



Contents lists available at ScienceDirect

Technological Forecasting & Social Change



Roles during innovation ecosystem genesis: A literature review

Ozgur Dedehayir^{a,*}, Saku J. Mäkinen^b, J. Roland Ortt^c^a Queensland University of Technology, School of Management, Level 9, Z Block, 2 George Street, Brisbane 4000, QLD, Australia^b CITER Center for Technology and Innovation Research, Department of Industrial Management, Tampere University of Technology, PO Box 541, FI 33101 Tampere, Finland^c Faculty Technology, Policy and Management, Delft University of Technology, Jaffalaan 5, 2628 BX, Delft, The Netherlands

ARTICLE INFO

Article history:

Received 31 December 2015

Received in revised form 3 September 2016

Accepted 29 November 2016

Available online xxx

Keywords:

Innovation ecosystems

Ecosystem genesis

Birth phase

Ecosystem roles

Literature review

ABSTRACT

This paper addresses recent calls to enhance our understanding of innovation ecosystem genesis, focusing in particular on the roles that come to prominence during this important yet volatile phase in the innovation ecosystem lifecycle. To this end, we undertook a systematic review of the literature, which has allowed us to study in detail 60 publications appearing in journals and conference proceedings. Our results propose several roles seminal to innovation ecosystem birth, which we have collated thematically into four groups – leadership roles ('ecosystem leader' and 'dominator'), direct value creation roles ('supplier', 'assembler', 'complementor', and 'user'), value creation support roles ('expert' and 'champion'), and entrepreneurial ecosystem roles ('entrepreneur', 'sponsor', and 'regulator') – and defined in terms of the specific activities they carry out during ecosystem birth. Furthermore, our findings tentatively suggest the entrance of these roles at different times as the process of genesis unfolds. Particular roles, such as the champion, are likely to be pivotal in ensuring that the innovation can move successfully from discovery to its commercialization. We conclude our paper by discussing future research avenues that can build on our role typology, to shed further light on the process of innovation ecosystem genesis.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

Innovation ecosystems describe the collaborative effort of a diverse set of actors towards innovation, as suppliers deliver key components and technologies, various organizations provide complementary products and services, and customers build demand and capabilities (Moore, 1996). In this systemic context, firms acquire a competitive advantage by recognizing the holistic value embedded in products and services delivered to the customer (e.g. Ethiraj and Posen, 2013; Mäkinen and Dedehayir, 2013). Topics such as the collaboration between organizations, the creation and the capturing of value by actors, and the leadership of ecosystems have subsequently garnered growing interest from practitioners as well as scholars (e.g. Adner, 2006; Adner and Kapoor, 2010; Cusumano and Gawer, 2002). Notwithstanding, there have been recent calls to enhance our understanding of how innovation ecosystems come into existence in the first place (Autio and Thomas, 2014; Gawer, 2014). While ecosystem genesis has received very limited attention hitherto, it is a topic that is likely to carry substantial implications not only for practitioners and scholars alike, but also for policy makers whose efforts are directed towards promoting economic welfare within sectors, regions, and nations. The process of innovation ecosystem genesis is important to understand for these stakeholders,

as this period in the evolution of the ecosystem is likely to be volatile, such that a viable collaborative network may fail to come into existence in the absence of necessary conditions, resources, and activities.

Motivated by this general line of inquiry, this paper addresses the genesis of innovation ecosystems, specifically focusing on the roles that are enacted during this process. Following Moore's (1993, 1996) four-phased description of the innovation ecosystem lifecycle, we conceptualize ecosystem genesis (i.e. the 'birth' or 'pioneering' phase) as the span of time that stretches from an initial discovery or invention, to the commercialization of an innovation. This is a period pronounced by the challenge of defining "value", as visionaries and entrepreneurs "focus on identifying the particular seed innovations, whether technologies or concepts, that will create radically better products and services than those already available" (Moore, 1996, p. 70). We additionally borrow insights from role theory (e.g. Biddle, 1986), to study the appearance of particular roles, enacted by various actors on "stage", as the genesis of the innovation ecosystem unfolds over time (e.g. Battistella et al., 2013). By defining 'role' as a characteristic set of behaviors or activities undertaken by ecosystem actors, our study aims to comprehend how innovation ecosystems are created as different types of roles take center stage during this period.

