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**Significance of Academic Entrepreneurship
and Edupreneurship in Sustainable Development
of an Entrepreneurial Ecosystem**

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Significance of Academic Entrepreneurship and Edupreneurship in Sustainable Development of an Entrepreneurial Ecosystem

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Abstract

There is a vast amount of literature focused on entrepreneurial ecosystem. However, it is disintegrated in terms of understanding the influencing parameters within its components. The purpose of this study is to review and consolidate the literature by adopting a 'funnel-approach'. This is done by considering Mazzarol's model of Entrepreneurial Ecosystem - derived from the work of Isenberg, narrowing down to two components - Universities as Catalysts and Education & Training. The ultimate focus on this study are the two ends of these components – Academic Entrepreneurship & Edupreneurship. It is found that the published literature covers the concept of Academic Entrepreneurship, independently, to a large extent. However, there is limited literature on Edupreneurship. Moreover, a gap was noticed in the literature about investigating the reason (s) or the influencing factors which result in faculty, students, professionals or entrepreneurs pursuing and continuing the path of either Academic Entrepreneurship or Edupreneurship. The investigatory effort intends to give rise to a new avenue for both empirical and conceptual research by highlighting the role of Edupreneurship and Academic Entrepreneurship as vital contributing elements for the growth and sustainability of entrepreneurial ecosystem.

Keywords: Entrepreneurial Ecosystem, Academic Entrepreneurship, Edupreneurship.

Introduction

Entrepreneurship as a concept has been described by various scholars differently. However, in general, entrepreneurship is an endeavour accompanied by risk and time and involving creativity or innovation not only in introducing newer products or services in the market, but also in the process of producing or delivering those products or services (Abreu and Grinevich, 2013). The two central features of entrepreneurship - creativity and innovation, have been described as vital tools which enable the initiation, sustainability and growth of firms (Shalley, Gilson and Blum, 2009; Gundry, Ofstein and Kickul, 2014). Dromereschi (2018) stresses on the significance of creativity & innovation in aiding entrepreneurial businesses to achieve competitive advantage. Furthermore, Cha and Bae (2010), elucidate that entrepreneurship is a resourceful process which not only enables creation of new products and services, but also facilitates generation of novel solutions to prevailing problems. Therefore, Audretsch and Keilbach (2007) regard entrepreneurship as a key driving force for economic growth in not only developed, but also in developing economies. However, it is also argued that decision making within an entrepreneurial activity does not happen in isolation and is strongly impacted by the contextual factors (Acs, Boardman and McNeely, 2013; Audretsch and Belitski, 2017). Moreover, (Kuratko, 2005) accentuates that entrepreneurship necessitates five key characteristics – readiness to take measured risks, competence to form an entrepreneurial team, management skills to organize needed resources, professional skills to draft a business plan and finally capability to recognize opportunity quickly; on a whole termed as ‘Entrepreneurial Perspective’, which could be developed in individuals. The last two decades have witnessed concrete efforts, across the world, to disseminate entrepreneurship education and support individuals from various disciplines such as - medical, engineering, arts & sciences, to translate their ideas to businesses. However, there are many barriers in the pursuit for entrepreneurship and young entrepreneurs’ primary barriers are lack of life experience and dearth of optimal resources (Bell and Blanchflower, 2011). Moreover, Stamboulis and Barlas (2014) have categorized all the barriers faced by entrepreneurs into three types – individual, organizational and environmental; individual entrepreneurship barriers include personal factors such as educational level and family, organizational entrepreneurship barriers comprise of lack of support in creating and sustaining a firm - marketing, financing and physical resources, and environmental entrepreneurship barrier encompass policies, governing laws, markets and socio-cultural factors. All these factors, other influencing parameters, supporting entities and consumer market put together form an ‘Entrepreneurial Ecosystem’. The following sections focus on entrepreneurial ecosystem, utilizing the model published by Mazzarol and connecting the two ends – academic entrepreneurship and Edupreneurship of two components involving education – Universities as Catalysts and Education & Training. Furthermore, literature focused on the parameters and concepts within the afore mentioned areas has been reviewed and presented; thereby adding value to the

study of academic entrepreneurship and edupreneurship at micro level and their impact on the entrepreneurial system at the macro level.

