

Value-Based Academic Entrepreneurship and its Application in Developing Countries

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Abstract: Academic entrepreneurship possesses its distinct identity in the field of entrepreneurship. The study identifies a gap that there is no unified definition of the field. This study focuses on the current literature and the development in the field of academic entrepreneurship with specific focus on the definition of the academic entrepreneurship and how it is different from other fields of entrepreneurship. The definition is proposed on the basis of current literature with the dimensions of opportunity recognition, opportunity exploitation, economic value and social value. The study fills the gap by overcoming the fragmented definitions of the field. This will help the future researchers conduct quantitative research in the field of academic entrepreneurship. The study puts forward some important questions to be answered in future research.

Key words: Academic entrepreneurship, opportunity recognition, opportunity exploitation, economic value, social value

INTRODUCTION

Universities play a major role in economic development through research publications (Jin and Jin, 2013) and the commercialization of research. Universities are also the driving force for technological innovations and the economic growth (Muller *et al.*, 2004). Therefore, the field has attracted a lot of attention in the academic literature (Yusof and Jain, 2010). Within entrepreneurial universities academic entrepreneurship refers to the capitalization of knowledge by the academics, students and staff. This capitalization of knowledge takes the modes of technology transfer office, incubators, university science parks, academic spin-offs, licensing, consulting and contract research.

The main purpose of this conceptual study is to define academic entrepreneurship in a perspective of developing economies. From the literature survey, this study identified the different definitions of academic entrepreneurship that focus on developed economies of USA and Europe. The examination of challenges faced by universities in developing economies the study defines academic entrepreneurship that better suits these economies instead of following the concept pursued in developed world. The study contributes to academic entrepreneurship literature with focus on developing economies. Finally, the study proposes some future directions for research on academic entrepreneurship in

developing world. The future research on these areas will add value to the field of academic entrepreneurship as a whole.

Literature review: Entrepreneurship is everywhere. It's all because the entrepreneurial activities result into the economic benefits (Van Praag and Versloot, 2007) for individuals, firms and the society. Therefore, it has become the major field of academic research since the year 2000 (Meyer *et al.*, 2013). Generally, entrepreneurship research is categorized into five clusters, these are; cognitive aspects of entrepreneurship, demographic and personality determinants of entrepreneurship, theoretical perspectives on entrepreneurship, entrepreneurial and innovation finance and v) eclectic approaches on entrepreneurship (Meyer *et al.*, 2014).

Entrepreneurship in universities: The scientific knowledge and the technologies produced in universities are very important and the prerequisite for the economic development and the job creation in an economy (Atasu *et al.*, 2008). The commercialization of research conducted within universities contributes to the GDP of nations. In any economy, universities are the important driving force for technological innovations and ultimately the economic growth of nations (Muller *et al.*, 2004). The universities mainly attain this by creating and disseminating the knowledge.

By all means the university of 21st century plays an active role in teaching, scientific research and commercialization of the technology produced by scientific research. The contemporary university has to create marketable outcomes with the aim to enhance its contribution to the developmental needs (Berbegal *et al.*, 2013) and regional economic progress (Drucker and Goldstein, 2007). Universities possess intellectual capital which can be utilized to exploit the market opportunities.

The first role of the universities is the teaching. By teaching different disciplines and faculties, the universities produce the qualified human resources for the industry that ultimately contribute to the economic development (Mueller *et al.*, 2004) and this can be better done when university graduate becomes a job-creator as compared to job-seeker. Along with teaching, the research publications are also the important source of the new knowledge created within universities. These publications should be the source of innovation and the source of ideas for new businesses in the society. The research publications of the university professors provide the positive and significant impact on the growth of the economy (Jin and Jin, 2013). With the introduction of third mission of universities (Etzkowitz, 2003a) that requires universities to commercialize the research and knowledge created, the universities are playing active role in commercialization activities. A university adopting commercialization should not be considered as a commercialized university but it's a university that promotes commercialization of knowledge and innovation in the society (Etzkowitz, 2003b).

University today is expected to play a broader role at local, national and regional level that includes not only the traditional roles of teaching and research but the active role in economic initiatives, policy development and knowledge transfer also to create its impact (Breznitz and Feldman, 2012). Besides technology transfer, the cultural activities and arts spin-offs by universities also promote economic activities (Etzkowitz, 2013). The entrepreneurial university of 21 century contributes to the practical interests of society alongwith the traditional academic values of teaching and research in the natural sciences, social sciences and technology.

