key formative elements such as curricular content, teaching methodologies, research approaches, and even the services offered to students. The combination of these elements will determine whether graduates' competencies align with the current

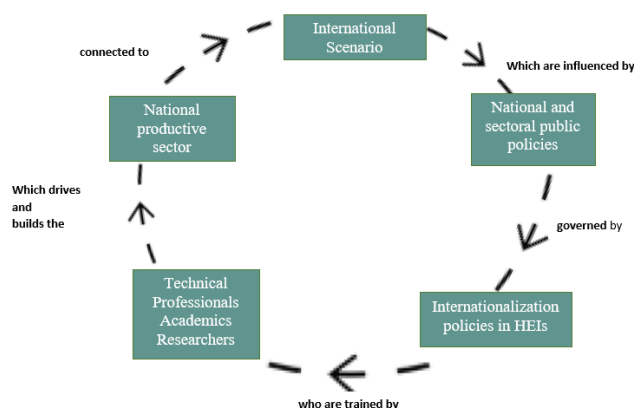


Figure 1. Cycle of Influence of HEIs on the National and International Environment

demands of the labor market and how they will contribute to its evolution

- This process occurs cyclically: international contexts influence the creation of (national and sectoral) plans and programs that will impact, directly or indirectly, the internationalization policies of HEIs, which are responsible for educating the individuals who, in the medium and long term, will drive the national productive sector, which in turn connects back to the international context.
- HEIs have a dual role: to transmit knowledge and to generate it. These roles are fulfilled through teaching, research, and innovation, and are closely linked to the economic order since the quality of human capital and the application of science and technology are engines of social and economic development, directly related to the behavior of the productive sector.
- This university-industry collaboration has gained increasing importance, as the relationship allow us to

go beyond a high graduate employability rate or joint projects, also promoting the development of other levels of cooperation that vary in scope and complexity. These include internships, dual education program design, joint research projects, technology transfer, and even entrepreneurship.


- It is also worth considering, as part of this analysis, the notion of the “Triple Helix Model,” which, according to some experts, is key for countries to improve their competitiveness through innovation and to transition from industrial societies to knowledge societies.
- This model, developed by Henry Etzkowitz and Loet Leydesdorff in the late 1990s, emphasizes the importance of the interaction among university, industry, and government in the production of knowledge, with each participant representing a sphere of influence and activity. Within this model, these three spheres relate and interconnect; it is worth noting that the authors assign academia a strategic role in shaping how the other two actors engage within this dynamic.
- This model is complex, firstly, because it is the product of a historical evolution in which individual interests do not always converge. However, in developed countries, it has yielded good results and there have even been proposals to incorporate additional actors—though this would require a solid relationship among the initial three.

3. CHALLENGES, OPPORTUNITIES AND RECOMMENDATIONS

- To actively engage with the productive sector and build a mutually beneficial bilateral relationship that could later involve more actors and expand its reach, HEIs must have a support structure based on four main pillars:
 - a. The first must be the analysis of sector needs in terms of human capital, inputs, and technology. This helps identify market trends, recognize national and international needs, and establish guidelines that will serve to update curricula, teaching strategies, services, and other elements that contribute to academic training. Proper dissemination of this information within HEIs helps to align joint efforts with these areas of opportunity.
 - b. Secondly, there must be coordinated cooperation with industry across three areas: internships, social service, and graduate follow-up. The first two provide students with experience and practice, helping them to develop soft skills and strengthen their technical knowledge.

The third should closely monitor the performance of graduates in the labor market, preferably including employer feedback..

- c. The third pillar should be a support structure for innovation and entrepreneurship that guides those interested in the processes required to protect and commercialize discoveries or to structure and position their entrepreneurial projects. This pillar requires the development of an entrepreneurial ecosystem that encourages connection with financing institutions, collaboration networks, and even other HEIs that help transform projects into high-impact ventures. Moreover, it would be advisable to maintain a close relationship with the area responsible for applied research follow-up, as it is fertile ground for innovation and invention.
- d. Finally, HEIs must facilitate the connection and negotiation of substantive areas with potential partners both within and outside the country. As part of this pillar, it is important to include a dimension aimed at fostering approaches and dialogue with the business sector that go beyond graduate job placement or commercialization of research products, to instead seek ways for science to help solve social problems and also involve national and international productive sectors.
- For the university-industry linkage to work, these pillars must maintain constant interaction and also take on an active role in external communication and outreach. These actions must be aligned with a common institutional strategy built around the specific characteristics and objectives of each HEI. By including internationalization in this strategy, public universities such as the Instituto Politécnico Nacional (IPN) face a dual challenge: to become more competitive and relevant internationally while maintaining their social mission in national and regional contexts.
- The strategy adopted by HEIs will serve as a guide to determine with whom and how to collaborate, ensuring that partnerships prioritize quality over quantity. To increase selectivity in linking with the productive sector, an analytical tool is needed to assess the potential for collaboration with each type of partner, so that efforts and resources are used more efficiently and deliver greater impact.
- It is important to mention that the IPN, by its very nature and its academic offering—mostly oriented toward technological and industrial sectors—has a competitive advantage in terms of linking with the productive sector, compared to HEIs whose focus is less defined and who may face greater challenges, especially those focused on social sciences, humanities, and the arts.

- On the other hand, there is also an interesting field of action beyond Mexico City's metropolitan area in terms of productive sector engagement, particularly concerning graduate employability.
- This idea becomes more relevant when considering, for example, the growth in recent years of clusters established in the Bajío region, where countries such as France, Japan, and Germany have found fertile ground to strengthen collaboration not only with academia and government but also with other societal actors.
- In this sense, the IPN also has a significant opportunity area considering its nationwide presence—not only through its regional academic units and research centers but also through its Regional Linkage and Development Centers (CVDR) and the recently inaugurated Centers for Innovation and Integration of Advanced Technologies (CIITA).
- Finally, regarding the Triple Helix Model, the IPN once again holds a favorable position, since, as a decentralized body of the Ministry of Public Education (SEP), it could help facilitate the implementation of collaborative projects among academia, government, and certain companies, including some with an international profile. 

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