University Incubators and Entrepreneurial Ecosystem

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Abstract

Worldwide, universities are proactively searching for strategic partnerships in achieving their third mission of socio-economic development besides its core function of teaching and research. Universities are facing new challenges to developthe entrepreneurial ecosystem to achieve their third mission of socio-economic development. The problem persists with fact that majority of universities are lagging behind to understandtheentrepreneurial ecosystem. Resultantly, a dire need groomed to have a better understanding of entrepreneurial ecosystem at universities for their substantial contribution to economic growth.The aim of the current study is to review the role of university incubators in developing an entrepreneurial ecosystem. The study contributes to improvingthe understanding of university incubators and the entrepreneurial ecosystem.

Keywords: Incubators; Entrepreneurial Ecosystem; Universities

Introduction

The entrepreneurial success depends on the value networking of entrepreneurship (Leyden, Link, & Siegel, 2014). The idea of this value networks materializes an ecosystem that set the networks of a group of individuals, companies, organizations and institutes to create value through knowledge, skills and capital sharing.Researchers have built the consensus that ecosystems in businesses provide information and resources to entrepreneurial firms for their survival and growth in a constantly changing competitive environment (Zahra & Nambisan, 2012).

Universities are struggling to contribute effectively in the economic development and to decrease unemployment ratio(Henry Etzkowitz & Leydesdorff, 2000; Huggins, 2008; Ismail & Ajagbe, 2013;

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Vinig & Lips, 2015). However, an ecosystem tofortify the entrepreneurial culture becomes crucial among academicians and practitioners (Zahra & Nambisan, 2012) especially in universities context (Maia & Claro, 2013; Mason & Brown, 2014).Moreover, a call for papers for a special issue on the entrepreneurial ecosystem is announced in year-end 2015 for Strategic Management Journal. Thus, the theme of the entrepreneurial ecosystem has emerged as a recent and rapidly gained popularity. Although, previous researches have remained less intuitive towards the entrepreneurial ecosystem especially in the university context. On the other side, the networking among the stakeholders is not at the utmost level to achieve the objective of establishing an entrepreneurial ecosystem (Clarysse, Wright, Bruneel, & Mahajan, 2014; Kantis & Federico, 2012). Thus, generally, researchers are lacking to build consensus on the issue of universities role in the entrepreneurial ecosystem.

In the meanwhile, the internationallyentrepreneurial ecosystem has emerged as a benchmark for the frameworkof entrepreneurial policies and to promote entrepreneurial society(Kantis & Federico, 2012). Entrepreneurial ecosystemprovides a competitive advantage to both new and existing entrepreneurs (Iansiti & Levien, 2004). In addition, the entrepreneurial ecosystem may not be achieved without the adoption of national policies that favors the constitution of the national ecosystem. Whilst, universities are recognized as one of the crucial element to fortify the entrepreneurial culture (Audretsch, 2014; Grimaldi, Kenney, Siegel, & Wright, 2011) and to substantially contribute to the entrepreneurial ecosystem (Mason & Brown, 2014).Subsequently, several programs are initiated at the university levelto generate revenue, commercialization of research, formation of new entrepreneurs (Link & Siegel, 2005; Mustar & Wright, 2009). This is the reason why universities are more interacting with industries and developing linkages with them.However, the understanding of university incubators and their role towards entrepreneurial ecosystems needs to be reviewed extensively.

Entrepreneurial Ecosystem

In 1993, James Moore presented the term business ecosystem to claim that businesses do not establish and grow independently without interacting with an embedded nature of networks with all stakeholders (Moore, 1993).Apart from the biological ecosystem, entrepreneurial ecosystem is based on large and flexible network of entities such as entrepreneurial firms, organizations, universities and government(Clarysse et al., 2014; Heikkilä & Kuivaniemi, 2012). Moreover, the performance of each object is based on the overall

performance of all objects collectively. Entrepreneurial ecosystem is defined by several researchers as in Table 1 and summarized as

'A set of differentgroup of entrepreneurial firms having networks with universities and R&D institutions, qualified human resources, formal and informal networks, governments, angel investors and venture capitalists, professional service providers, and an enterprising culture that connects all of these actors to gain competitive advantage'.

