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Uncharted waters of the entrepreneurial ecosystems research: comparing Greater Istanbul and Reading ecosystems

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Uncharted Waters of the Entrepreneurial Ecosystems Research: Comparing Greater Istanbul and Reading Ecosystems

Abstract

This study introduces the complementarity perspective to the entrepreneurial ecosystem (EE) research as a process to compare two entrepreneurial ecosystems of Reading (United Kingdom) and Istanbul (Turkey). We apply the multiple-case design methodology based on the rapid ethnography and the grounded theory to construct two entrepreneurial ecosystem models, characterized by different EE taxonomy pillars and embedded in different local and institutional contexts. As a result of the study, two findings emerge. First, we find three distinct complementarities in both EEs: access to resources, effective use of resources, entrepreneurial orientation, and ecosystem awareness. Second, EE taxonomy pillars serve as mediators between ecosystem elements that drive entrepreneurial activity and complementarities. We argue that this approach could be applied to understand how EEs work and develop in regions with heterogeneous economic, geographical, and institutional contexts.

Keywords: entrepreneurial ecosystem, complementarity, regional taxonomy

Introduction

The research on the entrepreneurial ecosystem (EE) has grown quickly in recent years (Qian et al. 2013; Spigel, 2017; Acs et al. 2018; Godley et al. 2019; Nordling et al. 2020). High importance has been attributed to the concept as it contributes towards helping scholars to think systemically when considering entrepreneurship activity across various sectoral, institutional, and local contexts (Partridge et al., 2019; Tsvetkova et al., 2019). Cities and regions have become an important unit of analysis for entrepreneurial ecosystems research with different economic agents operating within its boundaries (Audretsch & Belitski, 2017; Malecki, 2012, 2018; Stam, 2018).

EE is defined as "a set of interconnected entrepreneurial actors, entrepreneurial organizations, institutions and entrepreneurial processes which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment" (Mason & Brown, 2014:5). Since Mason and Brown (2014), several other EE definitions emerged, all with a specific focus on high-growth and productive entrepreneurial activity as the prominent outcome of the ecosystem. For instance, Stam (2015:1765) defines

EE as “a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship’.

The entrepreneurial ecosystem has faced a numerous critique of being widely undertheorized concepts, policymakers have adopted the ecosystem perspective as a process to spur regional economic development (Spigel & Harrison, 2018) by focusing on the interrelations between economic agents in a city or region and the knowledge spillover of entrepreneurship within the ecosystem boundaries (Audretsch et al., 2015; Stam, 2015; Content et al. 2019; Tsvetkova and Partridge, 2019). While significant empirical evidence and case studies on high-quality EEs have been developed (O’Connor et al. 2018), there is a paucity of knowledge of how EEs from different economic, geographical, and institutional contexts can be benchmarked (Content et al. 2019) and what process should be applied to compare and analyse ecosystems.

The systemic approach to study entrepreneurial activity is adopted by regional economics and policymakers (Isenberg & Onyemah, 2016; Szerb et al. 2019), however, it limits the understanding of origins and dynamics of heterogeneity between EEs. For example, there is still limited evidence on the extent to which different ecosystems promote “high-growth entrepreneurship” and the role of the local and institutional context in this relationship (Szerb et al. 2013; Stam, 2015).

Rather than adopting uniform, one-size-fits-all approaches, this study develops a process to analyse highly heterogeneous entrepreneurial ecosystems and across different geographical contexts. In doing so this study addresses the call for a better understanding of the mechanisms and the pillars of EEs and the implementation of systems perspectives in developing and less-favoured settings (Tsvetkova et al., 2017; Lundvall et al., 2011). In analysing two EEs one from the developed and another from the developing regional economy takes the systems perspectives out of its comfort zone

and re-defines the mechanisms and pillars of the EEs. Thus, focusing on EE as a preferred framework accommodating economic geography and entrepreneurship fields aims to bring a new, complementarity-based lens to comparing EEs across different geographical and institutional contexts.

We ask the following research question: What constitutes EEs in different regions, and what role do complementarities between EE taxonomy pillars play in EEs in countries with different economic and institutional development levels? The research question contributes to the special issue objectives on "what enables the emergence and the sustainable growth of ecosystems."

By adopting a "place-based" systemic approach to analyse entrepreneurship in Greater Reading (United Kingdom) and Istanbul (Turkey) we use the complementarity approach (Adner & Kapoor, 2010; Williamson & De Meyer, 2012) and extend the existing knowledge on EE taxonomy (Brown & Mason, 2017; Godley et al. 2019) top broader heterogeneous contexts.

The contribution of this paper to the literature is twofold: First, using two distinct EEs of Greater Reading and Istanbul, this study demonstrates how the interdependency between EE pillars changes the behavior and roles that economic actors play in the EE. In doing so, this study complements studies by Stam (2015, 2018) and Audretsch & Belitski (2017), which is nowadays considered as a standard template to represent regional (city) entrepreneurial ecosystems. We expand the emerging theory of EE (Contract et al. 2019) by reviewing how various configurations of pillars complement each other and facilitate entrepreneurial activity in Istanbul and Reading EEs, adding to the body of knowledge on EE dealmakers (Feldman and Zoller, 2012; Bosma et al. 2012) and EE taxonomy for regional economic development (Brown & Mason, 2017).

Second, the EE framework we develop complements the approach proposed by Stam (2018) and Content et al. (2019), in which the author set up a quantitative model with drivers predicting productive entrepreneurial activity in a region, along with regional economic development. Compared with these studies, however, we use the multiple-case design approach based on the ethnography-oriented qualitative methodology and the grounded theory (Corbin & Strauss, 2014) to construct such a model and rely on both interview data and the multiple qualitative data sources for two EEs (Nordling & Pugh 2019). The importance of qualitative methods is due to significant differences between Istanbul and Reading EEs, for example, in terms of market size, entrepreneurship culture, availability of financial capital, and institutional quality.

In an attempt to link our empirical findings to policy, we relate the distinct pillars of EE in specific complementarity clusters, which the emerging literature on EEs has suggested as important (Godley et al. 2019). While we find that the complementarities of EE pillars have several commonalities between Istanbul and Reading EEs, they also differ significantly in the way they provide, access, and distribute the resources. We recommend several policy interventions for ecosystem actors to distinctly engage in the interdependent networks to enhance the level of complementarity between EE pillars and explain which elements can be supported and combined. In other words, our special focus is on the EE taxonomy with the pillars which could be combined and the practice, which can become common to analyse and compare heterogeneous EEs in both developing and developed countries (Tsvetkova et al. 2017).

A systemic approach to understanding entrepreneurship activity in greater Reading and Istanbul enables policymakers and regional scholars to map what constitutes an EE in Greater Reading and Istanbul and what elements of the ecosystems

are interdependent and how. We take the more – the merrier approach and argue that the more the EE taxonomy elements will develop complementarity, the more the ecosystem actors work cooperatively with each other, and the economic development of a region could be achieved. Our findings imply that a one-size-fits-all approach does not apply to understand EEs; rather, a careful analysis of the complementarities and pillars needs to be done to develop relevant regional policies.

The remainder of the paper is as follows. The next section presents a literature review of the main concepts. Section 3 introduces and explains two EEs and the method used in this study. Section 4 provides an in-depth analysis of the ecosystem, while section 5 discusses the findings and concludes.