Entrepreneurial Ecosystem

There has been growing interest to define and investigate the role and of entrepreneurial ecosystem (Zahra and Nambisan, 2011; Maroufkhani, Wagner and Wan Ismail, 2018). Nicotra *et al.*, (2018), posit that “*the process of developing an enabling ecosystem for entrepreneurial events has received considerable attention from governments, agencies, venture capitalists, and business development consultants. Organizations such as the organization for Economic Co-operation and Development (OECD), the World Bank, and the World Economic Forum (WEF)*”. The concept of entrepreneurial ecosystem has a diverse and rich lineage of intellectual investigation by scholars from various fields such as geography, finance, economics, management and business venturing. Furthermore, Stam (2015) defines the term Entrepreneurial Ecosystem by breaking it down into two components. Firstly, “entrepreneurial” derived from the general terminology – Entrepreneurship; a dynamic process which primarily includes clear vision and ability to bring about a change through creativity and or innovation (Kuratko, 2005). Secondly, “ecosystem” is drawn from the biological description of the term which figuratively relates to interaction and interdependence among entities in a geographic region. Moreover, it is evident that the definition of entrepreneurial ecosystem approach does not include the conventional statistical indicators of entrepreneurship, such as ‘small business’ and ‘self-employment’ (Stam, 2015).

The entrepreneurial ecosystem approach pushes for ‘productive entrepreneurship’, ultimately leading to entrepreneurial economy (Thurik, Stam and Audretsch, 2013; Stam, 2015). Productive entrepreneurship is described as an entrepreneurial pursuit which not only results in the introduction of new products or services, but also contributes to societal well-being (Lucas and Fuller, 2017). The entrepreneurial ecosystem approach is unlike the concepts such as regional clusters or industrial districts, because it considers entrepreneurial pursuits as creative or innovative ventures and their significance in economic and social contexts (Nicotra *et al.*, 2018). This approach has resulted in enhancement of validity and generalizability of supporting entrepreneurial start-ups and other such initiatives across different regions or countries. However, Isenberg (2010) cautions the attempts to replicate silicon valley model in US to other regions without understanding and taking into consideration, the local factors and prevalent societal culture.

Entrepreneurial Ecosystem, on a whole, is a conceptual framework which is drafted to indicate the key players and their roles in initiating, promoting and developing entrepreneurial ventures (Mazzarol, 2014). This study categorically examines the framework for an entrepreneurial ecosystem (Figure 1) proposed by Mazzarol (2014) which has been adapted primarily from the work of Isenberg (2010). The framework consists of interlinked, dynamic nine components which

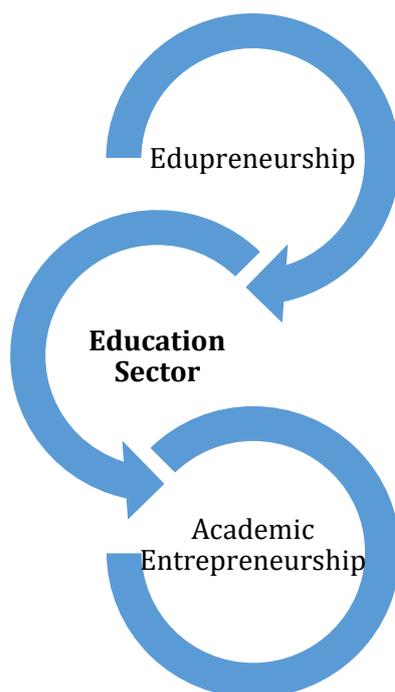
individually have the capacity to impact the ecosystem and collectively bring about a radical change in the society.