Table 1: Definitions of entrepreneurial ecosystem

"A set of interconnected entrepreneurial actors (both potential and existing), entrepreneurial organizations (e.g. firms, venture capitalists, business angels, banks), institutions (universities, public sector agencies, financial bodies) and entrepreneurial processes (e.g. the business birth rate, numbers of high growth firms, levels of 'blockbuster entrepreneurship', number of serial entrepreneurs, degree of sell-out mentality within firms and levels of entrepreneurial ambition) which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment".	(Mason & Brown, 2014)
"An entrepreneurial ecosystem includes a set of tangible and intangible resources and actors characterized by an interdependence relationship that creates important synergies".	(Carvalho, Costa, & Dominguinhos, 2010)
"The entrepreneurship ecosystem consists of a set of individual elements—such as leadership, culture, capital markets, and open-minded customers—that combine in complex ways".	(Isenberg, 2010)

The entrepreneurial ecosystem has emerged as a benchmark for the economies, universities, institutes and organizations to develop the entrepreneurial policies for promoting entrepreneurial skills and commercialization of research(Kantis & Federico, 2012; Maia & Claro, 2013). Similarly, entrepreneurial activities in an ecosystem areencouragedto stimulate the innovation, linkages with industry and commercialization(Zahra & Nambisan, 2012).

Researchers have identified the fundamental factors behind the concept of entrepreneurial ecosystem(Isenberg, 2010; Kantis & Federico, 2012; Mason & Brown, 2014). These factors include (i) the existence of a geographically bounded but not specific location having

substantialentrepreneurs, companies and specialized institutions. (ii) the presence of an integrated network of the relationship among these stakeholders (iii) an entrepreneurial culture to create connectivity (iv) availability of finance (v) skillful human capital and (vi) commitment from leadership.Based on above definitions and relevant literature, the entrepreneurial ecosystem can be expressed in a form of a layer of embedded networks government, universities, entrepreneurs, mentors, investors, business incubators, community and other stakeholders. Figure 1 shows the entrepreneurial ecosystem.