To divulge the roles that come to prominence throughout ecosystem birth, we conduct a review of the innovation ecosystem literature. In this endeavor, we use keyword searches to scour the ISI Web of Science database and apply filters to arrive at a relevant collection of publications appearing in journals and conference proceedings ($N = 60$). We,

* Corresponding author.

E-mail addresses: ozgur.dedehayir@qut.edu.au (O. Dedehayir), saku.makinen@tut.fi (S.J. Mäkinen), j.r.ortt@tudelft.nl (J. Roland Ortt).

in turn, analyze the contents of these publications to allow the emergence of roles seminal to the process of ecosystem genesis.

Our paper is structured as follows. We begin by introducing Moore's (1993) lifecycle depiction of ecosystem evolution, focusing specifically on the birth phase portrayed in this model. Next, we describe our methodology, and then present the results of our review of the literature. Our main contribution is a typology of roles that come to prominence, defined by the activities they enact during ecosystem genesis. We conclude our paper by proposing several possible extensions of our work to shed further light on the process of innovation ecosystem birth.

2. Theoretical background

Innovation ecosystems refer to heterogeneous constellations of organizations, which co-evolve capabilities in the co-creation of value (Adner and Kapoor, 2010; Autio and Thomas, 2014; Moore, 1993). Producers, suppliers, distributors, financial and research institutions, makers of complementary technologies, and regulatory bodies are just some of the organizations that constitute the innovation ecosystem (e.g. Mäkinen and Dedehayir, 2013). There are defining traits holding innovation ecosystems as distinct from similar or overlapping constructs depicting organizational networks, such as clusters (e.g. Porter, 1998) and value networks (e.g. Christensen and Rosenbloom, 1995). Clusters refer to "critical masses – in one place – of unusual competitive success in particular fields" (Porter, 1998, p.78). Examples of such clusters include the Silicon Valley, Boston's Route 128 corridor, North Carolina's Research Triangle Park, Hollywood, Wall Street, and the Californian Wine Cluster (e.g. Bresnahan et al., 2001; Porter, 1998). As a conceptual framework, clusters allow the study of regional competitiveness and economic performance, with the co-location of businesses increasing the productivity of companies, driving innovation, and stimulating the formation of new businesses. The regional focus of the cluster distinguishes it from the innovation ecosystem, the boundary of which is not defined by a specific geographical location but rather by a 'collective functionality' constituting a functional barrier. Indeed, innovation ecosystems of firms such as Apple and Google span the globe and coalesce a myriad of actors in the co-creation of value. By comparison, the value network depicts a complex, interconnecting web of direct and indirect ties among a group of actors, which create value for customers through the products and services that are manufactured (Basole and Rouse, 2008; Lusch et al., 2010). The network can be seen as a nested, hierarchical system of manufacturers and markets, which produce as well as purchase the corresponding nested hierarchy of components, products, and holistic systems (Christensen, 1997, p. 225; Christensen and Rosenbloom, 1995). In this manner, the value network framework allows the study of connecting structures, but remains relatively silent on the dynamics of these connections. Given its biological origins, innovation ecosystems differ from value networks by focusing on the co-evolutionary processes taking place as various organizations (akin to species) interact, often in symbiosis. A further distinct feature of the innovation ecosystem construct, in comparison to other overlapping depictions of organizational networks, is the inclusion of end-users in amongst this constellation (Autio and Thomas, 2014). Innovation ecosystems can consequently be viewed as being centered about a platform that brings providers of products and services into exchange with the users of these products and services (Gawer, 2014; Thomas and Autio, 2013). While platforms typically connect individual consumers to value creating organizations (e.g. the platforms of Apple and Google), some contemporary platform-based ecosystems (e.g. those of Uber and Airbnb) demonstrate that individuals can simultaneously assume the role of provider as well as consumer of products and services.