2. Literature review

2.1. Institutional environment and entrepreneurial ecosystem

While there is a clear acceptance that entrepreneurial actors, connectors, dealmakers, networks, and entrepreneurial culture are important for the regional entrepreneurial ecosystem and its performance, there is still no consensus on how these elements are interrelated to facilitate regional entrepreneurial activity. Local and institutional contexts are important but relatively little is known about how and to what extent EE may be contingent on local contexts (e.g., Bjørnskov & Foss, 2016) and formal and informal institutions (Content et al. 2019). The impact of the institutional environment in shaping the context of entrepreneurial action has been widely discussed (DiMaggio & Powell, 1983; Acs et al. 2014; Audretsch et al. 2019). The regulatory, normative, and cognitive aspects of an institutional context determine the decisions and behaviours of actors embedded there (Korosteleva & Belitski, 2017).

In order to further understand the role of resources, local context, and the institutional environment as framing EE, there emerged a need for a structured framework on EE. Such

frameworks and taxonomies contributed to the field in several respects as they allow researchers to highlight differences among local contexts between EEs. The theoretical basis for this analysis can be traced back to Isenberg (2011) and Feld (2012). More recently, Stam (2015), Brown & Mason (2017), Godley et al. (2019) and Stam & Van de Ven (2020) offered various EE taxonomies, which are useful in thinking about what constitutes an EE . More formally, we may define the entrepreneurial activity as a function of the ecosystem characteristics(pillars), which relate to entrepreneurial actors, orientation, entrepreneurial connectors, and financial resource providers (Brown & Mason, 2017). The **first element** of EE is *entrepreneurial actors*. This pillar includes some major institutions that foster entrepreneurship activity, such as mentorship, incubators, and accelerators (Nordling et al., 2020). The **second element** is the *entrepreneurial resource providers (e.g.* banks, venture capital firms, business angels, and other financial institutions). Obviously, finance and related resources are fundamental for start-ups and growth-oriented innovative firms (Lee, 2014) and knowledge commercialization (Audretsch et al. 2016). The **third element** is the *entrepreneurial connectors such as* interdependent networks of entrepreneurial actors and their collaborators (Granovetter, 1973; Adner & Kapoor, 2010). Dynamic EEs typically have strong informal and formal networks, which help alleviate resource deficiencies in start-ups and facilitate tacit knowledge sharing (Sullivan & Ford, 2014). The **fourth element** is *entrepreneurial orientation or culture, representing* societal norms and attitudes that support entrepreneurship activity (Isenberg, 2011; Feld 2012; Feldman, 2014).

Although becoming an increasingly popular concept for regional authorities and entrepreneurs (Stam & Spigel, 2016; Szerb et al. 2019), we agree with Content et al.

(2019) that EE suffers from being atheoretical and what constitutes an EE has not yet been adequately tested (Spigel, 2017; Stam & Van de Ven, 2020).

2.2 The benefits of an entrepreneurial ecosystem from the complementary taxonomy perspective

An EE cannot possess all four elements, and a combination of the strongest elements can be used by policy-makers to facilitate entrepreneurial activity and growth. The complementarity approach describes the phenomenon where different elements (pillars) of the ecosystem jointly contribute to value creation within an ecosystem. The success of EE depends on how effectively it complements different pillars together. Reflecting on the emergency theory of EE (Content et al. 2019), four pillars of EE (Brown & Mason, 2017) create different interactions and determine the content of the EE organization in a city (region). For example, entrepreneurial actors can provide complementary resources to other pillars in the ecosystem that are underdeveloped to create interdependencies between them (Godley et al., 2019), while various components of EE taxonomy that create complementary pairs may construct combinations among them.

These combinations among pillars in an EE enable the entrepreneurial actors to leverage EE challenges and create a competitive advantage of a region, but it also allows them to achieve the ecosystem (Williamson and De Meyer, 2012). The benefits from the complementary combinations may vary depending on their roles that actors play in the ecosystem (Yaghmaie & Vanhaverbeke, 2019).

The distinguished systemic conditions approximate the combination of complementary pillars that characterize an EE (e.g., networks, leadership, finance, knowledge) (Stam, 2015) and the framework conditions (e.g., formal and informal institutions, infrastructure) (Audretsch & Belitski, 2017) A significant body of empirical work has now identified these

systemic and framework conditions as pillars that can facilitate entrepreneurial activity through the development of highly conducive EE in a region (city). With this in mind, we realize how the embeddedness shapes the roles of entrepreneurial actors such as connectors, entrepreneurs, incubators, dealmakers, investors, and other actors in the local and institutional context and the resources they use to be able to facilitate other EE pillars (orientation, culture, resources) to deliver the EE's objectives.

3. Data and Method

This section describes the research setting and the methodology used in this study. As we observe two EEs that constitute complex complementarities and interconnections between entrepreneurial actors and other pillars of EE taxonomy, a qualitative research methodology is applied to investigate the type of pillars and the role of these factors in the ecosystem. In the following subsections, the introduction of two ecosystems is made, followed by information on data collection, methodology, and analysis.

3.1. Entrepreneurial ecosystems of Greater Reading and Istanbul

Greater Istanbul and Reading are two very different EEs with significant variation in market size, regional location, formal and informal institutions, and the level of economic development. As indicated by the Turkish Statistical Institute (TUIK), $51of each $100 commercial activity in Turkey is created by Istanbul, with more than half of Turkey's exports. It is located on Europe's crossroads and the Middle East acting as a transportation hub with its two airports and three seaports. Traffic congestion, political instability, and the weak rule of law reduce its economic potential and attractiveness to foreign direct investments. A high population density and active business networks enhance economic activity and facilitate interactions between ecosystem agents. The leading Turkish Universities located in the city with special programs on

entrepreneurship, business accelerators, and technoparks (e.g. "ARI Teknokent" of Istanbul Technical University, "Yildiz Teknopark" of Yildiz Technical University) facilitate interaction and connectivity among entrepreneurial actors.

Reading in the United Kingdom is located near London between Bristol and Heathrow's two largest airports and a seaport of Southampton. Unlike Istanbul, there are no traffic congestions due to the city strategic location on the M4 highway corridor. The density of population and business activity is high, with several businesses demand more space and a decrease in commuting time for their employees being located in Reading. Unlike Istanbul, there is only one university in the city, with a 30-minute train connection to Central London and Heathrow Airport, making the city an attractive spot for multinationals and large businesses headquarters (PWC, 2019). The place is recently forecasted to be the fastest-growing economy for the period of 2018-2021 (Regions Economic Forecast, 2018) and one of the leading places in housing affordability near London (PWC, 2019).

According to Tech Nation 2018 report, Reading has eight times the UK average concentration of high-tech businesses and employs 44,405 people in the creative industries with 5248 creative businesses (Centre for Cities, 2019).

Both cities use their location advantage to attract multinationals and foreign direct investment; however, the quality of institutions and governance allows for a disproportional growth for Reading with entrepreneurship activity clustering in close proximity to Microsoft, Prudential, Verizon, Thales, PepsiCo, Cisco, Symantec, Oracle Corporation and Bayer's headquarters.

3.2. Method

To explore our research question, we apply the multiple-case design methodology (Yin, 2013) based on the rapid ethnography to understand “how things happen” (Humphreys &

Watson, 2009) and the grounded theory (Corbin & Strauss, 2014). A wider system perspective covering many entrepreneurial actors requires a deeper understanding of how a system functions (Tsvetkova et al., 2019). Due to the limited number of available case studies (interviewees), purposive sampling (i.e., ecosystem specific) was used (Miles and Huberman, 1994). We followed the rapid ethnography approach that supports the contribution of researchers who act as participant-observers (Reeves et al., 2016) as the study reveals complex interrelationship between ecosystem actors and the local environment in each distinctive EE. The method included data collection from people, places, and events that allowed researchers to develop concepts with regard to the characteristics of the EE in each city, as well as to identify relationships between the EE pillars (Corbin & Strauss, 2014).