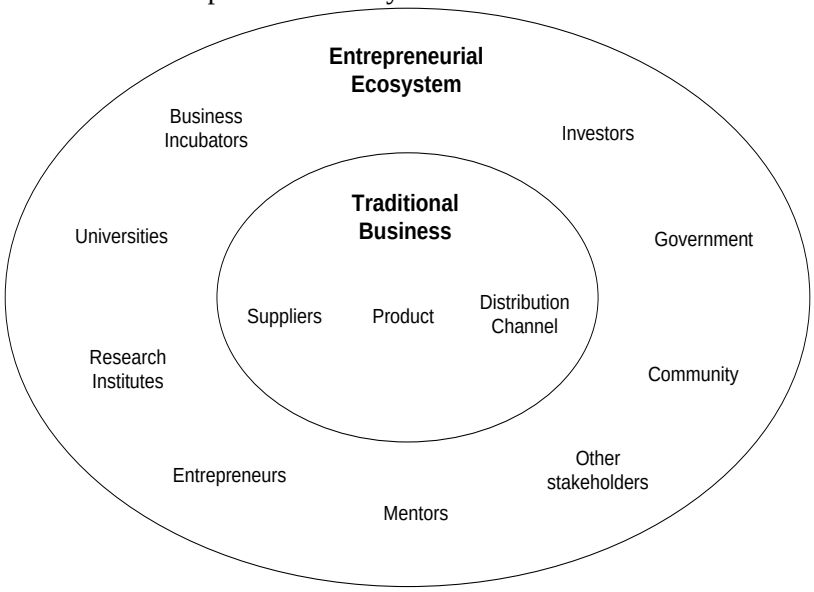

Figure 1: Entrepreneurial Ecosystem

University and Entrepreneurial Development

Universities are interacting with industries by establishing long-term close relations forcommercialization of researchabout growth-related entrepreneurial activities(Siegel, Wright, & Lockett, 2007). However, the commercialization of research may not be succeeded without addressing the knowledge gap at different levels (Lockett, Siegel, Wright, & Ensley, 2005). The gap between the knowledge and economic knowledge arises due to several constraints is referred as knowledge filter(Acs et al., 2003; Audretsch, 2014). According to Acs and Plummer, (2005), knowledge filter creates a hurdle for R&D activities and further its commercialization to society as ultimate beneficiaries. AnEndogenous Growth Theory (EGT) (Romer, 1986, 1990, 1994)supposition that R&D will itself transform without any further activities is counter down by the existence of knowledge filter (Audretsch, 2014).

One of the ways to control the knowledge filter at universities is to promote entrepreneurship. Entrepreneurship reduces the knowledge filter and creating the link between knowledge and economic knowledge (Braunerhjelm, Acs, Audretsch, & Carlsson, 2010; Qian & Acs, 2013). Etzkowitz (1983)has introduced the term 'entrepreneurial universities' to elaborate the changing role of universities over the time and especially towards the vibrant transfer of the university research. Another famous phrase 'magic beanstalk vision' by Miner, Eesley, Devaughn, & Rura-Polley, (2001)has induced the universities to involve in extensive entrepreneurial activities for industrial development. In relation to above, universities role has been dramatically changed from teaching and research to a third mission i.e. knowledge transfer to society by linkages with industry. University becomes a revenue generation instrument and hence amended its mission from a non-profit entity towards a profitable unit. Bercovitz & Feldmann, (2006)presented the economic, social and legal aspect for technology transfer mechanisms to promote an entrepreneurial university. According to Geuna & Muscio (2009), entrepreneurial development although contributes to economic development also becomes a source of revenue generation for the university through university-industry collaboration. While focusing on university-industry collaboration and commercialization of research, universities become an entrepreneurial development machine by initiating innovative idea, supporting and facilitating that idea to become reality and finally introducing the new ventures into the market.

Business Incubators

Business incubators are desired to foster future entrepreneurs. Business incubators, especially at universities, provide opportunities to entrepreneurs to acquire technical skills, product development, prototype and then market that product to potential buyers (Mason & Brown, 2014). Apart from this, entrepreneurs get in position to better understand the organizational structures, strategies and systems. Business incubators as an organizational entity perform many functions or provide services to incubatees. These include infrastructure, business support, networking, coaching, training and access to funding(Bergek & Norrman, 2008; Bøllingtoft, 2012; Bruneel, Ratinho, Clarysse, & Groen, 2012; Ratinho & Henriques, 2010).

Over the years, a number of new business incubators have developed and incubation practices have changed instantly to make them more effective and supportive (Soetanto & Jack, 2015). One of the key challenges, business incubators have to face is heterogeneity in their functions, services, availability of resources and objectives (Bruneel et

al., 2012; Grimaldi & Grandi, 2005). Thus, the existence of a systematic framework and theoretical foundations to understand incubators lacks (McAdam & McAdam, 2008; Phan, Siegel, & Wright, 2005).

A substantial literature on business incubators endorses their objectives summarized as 1) job creation 2) commercialization of research 3) promoting start-ups 4)economic and social development 5) strengthening university-industry linkages 6) fostering entrepreneurial culture 7) Networking (Chandra & Silva, 2012; Link & Siegel, 2005; National Business Incubation Association, 2014b; Tang, Baskaran, Pancholi, & Lu, 2013). These objectives also justify the reason why universities are inclined to support incubation programs and developing university-based incubators. UBI is the result of rapid development in an entrepreneurial environment and increasing the need for universities to contribute to the social and economic development of a country and the region (Soetanto & Jack, 2015).

