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# Exploring the roles of university spin-offs in business networks☆

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ABSTRACT

This paper identifies different university spin-off (USO) roles related to resource interaction among business parties. It does so by mapping how USOs become part of business networks in terms of their roles relative to other parties. The theoretical frame of reference focuses on roles and resource interaction based on an industrial network approach to business markets. The empirical research is based on five cases of USOs representing a variety in terms of technology, degree of newness, sector, and area of application. As a result of the analysis, three different roles are identified: the USO as resource mediator, resource re-combiner and resource renewer. These roles reflect how USOs adapt resources to, or require changes among, business parties' resources. The paper also discusses the main resource interfaces associated with the three roles and related challenges. The paper contributes to previous research through illustrating USOs' roles relative to business parties from a resource interaction point of view, and by pointing to the establishment of new companies in business networks as a way of implementing innovation. Finally, the paper discusses the managerial implications of the research in terms of the USO's need to understand which role to take and how to develop it.



## 1. Introduction

This paper identifies different university spin-off (USO) roles related to resource interaction among business parties. USOs can be defined as firms founded by university researchers aiming at commercializing ideas based on scientific discoveries and inventions (Mustar et al., 2006; Smilor, Gibson, & Dietrich, 1990; Walter, Auer, & Ritter, 2006). Academic studies and other investigations have documented their high failure rates (Zahra, Van de Velde, & Larraneta, 2007), despite receiving extensive support from incubators and public funding agencies (Rasmussen & Borch, 2010; Wennberg, Wiklund, & Wright, 2011). Failures are explained by, for example, researchers not being interested in or good at actually running businesses (Visintin & Pittino, 2014), or that the ideas are too radical or disruptive (Almus & Nerlinger, 1999; Chandy & Tellis, 1998; Sandberg & Aarikka-Stenroos, 2014). The latter infers that the ideas do not fit well with current solutions or expectations in the market. Lindelöf and Löfsten (2006) further note that in the initial state USOs often lack connections to business partners, while Bathelt, Kogler, and Munro (2010) point out that the business component is particularly important, and identify USOs' customers as having an important influence on the innovation process.

Drawing on ideas of reflexive communication among university, industry, and government (Etzkowitz & Leydesdorff, 2000), related streams of literature deal with support systems, and in particular university incubators (Mian, 1996; Salvador & Rolfo, 2011), technology-transfer offices (Lockett, Siegel, Wright, & Ensley, 2005), and the performance of USOs (Bigliardi, Galati, & Verbano, 2013; Clarysse, Wright, Lockett, Mustar, & Knockaert, 2007; Clarysse, Wright, & Van de Velde, 2011; Gregorio & Shane, 2003; Rasmussen & Borch, 2010). As an example of studies within these streams of literature exploring the relationship between USOs and other parties, Rasmussen, Mosey, and Wright (2014) describe how USOs are affected by the research departments they originate from. Furthermore, Sternberg (2014) investigates whether the regional environment affects the success of the USO. Both studies illustrate how the context surrounding the USO impacts its success. The context however remains the university, and also those studies dealing with support systems tend to focus on the academic rather than the business context. There are some studies on the bridging between research and business, for example Rajamaki (2011), but commercialization in most senses remains focused on the USO being divested or reaching the market of consumers. The interaction with various business partners – customers, suppliers, and others – is rarely referred to.

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Given the extensive direct and indirect financial support that USOs receive (cf. Wennberg et al., 2011), it should be important in our view to investigate how USOs' ideas are developed in a business context.

The importance of the context for USOs has been highlighted by economic geographers studying innovation networks and their effects on USOs. They show, for example, the importance of clustering and proximity to various types of partners (see, e.g., Asheim & Coenen, 2005; Eklinder-Frick, Eriksson, & Hallén, 2011; Moodysson & Zukauskaite, 2014; Rickne, Laestadius, & Etzkowitz, 2012; Saxenian, 1990). Ecosystems are a related approach which has become popular in recent years (Autio, Kenney, Mustar, Siegel, & Wright, 2014; Clarysse, Wright, Bruneel, & Mahajan, 2014; Fukuda & Watanabe, 2008). However, these two streams of literature are mainly concerned with regional development rather than the development of individual firms, which is the main topic of this paper.

In recent years, Industrial Marketing and Purchasing (IMP)-based studies emphasizing the importance of the company's context in terms of business relationships and networks have shown interest in spin-offs and other types of start-ups. IMP scholars highlight, for example, the importance of studying initial business relationships (Aaboen, Dubois, & Lind, 2011, 2013; La Rocca, Ford, & Snehota, 2013; La Rocca & Snehota, 2014). As another example, Ciabuschi, Perna, and Snehota (2012) show how newly created businesses need to engage actively in resource adaptations and interaction with other network actors. Öberg (2010) particularly emphasizes what can be learned from customer relationships, and how individual relationships can function as motors for customer-initiated start-ups. In a similar vein, Walter et al. (2006) describe network capabilities, pointing out how the success of USOs is positively correlated with their ability to develop and use business relationships. Laage-Hellman and McKelvey (2015) address the issue of how USOs in a particular industry (medical technology) develop by networking with customers, suppliers and other types of external actors.