By applying the multiple-case design (Yin, 2013), two types of data were collected. Primary data was collected from interviews and secondary data from research centers' websites and blogs, regional reports of LEPs, companies' websites, think-tank reports, brochures, company's newsletters, and conference papers (Baines & Cunningham, 2013; Raunio et al. 2019) as well as conference presentations, business meetings with ecosystem actors and further team embeddedness in the ecosystem (Spradley, 1980; Eisenhardt, 1989).

3.2.1. Interview analysis

In order to have a sufficient understanding of the sample study, sixteen cases (participants) were selected from Reading, UK, and 10 participants from Istanbul (Turkey). In other words, each interview case serves a distinct analytical unit, and multiple cases, in combination with other sources of data, serve as replications, contrasts, and extensions to the emerging theory (Yin, 2013). First, we generated codes

in vivo; they were categorized to create open codes that were further selected to create the themes and generate the theory.

We compared the codes and categories until they were saturated for both EEs. To support the analysis procedures, qualitative analysis software NVivo 11 was used (Pittaway et al. 2004). The interviews were collected through face-to-face meetings between September 2018 to June 2019. Interviewees were different economic actors of EE (e.g., researchers, senior managers in multinational companies, technology transfer office directors, professors, etc.). Each interview lasted between 40 minutes to 1 hour. All interview discussions were recorded, resulting in 86 pages of transcribed texts for Istanbul and 112 pages for Reading.

While selecting the respondents, the principle of "purposeful sampling" (i.e. ecosystem specific) was used (Miles & Huberman, 1994), as it allows retaining the depth of the study and the richness of the results (Piekkari et al., 2009). To maintain the originality of thought, we provide quotes from interviewees (Corden & Sainsbury, 2005). A complete list of interviewees in Reading is illustrated Table 1 and in Greater Istanbul - in Table 2. The interview protocols used to collect data are in Appendix A.

Table 1 about here

Table 2 about here

3.2.2. Multiple-case design approach

By following the cyclical pattern of investigation (Spradley, 1980), the theoretical sensitivity was achieved through a review of the literature, the interview process, interaction with participants, and using secondary sources (Corbin & Strauss, 2014) such as company reports, Local Enterprise Partnership (LEP) reports and statistical data from platforms such as Startupswatch in Istanbul (Denzin & Lincoln, 2011). We discussed them with the team, and in the light of these discussions, we went back to several interviewees in both EEs to gain

further information. This is similar to working in an ethnographically oriented manner, as writers analyse their research material as they write (Humphreys & Watson, 2009). At the end of the secondary data collection process, we were able to identify the patterns in data, which were further presented and discussed with the team in Reading and Istanbul. Field notes, conference feedback, and memos further contributed to interview findings and enriched the list of themes. Besides, we used an audit trail to measure dependability and conformability. It was used to develop an outline of the investigation process and the evolution of the codes, categories, and theory development, which consists of all the transcript texts, in vivo codes, memos and self-reflective observations, other documents, and access to companies' and organizations' websites and open source data (Miles and Huberman, 1994). This process led to understanding what constitutes the pillars of each EE and how these themes are interrelated with each other.

Reliability and validity are the core criteria for quality in quantitative studies (Lincoln & Guba, 1985). According to Eisenhardt (1989), the use of multiple researchers improves the reliability of a study. Also, using both primary and secondary data allowed us to validate the findings. The secondary data analysis involved making sense of a large amount of data we had access to such as regional databases on entrepreneurship and business growth (i.e., Startupswatch; Tech Nation), government agency reports on entrepreneurship activity (LEP reports) in both cities, techno-park annual reports and brochures as well as publicly available news on both EEs during 2018-2019. This was important to familiarize and map the emerging themes with the local context data, which is also an important feature for rapid ethnography (Handwerker, 2001).

Following the grounded theory approach to this study, we attended two formal meetings and one informal meeting (i.e., StartupsWatch meetings in Istanbul in February 2019 and in June 2019, as well as Brittlestand Symposium in Reading in September 2018 and September 2019). Both events allowed us to expand the list of cases and obtain access to additional secondary data sources and observations.

This is also in line with Nordling & Pugh (2019) and Pugh et al. (2016) describing the role of researcher's experiences in ethnography as "living" and "doing" the research topic, and thus gaining legitimacy to present some personal reflections on the field data. Team representatives live and work in the ecosystem (Pugh et al., 2016), and we have a convincing reason to believe that we have been ecosystem participants by embedding ourselves for over five years in the ecosystem.

4. Findings on the Ecosystem

In this section we present our findings for the main EE pillars for Greater Reading and Istanbul, and compare the results.

4.1. Entrepreneurial actors in Greater Reading and Istanbul entrepreneurial ecosystems

Istanbul has an abundance of entrepreneurial actors; however, their effectiveness is rather limited. Especially, weak nature of mentorship activities and rather "narrow" focus of accelerator programs and incubators which is often limited to technology-based firms limits the development of entrepreneurial actors. We evidenced this throughout interviews with local entrepreneurs and investors:

"The ecosystem lacks qualified mentors. They don't design their mentoring with an ad-hoc, project-based approach". (I3)

"*The structuring of accelerator programs is not good enough. They do not guide me properly, nor do they provide access to financial investors or mentors*" (I5). *We suffer from lack of guidance at the early stages as we lack established mentoring services*" (I6).

A striking finding about Istanbul EE is that, technoparks are mentioned on several occasions both throughout the interviews and focus groups studies as critical actors mitigating the impact of EE weaknesses. For instance, incubators located in university technoparks are described as "*exceptional*" and "*well-functioning*" (I6).

Technoparks' role in Istanbul EE is told to "enrich the network" (I1) and enable the firms to "*share the same space and thus become aware of each other's business and network*" (I9). Technopark's support is oftentimes limited in providing access to qualified mentors and advisory services. Technoparks in fact became a conduit of knowledge in the ecosystem where qualified mentors and advisory services are matched with the needs of entrepreneurs.

Along with incubators and accelerators in Istanbul, co-working spaces have gained popularity and their number has been increasing exponentially in recent years. High rent and shortage of physical space in Istanbul, however, are two impediments for early stage entrepreneurs located in co-working spaces. In order to leverage high rent, limited spaces and very selective criteria of technoparks and co-working spaces, entrepreneurs and investors foster the use of informal ties for idea sharing and co-creation of new products and create an alternative way of network sharing.

"*The entrepreneurs' own efforts hugely contribute to the development of Istanbul EE. Especially, their tendency towards information sharing with each other enables them to be informed about possible partnerships and investment opportunities*" (I5).

Non-for-profits such as locally formed business associations (i.e. GYIAD and TUSIAD) provide continuous support to entrepreneurs by offering the ad-hoc training programs for early stage entrepreneurs and scale-ups. This leverages the weaknesses of incubators, accelerators and co-working spaces and serves as a complementor to other informal networks in entrepreneurial community.

With respect to this dimension, the EE in Reading includes start-ups as major EE actors, following the example of particularly influential individual entrepreneurs and policy makers who act as role models and influential stakeholders.

"*We started the business in the Thames Valley area because of tech companies located here and the ability to draw on knowledge spillovers of various actors*" and "*Our ambition was to connect to other consultants in the area which we consider the main actors of entrepreneurial ecosystem*" (R2).

The annual Tech Nation Report (2018) captures the strength, depth and breadth of entrepreneurship actors working with digital technologies and software publishing in Reading. The report, while mapping the evolution of the UK tech sector, highlights that, "*Its start-up community is now growing too, tapping into the established expertise and resources available in the city*".