Looking back at the evolution and concept mapping of business incubators, Batavia Industrial Center is recognized as the first ever business incubator established at New York, USA in the 1960s (Lewis, Harper-Anderson, & Molnar, 2011; National Business Incubation Association).In earlier days, the concept could not able to get much recognition. However, today a rich literature acknowledges that business incubators have embarked many developed and emerging economies to develop business policies that support economic development and sustainable economic growth (Jamil et al., 2015; Jamil et al., 2016; Lalkaka, 2002; Mian, 2014; Ratinho & Henriques, 2010; Studdard, 2006).

Similarly, many developing countries have introduced the incubation models to promote the entrepreneurship and ensure firm survival. China among the developing countries has experienced a substantial increase in the number of incubators and also an improvement in their performance (Mahmood, Jianfeng, Jamil, Munir, & Lu, 2015).However, developing countries are still coping with many challenges to reduce unemployment, business failure and support the high potential new ventures (Lose & Tengeh, 2015). Table 2 presents the previous literature of business incubators focused on entrepreneurial activities.

Table 2: Review of relevant literature

Author Name	Findings
Hu, Chang, & Chen (2015)	An institutional R&D system and interconnect networks positively influence the number of successful businesses and indirectly affect the job creation.
Pettersen, Aarstad, Høvig, & Tobiassen (2015)	Besides network resources facilitated by an incubator, the ones acquired by the start-ups' by their own efforts are crucial for overall enterprise development.
(Baraldi & Ingemansson Havenvid, 2014)	The key performance indicators are positioning in the value chain, risk tolerance behavior, revenue generation, good governance, global perspective and cooperation.
(Cullen, Calitz, & Chandler, 2014)	The incubator meets the international performance standards and this is due to the entrepreneurs locating at incubator.
(Maia & Claro, 2013)	Proof of Concept Center, University of Coimbra has a potential role in university ecosystem and significantly impact on the commercialization of research through networking, access to finance and entrepreneurial development.
(Tang et al., 2013)	The incubators in China and India have many similarities and differences. However, both systems are evolved in a particular pathway due to specific national context.
(Bøllingtoft, 2012)	A bottom-up approach is suggested and characterized in being established by the entrepreneurs without any financial support.
(Al-Mubaraki & Busler, 2012)	Faculty and student start-ups and commercialization of university research are the main achievements of the incubator.
(Arif & Sonobe, 2012)	Social capital is one of the major factors closely associated with the performance of independent enterprises in an industrial cluster, it is not as closely associated with the performance of subcontractors.
(Salvador, 2011)	Turin spin-offs are not well aware of the opportunities available for raising finance. Thus, they rely on personal and family capital as the first source of financing and get funds from banks.
(Ahmad & Ingle, 2011)	Incubation significantly depends on the social relationships. Incubation comprised many successful models based on small micro processes each having their own strategies, policies, dynamics and norms.
(Ratinho & Henriques, 2010)	Many incubators are not well planned and are not contributing to the creation and development of new ventures, thus barely visible.
(McAdam & McAdam, 2008)	The propensity to make better use of incubator resources and support is increased with the proportionate of increase

	in company lifecycle.
(Grimaldi & Grandi, 2005)	The capacity to reduce start-up costs for promising knowledge-based and high-tech entrepreneurial initiatives is significant for incubators. ,
(Abetti, 2004)	The networking with local, regional universities and industries plays a significant role in the development high tech clustering of incubators and incubatees.
(Mian, 1996)	Incubators have a positive impact on the survival and growth of incubatees.

Conclusion

In the traditional approach, business incubators are generally involved in providing office space with infrastructure facilities. However, the evolvement is a continuous process for restructuring, value addition and maxim output. Recently, a contemporary and unique approach to university incubators has been introduced. The study argues that university incubators having full integration and free networking with inter-organizational units as well as with external stakeholders contribute towards the development of the entrepreneurial ecosystem.Despite the substantial developments in the recent years regarding the entrepreneurial ecosystem, these systems are still at beginning stages. Future research studies should further investigate the ways for the development of the entrepreneurial ecosystem. How the current infrastructure and services of incubators can be molded according to modern advancements to gain competitiveness and innovation.

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