While these scholars show the importance for USOs to connect with other parties, they do not shed little light on *how* the USOs do so. For example, how do USOs relate their own resources to those of other parties, and what impact do these resource interactions have? The present paper therefore focuses on USOs and their ways of acting *relative* to other parties in the business network, and in connection to commercialization of research-based product ideas. In other words, the paper focuses on the role of USOs in business networks. Roles are very much associated with resources, since the resource interaction underpins the role relative to other parties by influencing the technological structure, organizational structure, dyad, and surrounding network (Cantillon & Håkansson, 2009; Dubois & Araujo, 2006; Håkansson & Waluszewski, 2002b; Lillecreutz, 1998; Strömsten & Waluszewski, 2012). The resource development that takes place in interaction (Baraldi, Gressetvold, & Harrison, 2012) between the USO and other parties, and the adaptations that the parties make, will constitute the actions that will enable the USO to develop its role(s) relative to other parties.

Hence, the purpose of this paper is to identify different USO roles related to resource interaction among business parties. From an IMP perspective, commercialization is about establishing and developing business relationships. The idea to be commercialized, if it targets a business market (rather than a consumer market), has to be integrated with other resources in an existing setting of use. To successfully introduce the USO's idea, adaptation among various parties' resources is crucial (Ciabuschi et al., 2012; Snehota, 2011). Such adaptation may be mutual or unilateral by the USO or the partner (Guercini & Runfola, 2012).

Our suggestion for different roles in this paper makes a theoretical contribution to the relatively scarce literature on the establishment of USOs in business networks (La Rocca & Snehota, 2014). In particular, the paper develops ideas, based on the notion of resource interaction, regarding how roles relative to other parties become a means for capturing how USOs become embedded in business networks. It also increases the understanding of how ideas, in our case research-based ones, become "implemented" rather than developed (Corsaro & Cantú, 2015).

The structure of the paper is as follows. The next section presents the theoretical background. It is followed by a description of the method. Thereafter, the empirical material is presented in the form of case descriptions, which are then used in the subsequent section for identifying different roles. These findings are discussed in the following section. Finally, we summarize the main conclusions, state practical and theoretical implications, and make suggestions for future research.

## 2. Theoretical background

The paper is based on the IMP perspective on business markets, which views networks and interaction among firms as a key feature of the business landscape (Håkansson, Ford, Gadde, Snehota, & Waluszewski, 2009). Business relationships are multidimensional, and business parties need to relate to each other in a number of ways over time. Below, USOs' networks and the role concept is presented and connected with a resource interaction perspective (Baraldi et al., 2012; Håkansson & Waluszewski, 2002a) in order to explore the roles of USOs in business networks.

### 2.1. Roles in business networks

In general terms, role refers to a function performed by someone, or is a description of what someone does (Gross, 1958; Levinson, 1959; Parsons, 1951; Turner, 1985; Williams, 1969). This indicates that an actor may hold a role, such as that of being a USO, or that an actor can be defined by the way it acts or the activities it undertakes. Montgomery (1998) views every situation as connected to a set of meta-rules, which in turn evokes a role or bundle of roles that the actor to some degree can choose among. Heikkinen, Mainela, Still, and Tähtinen (2007) distinguish between task-oriented and network-oriented roles. The former refers to the company acting in a certain function, such as producer or developer, and hence links to roles as held by parties. The latter, however, reflects a more dynamic view where the actor not only takes on activities but also changes them. Building on the IMP literature, Guercini and Runfola (2015) emphasize that roles may change over time. Still, in a certain time period, they argue, there is a "predominance" of specific roles in terms of actors' teaching and/or learning, which is the focus of their study. Our cases also indicate how roles are lasting or semi-permanent. In line with this and despite the inherent dynamic aspects of roles, we focus on the roles USOs may take as static or semi-permanent. We do so to be able to identify specific roles, rather than describe how USOs shift in their activities.

The industrial network model (Håkansson, 1987) separates activities, resources, and actors as three network layers and views activities and resources of actors as interdependent across firm boundaries. Based on this separation, Olsson, Gadde, and Hulthén (2013) identify generic roles in the three different layers. They identify roles in the activity layer and the resource layer by pointing to activity specialization and activity coordination, and resource provisioning and problem solving, respectively. We build further on the resource layer to explore role – this in line with Lillecreutz (1998), who sees the company's role and its resources as "intimately associated". Cantú, Corsaro, and Snehota (2012) emphasize the need for integrating the resource and actor dimensions in understanding the role of actors, and hence also link roles to various network layers. They conclude that in the development of complex solutions, each actor acts both as a resource provider and a resource user and from the interaction between these two roles, resource interfaces and innovative solutions emerge.

Related to new firms, Lipparini and Sobrero (1997) conclude that these companies often seek new combinations of interfirm ties in

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