Partnership opportunities for start-ups are created through formal and informal entrepreneurial networks, which distinct it from Istanbul, where informal networks dominate.

"*Chamber of Commerce is a major actor in the ecosystem, and we should be doing more to support small businesses; instead, most activities are focused on multinationals and established businesses*" (R16). This focus on multinationals is very strategic as the experience of Microsoft Innovation Centers (MIC) in Brazil demonstrates that the way collaboration is organized between interdependent actors in the EE and multinationals can provide start-up incubation facilities and foster regional development (Nordling et al.,

2020). This remark underlines a possible weakness of Reading EE, which is a focus on medium and large start-ups often as subsidiaries of powerful multinational enterprises, and not on connecting them with the start-up infrastructure.

Unlike in Istanbul, there is an "open door" policy for business incubators and accelerator programmes with several created over the last five to ten years (e.g. "Start-up Grid", ConnecTVT and The Thames Valley Science Park). Business incubators, including The Thames Valley Science Park nurture entrepreneurial culture in the region which is dominated by multinationals: "*The demand for business incubators is still higher than the supply*" (R15).

The difference between entrepreneurial actors in both EEs is that technoparks and co-working spaces have gained a substantial popularity in Istanbul, while Reading EE relies on local enterprise partnership resources, which is a local agency created by the UK government providing financial support and mentoring services "top-down".

"*Initiative of Reading City Council is to reduce local unemployment through entrepreneurship, development of new actors for the ecosystem through the mentoring programs and financial support"* (R16).

Private and public initiative in Reading are interconnected with the example of Reading Borough Council, University of Reading and the Henley Business Angels working together to provide important venture capital, mentoring and working spaces building on multiple formal institutions and networks, making the process open and very transparent.

4.2. Entrepreneurial resource providers in Greater Reading and Istanbul entrepreneurial ecosystems

Entrepreneurial finance remains on top of the business agenda in emerging markets, such as Istanbul. Access to entrepreneurial finance is difficult and the financial markets are underdeveloped. Technoparks emerge as places where entrepreneurs can develop their business but also "*reducing the burden of several fixed expenses*" (I2).

Government finance is available for entrepreneurs via TUBITAK (The Scientific and Technological Research Council of Turkey) and KOSGEB (Small and Medium Enterprises Development Organization), however they are often insufficient and they only meet up to 75 percent of technology employee costs.

"*We use bootstrapping as long as we can. But still, for financial resources, the greatest support for entrepreneurs is the government funds. We use them rather than using investor support*" (I1). I9 also mentions that, "*The government grant-dividend is much higher for Istanbul, compared to other cities in Turkey. So if you are located here, it is easier to provide access to government funds*".

Two main issues can be emphasized when we research financial resource providers in Istanbul: i) investors lack the vision and effective screening procedures for business ideas, and ii) there is a shortage of financial resources, including alternative sources of finance and foreign direct investments.

"*There are some state supported programs like 'Invest in Istanbul' to attract foreign investors, which is good, but insufficient"* (I9).

"Foreign investor can join investment funds run by a collective entity such as state, large corporations and technoparks, which I hope will encourage more foreigners to come and invest in our start-ups" (I9).

It is likely that start-ups benefit by co-location with large multinationals located in Istanbul EE, which has the potential to generate significant knowledge spillovers (Audretsch and Belitski, 2013).

"*Mainly due to the operations of big corporations, nearly 85% of economic activities take place in Istanbul, which also prepares the ground for start-ups to identify several business opportunities*".

Unfortunate for the ecosystem, support of large corporations (both foreign and domestic ones) is limited to organizing start-up competitions and workshops, as well as other informal meet-ups with little direct investment in start-ups. "*Especially those large Turkish firms, manufacturing firms are totally closed to collaboration. The first thing they ask is, 'how much money will I make out of this? Rather than innovation, technological advancement, and new market opportunities, they are mostly short-term financial gain oriented*" (I9).

"Large corporations would rather immediately acquire a start-up rather than investing and collaborating with" (I6).

Talented graduates from leading universities in located in Istanbul get immediately recruited by large multinationals preventing graduates from starting their own business.

"*The role of universities as human resource providers is essential for start-ups, technoparks and large corporates*" (I3).

"This is understandable. In a risky environment, when they offer higher salaries, not many want to hang over with start-ups" (I7).

Interestingly, Reading EE has many mechanisms similar to those in Istanbul. Multinationals are also influential in the region, but unlike in Istanbul, they provide entrepreneurial finance. The "Business in Berkshire Report - 2018" revealing that Reading has attracted more foreign direct investment between 2017-18, than any other location in Berkshire with respondents highlighted the contribution of multinationals in EE:

"*Large multinationals do not often collaborate with entrepreneurs, such as Oracle, Verizon, Huawei and Cisco, may be the main customers for small businesses and they will also acquire the brightest ideas.*".

Interestingly, nurturing high qualified workforce may drag human resources away from entrepreneurship (Berrill et al. 2018), while providing supply chain support and acquiring business ideas is also like what occurs in Istanbul EE.

The direct financing for entrepreneurs is also very limited.

"*I may say that multinationals in Reading employ highly-skilled workers, who could otherwise start their own businesses or work in other London multinationals*" (R16).

"*Headquarters of multinationals in Reading do not use their knowledge and finance to directly sponsor small businesses and make it grow, but they could do it*", which is not exactly the same with prior studies, as, for example for Brazil, they demonstrated a very active role of multinationals in supporting small business (Nordling et al., 2020).

Like TUBITAK and KOSGEB government agencies in Istanbul, Local Enterprise Partnership (LEP) provides resources through the "Business Growth Fund" established by the government for the region. The Thames Valley Science Park, which was established with the support of the LEP in Reading, attracted significant number of multinationals such as Microsoft, Oracle Corporation, BG Group who mentor startups via hackathons, finance research labs, allocate resources to foster knowledge collaboration with entrepreneurs and University of Reading scientists.

"*Large firms do not necessarily put their focus into Thames Valley as their focus is nation-wide and global*" (R8).

Unlike universities in Istanbul, the University of Reading is more active in financially feeding the EE by providing office spaces, incubators, establishing the Henley Angels

Venture Capital Fund and by collaborating with Santander Bank to sponsor entrepreneurial initiatives.

"University of Reading contributes to the local EE by translating research into dynamic capabilities and by matching funds through linking local businesses to large firms and to other financial providers, such as business angel networks" (R8).

The contribution of University of Reading based activities, resemble the benefits of technoparks in Istanbul:

"*In Reading University spaces, entrepreneurs can leverage business costs; in particular renting, wages, office space, cost of living with simultaneous angel and venture capital investment networks*" (R11).

4.3 Entrepreneurial connectors in Greater Reading and Istanbul entrepreneurial ecosystems

The geographical location of Istanbul on the crossroads of Asia and Europe makes the city a natural "connector" and a transport hub. However, urban problems such as pollution and traffic congestion make it difficult for entrepreneurs to connect physically in a city. Over time, difficulties associated with moving in a city have become a problem for customers, suppliers, and other critical EE actors.

Entrepreneurship events, such as entrepreneurship and industrial clubs, co-working spaces and incubators contribute to the overall 'local buzz' (Bathelt et al. 2004). Several interviews support this: "*Community meetings make it easier to reach out resource providers and potential partners*" (I4).

"*When you go to one event, you meet with several people and thus you become involved in new contact lists and have the chance to be informed on several networking events and meet-ups*" (I3).

