University spin-off networks' double-sided influence: balancing founding teams in business performance and balancing local/regional ecosystems

Research on founding teams and early networks has been widely taken up, specifically concerning university spin-off firms. University spin-off firms (USOs) established by university staff and/or graduates, have attracted abundant attention as an important channel of commercialization of university knowledge. The reason for this attention is among others the perceived contribution of university spin-offs to diffusion of new knowledge and to dynamic entrepreneurship in regional economies, providing high-tech employment. However, USOs' early growth has remained modest in Europe since the late 1990s (e.g. Caputo et al., 2022; Hesse & Sternberg 2017), though more positive pictures have also been presented (e.g. Rodriguez-Gulias et al., 2018).

In search for understanding of small growth and differences in growth, founding teams' composition has received much attention in literature, including age, education, pre-start work experience, academic background, etc. Such studies have, however, produced several *ambiguous* results, like positive impacts from information richness (diversity) and also problematic impacts from team fault-lines, given strong team diversity. Furthermore, in a previous quantitative study in Northwest Europe, it was observed that founding team composition tends to *negatively* influence USOs' early performance, while networks - domestic social and international networks – tend to exert positive influence on this performance (Taheri, 2013).

Early networks seem relatively powerful among young spin-offs in Northwest Europe, as a large majority (about 70 per cent) tends to be involved in networking with a large firm, aside from other partners, according to several subsequent empirical studies (Van Geenhuizen & Soetanto, 2009, 2013). As the impact from founding team diversity can still not be fully understood, a shift in attention has taken place towards balancing (compensation) of team shorts in capabilities by networks with an adequate composition (Visintin & Pittino, 2014). The current paper takes up the challenge by disentangling influence of more versus less balanced networks-teams on key performance of innovative USOs. This performance includes market introduction, scaling up and survival. Accordingly, the paper extends analysis of initial USOs' growth with later growth in a

longitudinal way. In this longitudinal approach, we make use of qualitative descriptive analysis of 18 individual USOs covering about 10 to 20 years of their life.

With regard to benefits from entrepreneurial ecosystems (Spigel et al., 2020; Stam & Van de Ven, 2021), several changes are taking place more recently. In response to employing lean teams, e.g. two or one founder (e.g. Blank, 2013; Bocken & Snihur, 2020), USOs have developed a stronger orientation on their local ecosystem, like the parent university and related high-technology firms (eventually embedded in a local cluster), and on civic interest groups. The ecosystems themselves have also undergone several changes more recently, requiring adaptive approaches in planning and policymaking. In addition, the traditional focus on proximity to university is now blending with the growing importance of policy collaboration and collaborative networking in innovation in more bottom-up models, thereby putting emphasis on participation by local/regional stakeholders in-situ, in particular initiated by universities, other educational institutes, municipalities and civic interest groups (Ansell et al., 2017; Ansell & Torfing, 2021; Van Geenhuizen & Nejabat, 2021; Radulescu et al., 2023). The emerging reform is partly reflected in the overarching concept of *'co-creation'*, as the active engagement of local/regional stakeholders and end-users in the entire innovation process that runs from finding potential solutions, designing pilots and testing them, towards decision-making and implementation of solutions (Agrawal et al., 2015; Ramaswamy & Ozcan, 2018; Stephens, 2025). Enhancing such development would mean that spin-off networks also contribute to balancing of local/regional ecosystems. What the new qualities, including adaptive planning in dealing with uncertainty, integrative networking in e.g. Triple (Quadruple) Helix networks and employing open innovation networks, may imply for (young) USOs, has however largely remained unanswered. We take-up this additional challenge by exploring the more recent composition and potentially balancing influence of the networks on ecosystems, and what policies would work to increase co-creation and stronger local innovation.

Against the backdrop of the above knowledge gaps, the research questions are as follows: *What is the role of more or less balanced networks/teams in university spin-off firms' performance? In detail, how does the interplay of balanced networks/teams with radical innovation influence market introduction, upscaling and survival for spin-off segments? Regarding balancing on the*

ecosystem level, what are the more recent characteristics of the spin-offs' networks and which of them are beneficial in the new paradigm?

Results can be summarized as follows. A balanced interplay of networks/teams situations with innovation radicalness comes with specific sequences of life events. For example, early balanced networks/teams situations tend to enable early market introduction of radical inventions, while less balanced situations tend to cause a late (or impossible) reaching of the market, usually followed by bankruptcy. With regard to balancing ecosystems, USOs dealing with radical innovation often employ multifaceted networks abroad, eventually followed by acquisition by a foreign firm and a large chance that attention for the local ecosystem (e.g. parent university links) diminishes.

The *contribution* of the paper is twofold, *first,* exploration of dynamics in the network/team framework, and connecting this framework with innovation radicalness. And *related,* several life trajectories for different segments of USOs, with different performance in market introduction, upscaling and survival. Attention for such longitudinal approach is new. *Secondly,* implications are explored of USOs networks and acquisition of USOs by larger firms abroad, but also of local/regional co-creation in dynamically changing entrepreneurial ecosystems, which is also new. The latter conditions would enable 'smaller missions' with local citizens and local SMEs involved, aside from big ones (national government, EU and large firms) (Coenen & Morgan, 2020; Henderson et al., 2023).

The paper unfolds as follows. Section 2 discusses theoretical views, and this is followed by section 3 which addresses materials and methods. Section 4 discusses different trajectories of USOs in more versus less balanced networks/teams and radical innovation with contrasting outcomes on market introduction, upscaling and survival. Section 5 takes a specific look on the dynamic growth of USOs domestic and global networks, in the light of potential contribution to new (additional) models of local/regional *co-creation*. The paper closes with policy implications and future research paths to further identify network implications for stronger co-creation in local/regional ecosystems.

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