This work is an attempt to study the two ends of Education Sector:

- Academic Entrepreneurship is a result of universities or higher education institutions (HEIs) acting as catalysts for entrepreneurial activity by collaborating with other industry and governmental partners to transform the idea or research into commercial products or services (Wood, 2011).
- Edupreneurship also known as ‘Educational Entrepreneurship’ is a consequential category of entrepreneurship which arose due to the market opportunity in educational sector (Lăcătuș and Stăiculescu, 2016).

The rationale for choosing these areas for investigation lies in the fact, the significant role education has played throughout the modern history by not only enlightening and creating awareness, but also solving major issues plaguing societies across the world. While the philosophical and historical significance of education is unquestionable, the need of the hour is to investigate the education sector through the lens of entrepreneurial ecosystem.

Figure 1. *Pictorial Representation of the Dynamic Relationship Integrating Edupreneurship, Education Sector and Academic Entrepreneurship*



Academic Entrepreneurship

Education sector in general and HEIs in particular, are being seen as sources of creative ideas and innovative thinking, thereby playing a key role in

development of entrepreneurial ecosystem (Welter, 2011). Traditionally, HEIs were not primarily concerned in bringing research output to market (Muscio, 2010). However, the role of educational institutions is changing as they, now, are not only focusing on education & research, but also investing heavily on value creation – value for business and society at large (Brunswicker, Wrigley and Bucolo, 2013). Most of the technological solutions and management ideas which drive entrepreneurial pursuits are a result of the research conducted on campuses (Wood, 2011). HEIs are a platform which allow faculty and students to form teams together or among themselves to transform a technical or non-technical idea into business (Boh, De-Haan and Strom, 2016). The changing nature of HEIs has garnered more research interests among academics and has resulted in qualitative & quantitative studies to be carried out, in order to better understand the shift in focus of HEIs and design even more effective models of academic entrepreneurship.

Furthermore, Boh et al., (2016) have classified the HEIs into three categories:

➤ HEIs with Internal Focus

Institutions that develop entrepreneurial resources within their premises and strive to nurture start-ups.

➤ HEIs with External Focus

Institutions that pursue to build collaborations and partnerships for resources to support entrepreneurial pursuits of its members.

➤ HEIs with Dual Focus

Institutions that focus both externally and internally, establish network between various individuals and internal programs, and seek to derive resources from outside.

Abreu & Grinevich (2013) posit that senior faculty in a HEI are more likely to involve in entrepreneurial activities as they have more time compared to the junior faculty who are occupied in teaching, administration and research activities. Also, the tacit knowledge acquired over the years of extensive experience also plays a vital role in the engagement.

Academic Entrepreneurship is based on the premise that extensive business and scientific research activities taking place within HEIs may be commercially viable, resulting in building of business and generating revenue to the HEIs (Wood, 2011). Friedman & Silberman (2003), posit that Academic Entrepreneurship is a continuous process comprising of series of interconnected events. There is a wide, diversified literature on Academic Entrepreneurship compassing not only macro / regional level analyses focusing on policies, frameworks, technology clusters etc., but also micro / individual analyses centering on behavior, competency and motivation of individuals within a HEI towards commercializing their research (Barbieri *et al.*, 2018).

Wood (2011) theorizes that the development of Academic Entrepreneurship in the USA traces back to the passage of the Bayh-Dole Act, 1980 by the federal government, which provided a means by which the university, and not the funding agency, would have the ownership of the intellectual property generated under federal research grants. The main intent of the change in ownership rights was to motivate universities in disseminating the knowledge to the larger community

through commercializing the intellectual property (Carlsson & Fridh, 2002; Colyvas et al., 2002). Though few HEIs used to embark on commercialization pursuits before the passage of this act, it is evident that the act has influenced many HEIs to initiate and support academic entrepreneurship (Markman *et al.*, 2005). While the literature suggests that the 1980 Bayh-Dole Act was instrumental in the increase in academic entrepreneurial pursuits in USA, it also indicates that European HEIs are not efficient in transferring their high number of academic research outputs into commercial products – popularly known as “European Paradox” (Conti and Gaule, 2011). However, from wider viewpoint, entrepreneurship and research are not in conflict (Brunswicker, Wrigley and Bucolo, 2013); in fact they tend to be more productive than the peers working only within the academic realms (Abramo *et al.*, 2012). As concluded by Lundqvist and Middleton (2013) from their qualitative study on academic entrepreneurship, it is proposed that researchers should not be given the role to lead entrepreneurial ventures – but a more collaborative role should be entrusted on them with the support of other actors from within and outside the HEIs.