In addition to entrepreneurial events that connect actors, active start-ups also perform the "connector role" by using their networks. As "*There is a high chance that you get lost in the ecosystem*" (I10), in order to increase "visibility", "multi-facet nature of cooperation" helps to get stronger connections with other actors. "*Here, everything runs on networking, and meetings between entrepreneurs. Everything goes behind the doors*", points out I7 underlining the importance of informal ties and networks, adding that, "*maybe an obvious advantage of being a part of a newly structuring ecosystem is the chance to know the right people*". Again, participating in events and meetings increases the likelihood to start entrepreneurial activity, find co-founders and human resources with relevant skills:

"*Events enrich the entrepreneur's social capital and sometimes even enables him to reach out qualified tech people"* (I3).

Due to EE size, in Istanbul we can find "clusters of entrepreneurs", in different industries which facilitate the knowledge spillover among these different entrepreneurship groups (Belitski & Desai, 2016; Tsvetkova & Partridge, 2019).

"*Those events organized by amateurs are thought to be more effective and successful in touching people*" (I10).

When we think that the natural tendency to share information and learn from each other's experiences is the driving force behind these amateur gatherings, once more, collaboration acts as an important complementarity factor to other pillars of EE. There is a certain role of individual's contacts on reaching out to international investors.

"*It is very important for an early stage entrepreneur to reach out an investor with similar experience. At this point, 'the network of your network' becomes of critical importance. I am a member of two different WhatsApp groups, one on e-commerce, and the other one on exporting. And thus, I become informed about several events and meetings that bring investors, potential partners and customers together (I8).*

Such information sharing also makes it easier for entrepreneurs to provide access to investors and for investors to spot the entrepreneurial opportunities in the ecosystem. The case of Greater Reading as for connectivity relies on London infrastructure and transport. Supportively, data from reports and interviews put forth that, the geographical location of Reading is a conducive factor for connectivity.

"*Entrepreneurs and corporate businesses within the Thames Valley are well connected in terms of travelling to various locations across the UK and abroad quickly, as Reading has a train station and the largest international airport is in a footstep*" (R9).

Proximity to London has both spillover of investment and entrepreneurial finance as mentioned by R10 "*I enjoy the knowledge and financial spillover from London whenever I need to internationalize my business services*" and "*I guess a fondness, or an ease of working here, for my business, is the access to London*" (R8). Relatedly, the annual Tech Nation Report (2018) highlighted that, proximity to London connecting businesses with a global client base, Reading has long attracted major multinational actors, including Microsoft and Oracle.

As in Istanbul, Reading has multiple co-working spaces, online meet-up groups and clubs such as Business Biscotti, First Friday Club gatherings, "LiveLab", and Reading Business Club which bring entrepreneurs together at rotating venues and with different guest speakers (Tech Nation Report, 2018). The scale of these activities compared to Istanbul is rather low, but entrepreneurial actors "top it up" by travelling to London venues and events taking place there. As in Istanbul, specialized events which serve specific entrepreneurial and professional communities have gained popularity in Reading.

"*Events for entrepreneurs with the highest visibility are Business Improvement District Events in the Reading Town Centre, where they hold bi-annual networking and social events for town centre businesses*" (R6).

Still, the question remains: How to bring corporates on board?

"*We are in Reading to work globally with large businesses; however, while participating in various networks and the Business Improvement District events, we have not yet been able to connect to large market players*" (R2). It may be the case that support from local chamber of commerce, city council, and the university is needed to perform connector's role between small and large businesses, along with the activities taken place in the Thames Valley Science Park.

"*Small businesses are overlooked as their value added is tiny. Large firms should host more events which directly targets future scale-ups and small firms with an ambition to grow. For instance, IKEA does such community events in Reading, as well as Microsoft" (R16).*

The lack of formal and informal ties between entrepreneurs and large corporations was evidenced during the annual conference "International Business" at Henley Business School:

"*More should be done to connect global firms to the University and to the local entrepreneurs in Reading as these networks at the moment are rare and very much product specific*" (R7).

What we find similar between Istanbul and Reading ecosystems is that both highlighted the importance of foreign investors and multinationals as active actors in the ecosystem, as well as their role as connectors bringing small and large businesses together.

"*Entrepreneurial connectors are limited to networking events and business start-up clubs with very rare events initiated by large firms*" (R15). It is unlikely that such connectivity can be substituted by a greater engagement with London EE, as the major target of entrepreneurs are larger firms, that are located in Reading.

As in Istanbul, foreign investors are on the spotlight, with entrepreneurs travelling to London to raise finance:

"*Mostly, negotiations with private equity investors are done in London, at the Stock Exchange. Angel investor networks spread around our Science Park and investors travel here on a daily basis to observe the businesses, people and premises. But still, most negotiations take place in London*" (R15).

It is obvious that, Reading EE utilises connectivity pillar of London to leverage lack of entrepreneurial connectors locally.

4.4. Entrepreneurial orientation in Greater Reading and Istanbul entrepreneurial ecosystems

"Role models" in the ecosystem, such as entrepreneurs, investors, advisors and mentors are highly visible and known in Istanbul. Successful entrepreneurs attract a lot of public attention by attending entrepreneurship events and speaking to younger entrepreneurs and investors on "how they did it". These entrepreneurs often do serial investments and mentorship to support nascent entrepreneurial activity.

Not surprisingly, this "give-back culture" has been emphasized by many EE actors:

"*Successful entrepreneurs frequently attend entrepreneurship community meetings and most of them mentor other start-ups*" (I4), followed by, "*Without role models of successful entrepreneurs, the ecosystem will not function properly. Even when you cannot reach out to them, you hear their stories and it gives you inspiration*".

"*Successful entrepreneurs let new ventures benefit from their technological infrastructure for free. But still, I think they should share their experiences on funding process and related issues, more profoundly*" (I1).

Entrepreneurship culture in the city has been fed by examples of successful exits in the ecosystem such as Peak Games sold to Zynga, Yemek Sepeti to Delivery Hero, Gitti Gidiyor to eBay, Trendyol to Ali Baba, Iyzco to PayU, etc.

Leading universities in Istanbul are also effective in that, they provide "*the first touch point for students with the idea of founding their own businesses*" (I3) and develop "*entrepreneurship courses* and *the activities of Entrepreneurship Student Clubs*" (I4).

"*The events and entrepreneurship courses offered by universities and student clubs make students get more familiar with start-ups and thus they start to think of founding their own businesses or becoming a member of the start-up team*" (I3).

Random meetings like university club events, incubation meetings and other community events (such as open Mondays, fireplace talks, etc.) are described as important to keep entrepreneurship culture at University and bring other actors on campus to talk about entrepreneurship.

"*Yes, sometimes people just go there for networking on a specific theme. I think, feeling that atmosphere makes people be more willing to become a part of the ecosystem. If they have a business idea, they become more motivated to turn that into a real business*" (I3). In addition to entrepreneurial events at the universities, "amateur" networking events have also become popular to support the culture of entrepreneurship in the ecosystem:

"*It is those amateur events organized by entrepreneurs which reflect the real picture in the ecosystem. They are better at reflecting the spirit of entrepreneurship*" (I10).

Among the main challenges in Istanbul EE culture is a low tolerance for failure and incremental innovation by choosing the safe route to market, rather than launching a completely new business.

"*Turkish people mostly love to share their success stories. It is something related to local culture, we are ashamed of failure" (I9). Supportively,* I10 emphasized that,

"*Entrepreneurs need to hear about failure stories as well as success stories. Learning how an entrepreneur failed a business is the greatest know-how. This is something we lack in Istanbul*".

