

## Networks for Universities' third mission and research activities.

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**Aim of the paper.** The paper deals with the public-private interaction with a focus on higher education and research. More specifically, the paper aims at understanding the interaction between Italian Universities and other public and private actors and the underlying complex processes that guide the planning of research activities and the Universities' third mission. The University is not only responsible for qualifying the human capital (Education – the first mission) and for producing new knowledge (Research – the second mission). Universities must engage with societal needs and market demands by linking the university's activity with its own socio-economic context and related actors (Rider et al., 2012). The third mission has two major priorities: the targeted use and transfer of academic knowledge to help resolve societal challenges, and the transfer of technologies and innovations in the form of cooperation with other public and private companies, also as part of a “system of innovation” (Nelson, 1993; Laredo, 2007).

### **Theoretical background.**

*(I) Defining the universities' third mission.* The need for universities to connect directly to the external world has been discussed in the last decades in terms of “valorisation”, “transfer”, “third stream” or “third mission”, all linked to the growing importance of the interaction between university research activities and the external economic and social worlds. The theoretical underpinning concerns most of all the nature of knowledge, knowledge transfer and the process of innovation. Collins (1974) demonstrated that in high-tech sectors, firms needed to connect strongly with academic labs if they wanted to master new knowledge. Cohen and Levinthal (1989) developed a new understanding on the circulation of knowledge introducing the notion of “absorptive capacity” to address the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends. Absorptive capacity is the greater ability to learn that derives from the knowledge already acquired, and represents an important element in explaining the role of basic research (Pavitt, 1991), and so of a part of the role of the university. This is reflected in the growing attention, from the beginning of the 1980s, on the “industry-university collaborations”, namely joint research projects between public and private research actors. In parallel, the understanding of the innovation process has changed, introducing concepts such as “lead users” (Von Hippel, 1986), “distributed innovation processes” (Coombs et al., 2003) or “open innovation” (Chesbrough, 2006). In this framework, the role of universities in the innovation process changes. On the one hand, universities add to the codified knowledge produced, for example through publications, tacit elements that can be accessed only through direct collaboration. On the one hand, patenting activities allows universities to reap the benefits of innovation; on the other hand, there is an increasing importance of technology transfer activities that need to be organized. In this sense, in the last decades policy makers in all countries progressively understood the need for organization and professionalization of transfer activities and the establishment of rules concerning patents and the sharing of benefits. In addition, this was reinforced by the emergence of new models of valorization of research activities and innovation, especially in the field of IT and biotech, namely the growth of “start-ups” and “spin-offs” firms and the parallel development of specific support policies at a “systemic” level (Nelson, 1993). The results are a list of initiatives promoted by governments and universities: incubators, science or technology parks, business angels, fiscal incentives, policies for venture capital and so on.

This includes the role of public actors as key player for basic research development (Pavitt, 1991) and can make a context attractive for foreign direct investment to develop R&D (Paoli and Guercini, 1997). In the 1990s, a further shift in the approach of the role of universities in national innovation systems was driven by the importance of combining the production of tacit knowledge and the heterogeneous composition of innovation networks (Corsaro et al., 2012). Not only universities have to produce new knowledge, but they also have to produce it with social and economic perspective (Gibbons, 1994). This view lays the foundation of the triple helix model proposed by Etzkowitz and Leydesdorff (2000) that involves industry, government and university, and is the essence of the universities' third mission. Thus, the third mission of universities (after education and research), qualifies universities as "entrepreneurial universities" (Urbano and Guerrero, 2013). There are several types of indicators to measure the universities' third mission, such as revenues from contracts, numbers of patents granted, number of spinoff firms. Another key indicator of academic impact is commercialization, since it constitutes a measurable market acceptance for outputs of academic research (Perkmann et al., 2006; Markman et al., 2008). Furthermore, it has been shown that the third mission is often related with local development issues (Laredo, 2007). Universities are increasingly seen as major economic agents in a territory, because they assume a role of employer but also a role of attractor for the region, including external business investor (Paoli and Guercini, 1997). The latter is expressed through the academic visibility that is able to attract R&D centers and large firms (Soh and Subramanian, 2014). Other aspects deal with professional training and the role that universities play in cities for urban planning. Transport, cultural activities, museums, sport teams, leisure activities and so on. Finally, Laredo (2007) discusses that the most important local economic dimension of higher education within a territory links with undergraduate and vocational studies, since universities serve primary the local population and the local employment area. Thus, it can be argued that all universities pursue differently their three missions, thus positioning themselves as a unique mix of education, research and third mission.

*(II) Approaches for the study of universities' third mission.*

The third mission has the intent to impact the social and economic environment and to favor and develop business relationships (Sanchez and Elena, 2006). A perspective that has been adopted to provide an interpretation of the evolution and goals of universities' third mission is the neo-institutional theory that asserts that organizations seek legitimacy and financial support, from their context and from the institutions essential for their survival (Euske and Euske, 1991; Vakkuri, 2004). According to this perspective, the development of the third mission leads to a combination of forms of isomorphism that result from the interaction between researchers and different categories of stakeholders. Interaction is aimed at obtaining recognition within the set of rules that emphasize third mission activities. The identification, delineation and management of such activities have been the object of research that has identified the main characteristic of the third mission, that is to be "relational" (Nedeva, 2007). Following this line of reasoning, on a conceptual level, the study of the complex public-private interaction underlying the third mission refers to the relationship between the University and other actors, and provides for the possibility of conducting analyzes through approaches focused on business networks, in which the dynamics of interaction and relationship between actors are placed at the center (Håkansson and Ford, 2002). Thus, the Industrial Marketing and Purchasing (IMP) approach, which has had a growing importance in the study of dynamics within the organization and public administrations, appears to be an appropriate lens for the study of universities' third mission. The IMP approach focused the attention on the topics of collaborative activities with actors outside the organization, integration of activities, the role of the relational dimension for the improvement of effectiveness as well as efficiency (Håkansson et al., 2009). It offers support to the enhancing of the potential for innovation and learning that characterizes the networks for research as well as for the third mission, given the role of the

underlying processes of interaction between actors. Within IMP studies, there are several contributions on the university-industry relationship and knowledge transfer (Pinheiro et al., 2012; Baraldi et al., 2013; Boehm and Hogan, 2013; Corral de Zubielqui et al., 2015). However, specific attention to universities' third mission as a whole is limited.

**Directions for future research.** The paper, as a work in progress, intends to contribute to the understanding the interaction between Universities and other public and private actors, as well as the underlying complex processes that guide the Universities' third mission. The paper adopts a relation perspective on the third mission, with the IMP approach as the theoretical lens. To this end, on the one hand the paper proposes a review of the literature on universities' third mission, which in part has been presented in the foregoing, with a specific focus on the contributions on the topic in the industrial marketing literature. On the other hand, the paper employs a qualitative methodology and develops the specific case of an Italian University and its network of relationships with other public and private actors with a focus on how the involved actors are coping with the interaction and the complex processes underlying the third mission. The case of this Italian University is under contraction and includes in-depth interviews with selected interlocutors from 21 departments. The aim is to develop a systematic collection of models adopted in university management for planning and evaluation of activities related to the third mission. The paper contributes to the understanding of universities' third mission under an industrial marketing perspective, by shedding light on how interaction networks with other public and private subjects are structured, contents, limits and purpose of interaction, planning and organizational choices in consideration of shared objectives.

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