Academic Entrepreneurship has been supported through various modes within a HEI and effectiveness of the research commercialization in a HEI is affected by various factors (Caldera and Debande, 2010). The sections below investigate the two key units within a HEI, which support the entrepreneurial pursuits of researchers and connect them to the industry.

Technology Transfer Office

Technology Transfer Offices (TTO) were established across many HEIs, in order to encourage faculty members and students to work towards commercializing their research by translating it into businesses (Muscio, 2010). Primary task of TTO in HEIs is to define a clear purpose - which is vital in establishing credibility, draft explicit mission statements and set up well defined objectives (Fitzgerald and Cunningham, 2016). TTOs act as a bridge between researchers at the HEI and entrepreneurial world, and support programmes designed to carry out research and innovation activities (Porcel *et al.*, 2012). However, Huyghe *et al.*, (2016), conclude from their research findings that most of the HEIs take the presence of TTOs for granted and assume all the academics, specifically junior academics and student researchers, are aware of their presence and will come forward to seek their support.

In a nutshell, TTO is an independent unit in a HEI which maintains close relationships with researchers throughout the institution, across all departments, and supports research pursuits by having an effective incentive system in place.

University Industry Interaction Center

Universities are investing resources and time to build collaborations with the industry so as to create worthwhile Intellectual Property (IP) and promote technology transfer by establishing independent units within their premises and commonly known as University Industry Interaction Center (UIIC). From the universities’

standpoint, the applicability of research to business and collaboration with businesses has gained increased strategic relevance due to the fact that this is seen as potential sources of funding (Bruneel, D'Este and Salter, 2010). This enables universities to raise further resources required to fund its research and other professional activities. Furthermore, there is a mutual benefit from University-Industry collaboration as it not only supports the partnering firm's innovation activities, but also adds value to the researchers – financially & professionally (Guan and Zhao, 2013). Moreover, universities are keener than ever, to utilize management models developed and scientific results achieved by their academics in an industry context and apply the outcomes to solve societal issues or provide the community with simpler and economic alternatives (Salleh and Omar, 2013).

Edupreneurship

Education sector, in recent years, has witnessed a significant investment of financial and technical resources by venture capital investment firms, entrepreneurs and major technology companies (Williamson, 2018). This has led to growing interest of entrepreneurship researchers to categorize and describe such type of entrepreneurs. (Lăcătuș and Stăiculescu, 2016) define Educational Entrepreneurs, simply called Edupreneurs, as entrepreneurs who take the risk of time and money to influence and bring about changes in the education system through their innovative characteristics and entrepreneurial initiatives (Eyal, 2008). Edupreneurs act as 'change agents' who bring in innovative ideas and concepts into the educational sector. In most cases they have experience as an educator, possessing business acumen. This combination of expertise enables them to create or develop innovative product / service which would impact not only student learning, but society at large; hence, they are also known as 'Social Entrepreneurs' (Omer Attali and Yemini, 2017). Significantly, entrepreneurs based in Silicon Valley, US are increasingly utilizing their financial and technical power to create and prototype their own innovative educational and training institutions (Williamson, 2018). These entities are designed in such a way that they could be scaled to technical platforms in future, supported strongly by software engineering know-how and managed by entrepreneurs and executives of successful IT companies and other start-ups. Another avenue with ever increasing presence, which is less of an alternative to the conventional public education and more of a supplement, is the private tutoring / coaching (Zhan *et al.*, 2013). On the other hand, key foundations within the education sector have systematically moved away from supporting traditional educational institutions towards organizations that are a potential competition for education sector in the public domain (Reckhow and Snyder, 2014). Edupreneurship, in the US, is majorly through venture philanthropy wherein big corporations-backed charitable foundations and wealthy elites are active in charter school and education networks (Reckhow and Snyder, 2014). While in the UK, there has been an increased participation of private equity and foray of new philanthropic sources into the education sector, primarily – academy schools program (Williamson, 2018). Venture Philanthropy is seen as a tool for

the technology sector to enter the education space and this has resulted in schools manifesting private-style organizational culture and being competitively driven (Lubienski, 2013). This approach is seen as a "...radically 'disruptive' alternative to the conventional public education" (Williamson, 2018).