Reading was a centre for agriculture and food processing, and the founding family of Huntley and Palmers, a world-renowned biscuit manufacturing company, played a key role in its development as an industrial cluster. Reading lacks the role models of individual entrepreneurs in its recent business history. The Tech Nation (2018), report suggest that start-ups rather than individuals perform a role model function for small and medium sized firms. For example, Altitude Angel builds drones locally that revolutionise business and transform people's lives has achieved traction and visibility in a local entrepreneurship community. Another role model is Fairsale, a privacy-by-design data and analytics platform of AI-powered competitive intelligence which was recently acquired by Datasift.

"*These two cases (Datasift and Altitude Angel) have really changed the digital entrepreneurship landscape in the city as it is now associated with two successful acquisitions in the IT and digital media sector*" (R14).

Similarly to pioneering universities Istanbul, the University of Reading has an important role in shaping the regional entrepreneurship culture in the region especially via the Thames Valley Berkshire Business Growth Hub, Thames Valley Local Economic Partnership, Chambers of Commerce, the Institute of Directors, and Santander Bank. Hosting entrepreneurship events attended by hundreds of local SMEs and successful start-ups aim of promoting best practice share for business growth.

"*The Entrepreneurship Hub at University helps students and start-ups to test entrepreneurial ideas and pursue business*" (R8). Business competitions, such as

IDEAFEST and events with alumni who own businesses helps to disseminate entrepreneurship culture at university and beyond.

"*Centre for Entrepreneurship team has been so supportive in educating and mentoring young start-ups and spin-offs from the university. Now when I have first sales and experience, I am confident to continue my business*" (R7).

University of Reading, Chamber of Commerce, LEP and the Thames Valley Science Park altogether joined the forces to advertise the region as the most attractive in the UK to start and grow business. One of the challenges remain that large multinationals in the ecosystem acquire small and fast-growing digital start-ups preventing an entrepreneurship culture to develop (Berrill et al., 2018).

"We see major investments by large and mostly foreign technology companies in the software sector. This is mostly what we hear when we talk about digital entrepreneurship and business in Reading. Large companies are after fast-growing start-ups but this does not help entrepreneurship culture" (R6).

5. Discussion and conclusion

Using the multiple-case design analysis (Yin, 2013) and performing 26 interviews in both EEs and collecting secondary data (Raunio et al. 2019; Pugh et al., 2016), we develop a process for comparing two very different EEs and in two institutional and geographical context. In doing so we take the extent literature out of the comfort zone by critically analysing how EE taxonomy may differ conditional on geographical context - Istanbul and Greater Reading. In order to apply this new process, firstly, it is important to combine various elements of EE which will build up EE pillars. Secondly, EE pillars need to interact with each other in the EE to facilitate productive entrepreneurship activity and that an "anchor"

element, such as an anchor company (Spigel and Harrison, 2018) can become a centre of regional development.

This study responds to the research call in regional studies and growth literature to expand the systemic approaches to regional economic development (Tsvetkova et al. 2019; Belitski et al. 2019; Stam & Van de Ven, 2020), with a particular focus on the EEs, by using a multiple-case design study. Moreover, we understand from the findings that the revealed differences might be related to each region's local and institutional context in each region. Basing on our findings, we visualized ecosystem pillars and related combinations in Figures 1 and 2, respectively. Straight lines in the figures represent strong effects, while the dotted lines imply limited implication of the element and the signal of an opportunity for the factor to be expanded.

Insert Figure 1 here

Insert Figure 2 here

To assess whether (and how) EEs differ, we need to compare the elements which constitute the four ecosystem pillars in Istanbul (Resource Providers, Networks and Connectors, Entrepreneurial Mind-set, Market Size) and five pillars in Reading (Financial Capital, Resource Providers, Education and Mentoring, Entrepreneurial Mindset, Networks and Connectors).

We found that the ecosystem pillars develop four complementary combinations for Istanbul (access to resources, effective use of resources, ecosystem awareness and entrepreneurial orientation, market attractiveness). We also have four complementary combinations for Reading (access to resources, effective use of resources, resource development, ecosystem awareness& entrepreneurial orientation). While three complementary combinations could be observed both in Reading and Istanbul, market

attractiveness complementarity is Istanbul-specific, and resource development is Reading-specific. Besides the similar ones, there are two groups of complementarities – "market attractiveness" in Istanbul and "resource development" in Reading – which differ from each other, underlying the differences in the local and institutional contexts of two EEs. For example, the "resource development" combination in Reading is characterized by significant positive effects of multinational enterprises, government agencies (i.e., Chamber of Commerce and LEP) with the Business Growth Fund, which is allocated to support start-up activity and high-growth firms. The University of Reading and its work with the Henley Angels have also created a channel of resource accumulation and investment in the ecosystem. We also found that "market attractiveness" in Istanbul is affected by all pillars, showing that Istanbul, compared to other regions in Turkey, has obvious leverage with regards to all pillars, which makes it attractive despite its weaknesses. This attractiveness becomes an important dimension for the ecosystem to run effectively.

Despite the lack of foreign and regional resource providers in Istanbul EE, entrepreneurial connectors emerged as an enabler leading to a complementarity - easier access to resources on hand. Also, for Reading EE, the interactions between "resource providers" and "networks and connectors" enable access to financial and human resources. An important complementarity element for EE in Istanbul is the government endorsed funds in alliance with programs run by universities and technoparks. This leads to a stronger connection between entrepreneurship actors and stronger market attractiveness for high-tech firms and start-ups.

Within the extant literature discussing that EEs motivate structural relationships between entrepreneurial actors and economic outcomes (Content et al. 2019; Szerb et al. 2019), we take our findings as supportive for the notion that entrepreneurial actors who found

businesses and invest in the ecosystem exercise an important influence on the overall interdependencies in the ecosystem.

Our findings also indicate how the literature might develop a narrower understanding and design of EEs; specifically, what elements constitute EEs and how they are interrelated. Our two models attempt to highlight the connections between the EE elements - pillars and complementarities nexus. Our results suggest that complex interrelationship between ecosystem actors and the EE contextual factors matter; however, differences can be traced between different institutional contexts. In doing so, the results shed light on the debate on the appropriateness of a one-size-fits-all approach to EE.

In general, this study has shown that a way forward is to investigate how EE functions are to use crude but inclusive ecosystem pillars and relate them to a variety of entrepreneurial activity elements that we use to translate entrepreneurship activity into regional economic development (Audretsch et al., 2015). In that way, the ecosystem taxonomy pillars can be conceptualized as driving not only the level of entrepreneurial activity in a region but also as a mediator of the effect of such drivers of entrepreneurial activity on the quality of EE as a whole, with the complementarities built to strengthen the ecosystem.

This study also allows us to overcome the focus on high-growth and highly productive entrepreneurial activity and unicorns (Stam, 2015, 2018) as the ultimate outcome of the ecosystem. By combining various ecosystem taxonomy pillars, various EE outcomes could be enhanced in regions with different resource capabilities and levels of economic development. We contend that each EE element, even underdeveloped ones, could be utilised in combination with other elements to enhance EE performance. While complementarity between EE pillars is a boundary condition

for creating an EE in different local and institutional contexts, it is also at the heart of the EE research.

It is our motivation that comparative research on different institutional settings strongly serves the purpose of expanding the body of work on ecosystems. With the framework it introduces, this study underlines the need for more work on the contextual significance and heterogeneous EEs.