Academic entrepreneurship: Academic entrepreneurship generally refers to the involvement of academics into commercial activities in addition to teaching and research. Academic entrepreneurship is an additional feature of universities (Meyers and Pruthi, 2011) that includes more than imparting the education and training to the students. This originated in USA and then adopted by the

universities in UK. It is quite a new phenomenon for the universities in developing world. According to Brennan *et al.* (2005) academic entrepreneurship is embedded into three overlapping fields of research like technology-based firms, commercialization of academic knowledge and entrepreneurial university.

The Academic entrepreneurship comprises of the activities like industry-university collaborations, university-based incubator firms, start-ups by academicians, double appointments of faculty in firms and universities (Lacetera, 2009), consulting and patent-seeking (Klofsten and Evans (2000). Academic entrepreneurship is the phenomena within universities that include the entrepreneurial behavior of academics in addition to the teaching and research and the commercialization of scientific knowledge. Academic entrepreneurship fills the gap between the production of knowledge in the academic world and the demand for that knowledge by the society (Barth and Schlegelmilch, 2013). Brennan and McGowan (2006) presented a framework to understand the academic entrepreneurship phenomena in a university setting. In the model they identified the key elements of academic entrepreneurship in terms of advantage seeking, novelty seeking and opportunity seeking.

Definitions: Entrepreneurship is a multi-dimensional concept which includes academic entrepreneurship along with economic entrepreneurship, social entrepreneurship, civil entrepreneurship, political entrepreneurship and innovative entrepreneurship (Westlund, 2011). These dimensions indicate the depth of entrepreneurship and its ability to accommodate itself into the various areas of knowledge shown in Table 1.

Under the umbrella of entrepreneurship, academic entrepreneurship has emerged as a distinct research area because there is a global consensus on the commercialization of research and knowledge created at public and private universities (Grimaldi *et al.*, 2011) but the research on academic entrepreneurship is fragmented into different aspects. The earlier researchers Louis *et al.* (1989) defined academic entrepreneurship as the attempts to increase individual or institutional profit, influence or prestige through the development and marketing of research ideas or research-based products. They combine the research ideas and the marketing of these ideas to earn profits for the individual academic and the university as an institution. Similarly, Klofsten and Evans (2000) suggested that academic entrepreneurship included the commercialization aspect of research. It includes the university efforts and activities with industry to commercialize the research (Wood, 2011) and such

Table 1: Definitions of academic entrepreneurship

Study	Definitions
Louis <i>et al.</i> (1989)	The attempt to increase individual or institutional profit, influence, or prestige through the development and marketing of research ideas or research-based products
Klofsten and Evans (2000)	All commercialization activities outside of the normal university duties of basic research and teaching) has developed
Franzonic and Lissoni	“Academic Entrepreneur” (AE) looks straightforward: the AE is a university scientist, most often a professor, sometimes a PhD (2006)
Wright <i>et al.</i> (2007)	student or a post-doc researcher, who sets up a business company in order to commercialize the results of her research
Yusof and Jain (2010)	The development of commercialization beyond the traditional focus upon licensing of innovations to the creation of new ventures that involve the spinning-off of technology and knowledge generated by universities
Yusof <i>et al.</i> (2012)	The leadership process of creating value through acts of organizational creation, renewal or innovation that occurs within or outside the university that results in research and technology commercialization
Kenney	Academic entrepreneurship is defined as intrapreneurship within academia
Llano	Academic entrepreneurship as the discovery, evaluation and exploitation of opportunities for converting knowledge into products, processes and services within university setting
Wood (2011)	The efforts and activities that universities and their industry partners undertake in hopes of commercializing the outcomes of faculty research
Jain	Any form of technology transfer which has some potential commercial benefit
Cantaragiu	A practice performed with the intention to transfer knowledge between the university and the external environment in order to produce economic and social value both for external actors and for members of the academia and in which at least a member of academia maintains a primary role
Padilla-Melendez	The establishment of a new firm by the academic community based on research output originated in an HEI or public research centre
Urbano and Guerrero (2013)	Academic entrepreneurship is a phenomenon where an entrepreneur, a researcher, or academic develops his or her daily activities within a university that provides an adequate environment and resources to support the generation, transformation and commercialization of knowledge and technology

Table 2: Benefits of academic entrepreneurship

Individual benefits	Organizational benefits	Societal benefits
Higher income	Increased revenue	Innovations
Increased publications	Competitive advantage	Solution to problems
Reputation in scientific community	University-industry cooperation	Employment opportunities
Industry relations	New products	Economic development
Access to industrial resources	New processes	Qualified human resource
Own elaboration		

behavior of universities is termed as entrepreneurial and university is known as entrepreneurial university (Etzkowitz, 2003a).