Since Moore's (1993, 1996) seminal publications, a number of scholars have made important contributions to the relatively nascent innovation ecosystem field of inquiry. These include Cusumano and Gawer (2002), who discuss the strategic considerations of actors that

constitute the innovation ecosystem, underlining the provision of platforms (e.g. tools, technologies, manufacturing processes, and services) as the key to the success of ecosystem leadership. Iansiti and Levien (2004), in turn, discuss organizational strategies in relation to innovation ecosystems and offer measures of ecosystem performance, while Adner (2006), and Adner in a series of subsequent papers together with Kapoor (e.g. Adner and Kapoor, 2007; Adner and Kapoor, 2010; Kapoor and Adner, 2007), highlight the centrality of performance discrepancies that appear and curb innovation ecosystem development. Building on these earlier works, Adner (2012) introduces methods for: (i) designing the ecosystem's 'value blueprint' (i.e. locations and links between ecosystem actors); (ii) foreseeing risks to value creation; (iii) determining the value of leadership and followership roles in the ecosystem; (iv) timing of innovation introductions; and (v) the dynamic reconfiguration of the ecosystem over time. And more recently, Autio and Thomas (2014) provide a review of the literature to shed light on the boundaries, structure, and management of innovation ecosystems, while Gawer (2014), and Gawer and Cusumano (2014) offer an overarching conceptualization of platforms, distinguishing between 'internal platforms' that comprise a firm and its sub-units, 'supply-chain platforms' that comprise assemblers and suppliers, and 'industry platforms' (akin to innovation ecosystems) that comprise a platform leader and its complementors.

These central themes hitherto examined by scholars (e.g. organizational strategies pertaining to value creation, value capture, and ecosystem leadership, the configuration of ecosystem value blueprints, and the structure of ecosystems), are contingent on the evolution of the innovation ecosystem. Conceiving ecosystem evolution to follow a stylized lifecycle, Moore (1993, 1996) proposes that ecosystems progress through four phases - birth, expansion, leadership, and self-renewal (or death). The birth phase is pronounced by a common understanding of the product and service requirements of the customer by all members of the ecosystem. This understanding guarantees the collaboration of actors towards common objectives. The ecosystem expands into new territories of application in the second phase. It is possible that rivalries eventuate as the same application realm may be targeted by different ecosystems. Expansion into new territories requires the stimulation of market demand albeit within the capacity of the ecosystem, and it is therefore vital that the ecosystem leader is able to maintain strong relationships with the customer as well as suppliers and complementors (Moore, 1993). The third stage of ecosystem evolution is a period of consolidation and establishment. This stage centers on determining ecosystem leadership and the attainment of stability in the ecosystem's subsystems and processes. These foundations, together with a clear vision of future development, enhance the commitment of component suppliers and complement producers, thereby institutionalizing a true network of cooperators (Moore, 1993). And the final stage is a response of the mature ecosystem to emerging threats from new ecosystems and innovations, or significant upheavals and alterations in the ecosystems environment, such as those pertaining to government regulations and demographic traits, which create opportunities for new ecosystems to emerge. There are two possible reactions to these challenges: the ecosystem's self-renewal or death. For the former, ecosystem leaders play a vital role in either slowing down the development of new, threatening ecosystems, or generating new innovations and creating a fundamental restructure of their own ecosystems. If self-renewal cannot be put into practice, then the inevitable outcome of an ecosystem is one of death (Moore, 1993).

In this paper we focus on the period of innovation ecosystem birth, which is a vital precursor to the sequential phases that are to follow. To date there have only been a handful of purposeful scholarly examinations of the process of ecosystem genesis. Garnsey and Leong (2008), firstly, illustrate how new ventures in the pharmaceutical sector negotiate constraints presented by the selecting environment during the process of bringing a medicinal product to the market. The authors utilize the notion of a 'transaction environment' to analyze a firm's interaction

Download English Version:

<https://daneshyari.com/en/article/13404486>

Download Persian Version:

<https://daneshyari.com/article/13404486>

[Daneshyari.com](https://daneshyari.com)