Policy implications

We propose two policy recommendations from our findings. First, the regional economic policy aims to promote entrepreneurship as an engine of economic growth. As our findings show, government support needs to be combined with other EE drivers such as university programmes towards entrepreneurship, technopark, and incubator activity, as well as with the role that multinationals can play in the EE (Nordling et al. 2020) and the local institutions as EE connectors. Depending on the underlying regional EE characteristics, additional policy measures are required to reveal the strongest pillar and create a combination where entrepreneurial activity can be enhanced. For example, for Reading EE, LEPs could work closely with the multinationals to expect the nurturing entrepreneurship culture and positive effects on regional growth via technopark, incubation, and acceleration activities. We have shown that in EEs where access to resources functions well, local formal and informal institutions must facilitate it. More research is needed to establish the exact causal links between the combinations of EE pillars and their effect on every given EE outcome.

Second, our findings imply that local governments and government agencies for economic development need to adopt a more detailed multiple-case design approach to decide which elements should be facilitated within each EE pillar in each region. Governments of regions where complementarities are naturally combined and where entrepreneurial activity still does not spin-out may change their policies by building on the

three main complementarities which we observed in both EEs: access to resources, effective use of resources, ecosystem awareness, and entrepreneurial orientation.

The differences in the relationship between EE elements and pillars and entrepreneurial growth that we have identified, together with the differences in EE characteristics between the regions, may indicate that it is economically not feasible or simply not cost-effective for Istanbul and Reading to aim at making all pillars work independently and autonomously, as they will achieve less than if combining them (synergy effects).

Future Research and Limitations

Our main limitation is the "two-city" approach, which allows scholars to go into more details within the EE elements-pillars-complementarities nexus but hinders the generalization of findings for other types of EE. Two EEs are embedded in the different local and institutional contexts, and thus, generalization is limited.

Future research should focus on comparative studies and adding more EEs in the sample to analyse whether the combination of the complementarities revealed here will always appear as significant in the entrepreneurship ecosystems. "What will be the additional complementarities which define the specificity and authenticity of EE?" is another important question to pose for further studies. It is important to continue the multiple-case approach and expand it for other cities to reveal the elements which drive entrepreneurial activity and the mediating role of EE pillars.

In other words, complementarities built among these pillars should be observed in different settings, EEs of different sizes, including regional and urban focus, in countries at different development stages.

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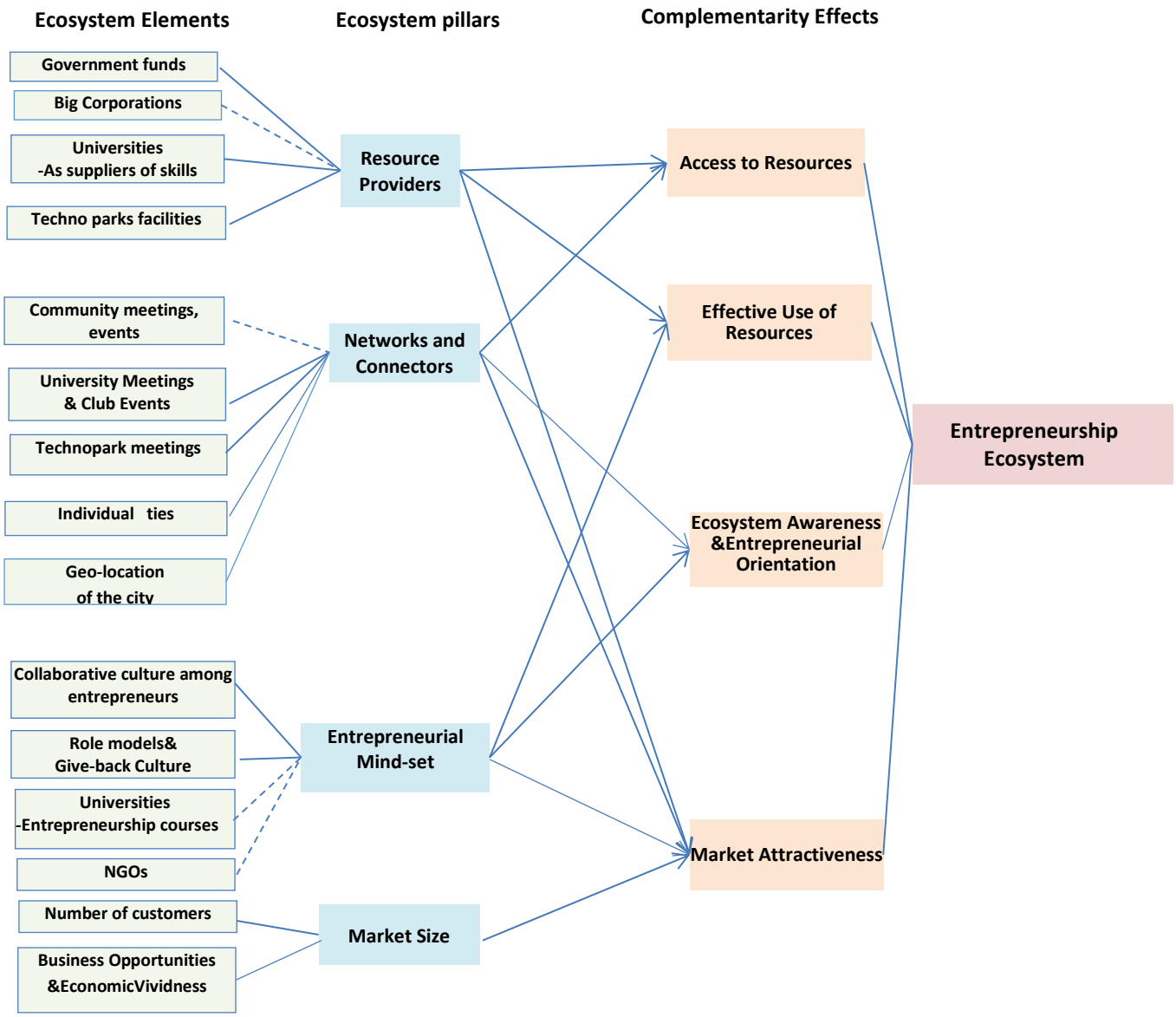