Edupreneurs can be categorized into two types – first, owners / stakeholders of big businesses supporting educational initiatives or start-ups. This is evident from the huge concentration of significant resources in education by major IT companies and venture capitalists (Williamson, 2018). Second, founders of educational institutions offering formal degrees or training programs.

The founders of educational institutions could be further classified based on the educational or training level / category.

- School Education involves founding schools which cater to the needs from kindergarten until grade 12 (also known as K-12)
- Higher Education includes colleges/universities offering undergraduate and/postgraduate degree programs
- Vocational Training encompasses centers or institutes which prepare candidates with job skills through their certified programs
- Coaching /private tutoring encompasses academies /establishments which train students, online or in classrooms on various technical and management concepts
- Research & Innovation comprises of centers /institutes provide a platform for academics or industry professionals to create new knowledge and products or further develop them

Edupreneurship and Social Entrepreneurship

Edupreneurship has brought about a much-required paradigm shift from outdated, ineffective, drafted-for-industrial era education system to skill-based and competitive space in the education sector. Edupreneurship could be associated to Social Entrepreneurship due to the common factors between them.

First common factor is the role of a 'change agent' through philanthropic investments or charity foundations (Acs, Boardman and McNeely, 2013). Furthermore, Zahra and Nambisan (2011) describe social entrepreneurs as entrepreneurs who "make significant and diverse contributions to their communities and societies, adopting business models to offer creative solutions to complex and persistent social problems". However, (Phillips *et al.*, 2015) argue that the perception of social entrepreneurship is often biased and its definition is vague because the commercial aspect is neither considered as essential, nor beneficial at all times; also it is considered primarily as not-for-profit pursuit (Choi and Majumdar, 2014).

Second common factor is the role played by Edupreneurs and Social Entrepreneurs is that of a 'social engineer'. Social engineers intend to bring about a revolutionary change and tend to upset the existing equilibrium or status quo, through their innovative and at times disruptive initiatives (Zahra and Nambisan, 2011).

Third common factor is ‘social value’. Both edupreneurship and social entrepreneurship are primarily driven by the strong underlying motive to create social value, rather than only maximizing stakeholder or personal wealth. Finally, there are various examples of edupreneurs and social entrepreneurs working on not-for-profit pursuits. However, this cannot be generalized across the concepts as the only motive or direction for edupreneurship and social entrepreneurship.

Conclusions

It is observed from the literature that the education sector plays a vital role within an ecosystem. The two ends of this sector – academic entrepreneurship & edupreneurship have increasingly attracted the attention of academic researchers as a comprehensive area for further investigation and investment of academics and entrepreneurs as viable, rewarding routes with financial and social benefits. There is extensive literature published on academic entrepreneurship right through its initiation and evolution. It is noted that creating ambidextrous structures among universities – ones which support and encourage research as well as commercialization would be highly beneficial. Also, it is essential that policies that promote successful scientists towards commercialization of their findings need to ensure their overall development with the necessary skills to succeed. However, the literature is limited to studies focused on the processes or entities. Furthermore, there is scant literature regarding individual and their experiences while pursuing entrepreneurial routes within academic institutions. Moreover, less literature is available on Edupreneurship; paradoxically, this is at a time when there is an increased interest among entrepreneurs to embark on investments in education sector and mushrooming of private educational institutions at all levels. Qualitative studies focused on investigating the reasons and influencing parameters for individuals to take up academic entrepreneurship route at one end or edupreneurship route at the other end would add considerable value to existing knowledge and pave way for further studies.

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