Figure 1. Entrepreneurial ecosystem in Istanbul conceptual framework

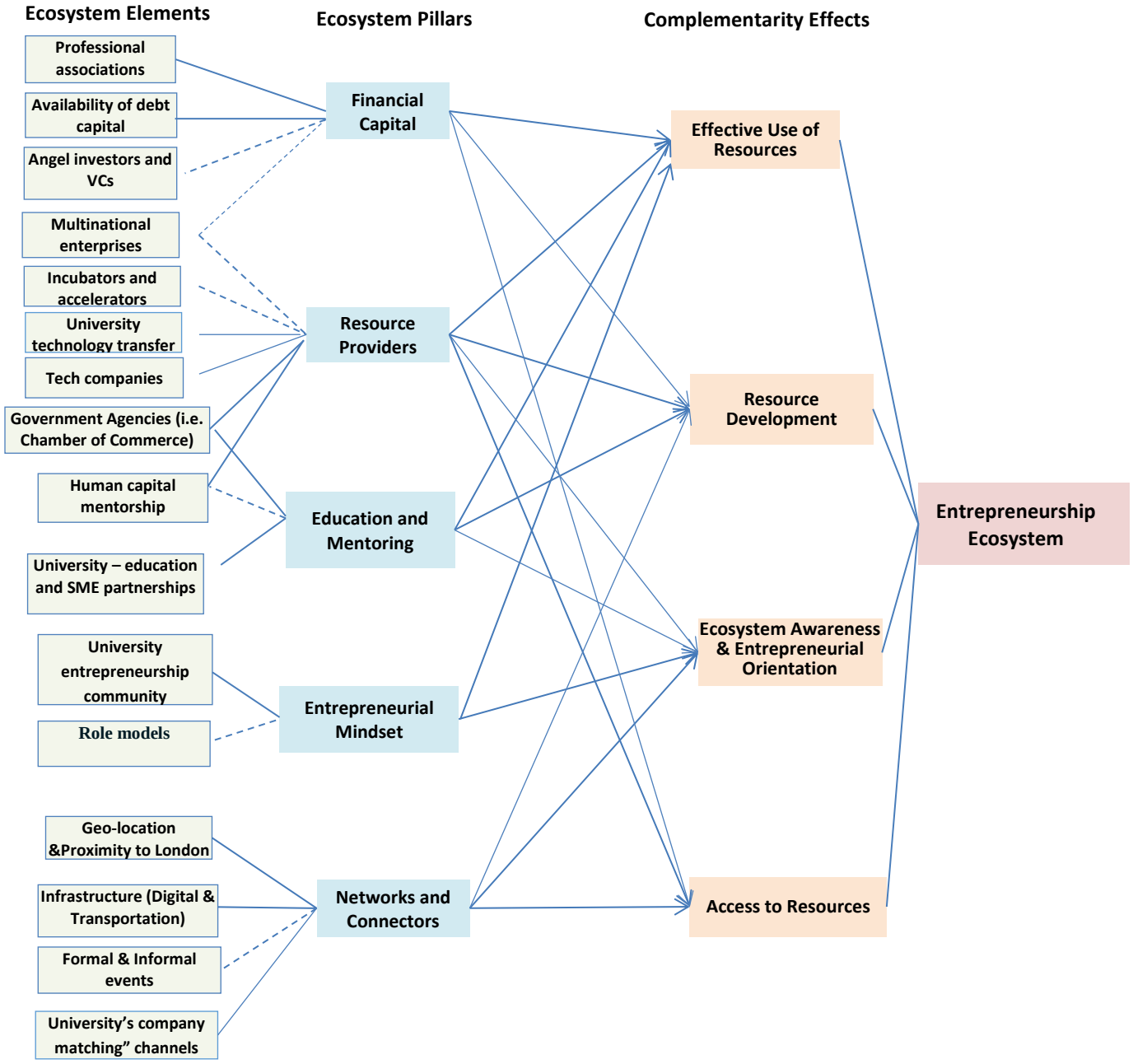

Figure 2. Entrepreneurial ecosystem in Reading conceptual framework

Appendix A1
Interview Protocol for Istanbul and Greater Reading (similar questions were used for both EEs).

Eligibility criteria to participate in this interview. Please confirm:

1. You and your business is located in Istanbul (Greater Reading) (Yes/No).
2. You are actively affiliated with any elements of the EE taxonomy in Istanbul (Greater Reading) (Yes/No).
3. You have at least 5 years of experience working in Istanbul (Greater Reading) (Yes/No).

Interview questions

Name - Last name?
Role in the company?
Company description?
How has your location in the Thames Valley /Istanbul been of influence for your business?
How has the presence of other businesses in the Thames Valley / Istanbul influenced you and your business?
Any role models?
Are there any opportunities you think are available to you per your location?
Do you have any limitations or barriers that you ascribe to your location?
How would you compare the Reading / Istanbul entrepreneurial mindset to the Silicon Valley mindset?
What would make you not want to move away from the Thames Valley / Istanbul location?
How would you describe the ability to find resources (could be financial) in the Thames Valley / Istanbul region?
How would you describe the role of universities in the region for your business?
What do you think about the general performance of businesses co-located in the Thames Valley / Istanbul? Why?
Who are the major entrepreneurial actors in your region?
Please give us example of how entrepreneurs and the entrepreneurial infrastructure are supported in your region?
Please name most important stakeholders in the region?
Have you raised entrepreneurial finance locally?
How easy was it?
What type of finance is easier to obtain: bank finance / venture (angel) capital alternative finance?
Do you think regional networks are efficient enough in supporting nascent ventures?
What is the role of informal / formal networks in supporting entrepreneurship?
What are the networking opportunities, such as business clubs and mentoring in a region?
Would you say your region has developed an excellent entrepreneurial culture?
Do you hear stories about successful entrepreneurs in local media (e.g. business magazine)?
What are the attitudes towards entrepreneurship from 0 very negative to 7 very positive?
Would you say that entrepreneurial culture in your region is inclusive and supportive?
What are in your opinion are the key factor of region's success?
Would you say the region has an entrepreneurial identity?

Table 1: List of interviewees in Reading

Number	Interviewee	Core products/services	Sector	Interview role
1	Reading & Wokingham Chamber of Commerce	Support to local business	All	Andy Cowie, President
2	Kymira	Advanced sportswear	Sports	Founder &CEO, Tim Brownstone
3	Rotolight	Advanced LED lighting technology system	Technology	Founder & CEO
4	Ecrebo	IT services	Software	HR Manager
5	Datasift (scale-up)	Financial services, business analytics, artificial intelligence	ICT	CEO, Mike Bagshaw
6	ITS (scale-up)	Food development, reformulation and innovation	Food	CEO
7	Myfalcon (scale-up)	Business consultancy services, It support	IT consulting	Co-Founder, Shahab Karimi
8	Henley Business School , University of Reading	Education , business consultancy, start-ups	Higher Education	Jurek Sikorski, Executive Director of Entrepreneurship centre
9	Research services – TTO , University of Reading	Education , Licencing ,commercialization	Higher Education	Dr Anne-Marie van Dodeweerd Head of Research Services
10	Telios partners (entrepreneur)	Business consultancy services	Knowledge services	Paddy Radcliffe, Co-director
11	Edge Plus Global Ltd (large firm)	Human resource apps for improving work efficiency	Human Resources	Melvyn Lloyd, CEO
12	Living Reading , Blog	Public services	Mass media	Economic Development manager
13	The Thames Valley improvement agency (entrepreneur)	Social and welfare services	Social	Andrew Humphreys CEO,
14	MCFT (large firm)	Commercial industrial and kitchen equipment maintenance	High-tech services	CEO, Chris Cragg
15	Innovation Catalyst, Thames Valley Science Park (business incubator)	Business support, angel investment	all	CEO, Ed Cooper
16	Reading Borough Council , Reading (local government)	Business support, public service, opportunities , social care , etc.	Public	Peter Sloman, Chief executive

Table 2: List of interviewees in Greater Istanbul

Number	Firm Info	Area of operation	Sector	Interview role
1	Innobase (Start-up)	Software development and consultancy	IT	Ozan Adali (Co-founder)
2	Brandface (Start-up)	Advertisement, digital content creation	IT, digital media	RasimÜner (Co-founder)

3	Omnibus (Start-up)	Transportation technology	Transportation, technology development	ŞeydaYaşar (Co-founder)
4	Haus	Food processing	Food, genetics engineering	EmrachSkovski (Co-founder)
5	Trace It Up	Restaurant Delivery Software	Food and restaurant services	ÇağkanÇaylı (Co-founder)
6	Bogazici University	TTO	Technology Development & Consultancy	Barkın Arak (TTO Director)
7	Workinlot (startup)	Digital Incubator	Consultancy & Education	Atilla Erel (Co-Founder)
8	Via Trade&Logistics (scaleup)	E-commerce	Trade and Logistics	GökseninCesur (Founder)
9	Yildiz Technical University	Science Park	Technology Development	İsa Turgut (Vice President)
10	Azor Brand Solutions	Consultancy & mentoring	Consultancy	Emre Başkan (Founder)