The literature defines academic entrepreneurship as the creation of new companies by the academics. Such companies are termed as university spin-offs created by the university faculty or staff based on the outcomes of their research (Shane, 2005; O Shea *et al.*, 2004). The spin-offs are important source of wealth creation and job opportunities in an economy (Steffensen *et al.*, 2000). These spin-offs take different forms of entrepreneurial activities by the academics and originate within university. These spin-off companies are categorized as consulting companies, development companies, product companies, software companies and the infrastructure creation (Druilhe and Garnsey, 2004). The other forms of technology transfer from universities are licencing, meetings, publications, cooperative R and D agreements (Rogers *et al.*, 2001).

Academic entrepreneurship is the cooperation between universities and local communities for the creation of new ideas and values. The university scientists interact with local community, business communities and industry to exchange the knowledge,

technology and sources. These co-operations and partnerships lead to commercialization of faculty research (Wood, 2011).

Kenny defines academic entrepreneurship as the intrapreneurship within universities. This refers to the entrepreneurial activities by the individual academics and the staff of universities, which may take the form of consultancy, joint research with industry or university spin-offs. This has led to the intrapreneurial role of the academics in which an academic scientist looks for the commercial use of the knowledge for industrial and financial gains while maintaining the academic role within university (Etzkowitz, 2013).

Academic entrepreneurship has been defined as the organizational level entrepreneurship within universities. For Yusof and Jain (2010) and Yusof *et al.* (2012) academic entrepreneurship is a leadership process within or outside of university that creates the value through organizational creation, organizational renewal and organizational innovation. The study approaches academic entrepreneurship at the university level instead of individual level. The academic entrepreneurship at university level is also termed as institutional entrepreneurship (Faltholm *et al.*, 2010).

Etzkowitz (2003) mentions five key elements of academic entrepreneurship at the university level:

- The capacity of organising firms within universities
- The presence of quasi-firm organised research teams
- The presence of university-industry research centres
- The organisational and institutional arrangements for protecting intellectual properties.

Academic entrepreneurship has also been viewed as a broader scenario within universities. Academic entrepreneurship is a phenomenon within entrepreneurial university which provides an adequate environment and resources to academics and researchers for the generation and commercialization of knowledge (Urbano and Guerrero, 2013). Table 2 presents the definitions of academic entrepreneurship available in the literature. The definitions range from simply commercialization of research for profit by individuals to the academic entrepreneurship at the organizational level and as a broader phenomenon existing within universities.

The available literature on academic entrepreneurship is mainly limited to the developing countries where science and technology is the core behind the development. The social issues are very limited compared to the developing countries. The academic entrepreneurship studies in developing countries mainly focus on transferring the university knowledge to industry to generate the additional resources to universities and the academic scientists. While in developing countries economic and social problems coexist. Therefore, the context for academic entrepreneurship is different from the developing countries. The universities in developing countries need to focus on the social issues to add social value to society with the knowledge created within universities. The universities are required to play dual role in developing countries.

Considering the fact that there is difference of context in both developed and developing countries this study argues that there is a gap to understand the definition and scope of academic entrepreneurship. Considering the above mentioned gap, this study proposes the following definition of academic entrepreneurship with an intrapreneurial perspective; "AE is an intrapreneurial process followed by academics to identify and exploit the entrepreneurial opportunities emanating from their research that have the economic and social value for individuals, organizations and society."

This definition leads to a new perspective of academic entrepreneurship in developing economies and will lead to a new way of looking at academic entrepreneurship for

future research. The two different threads of research combined to meet the economic and social requirements of developing societies.

MATERIALS AND METHODS

A total of 54 conceptual and empirical studies were reviewed that focused on definition of academic entrepreneurship and its dimensions. These studies were found in line with the objective of this study to define academic entrepreneurship in developing economies. To accomplish the objective, the study inductively selected the suitable dimensions of academic entrepreneurship and developed the definition of academic entrepreneurship for developing economies.

RESULTS AND DISCUSSION

From opportunity recognition to opportunity exploitation. Like entrepreneurship, academic entrepreneurship is a process that occurs within universities. It's a natural flow of university knowledge to the market place. Therefore, the universities throughout the world have adopted academic entrepreneurship as an additional feature along with teaching and research (Meyers and Pruthi, 2011) and the academics are pursuing the commercialization of their research. This may take the formal and informal ways of commercialization being the part of a university. Earlier the researchers were more interested in publishing their research but now the researchers find the commercial use of their research. This has created a new wave of academic researchers interested in the commercialization of their research. These academics are now known as the academic entrepreneurs or entrepreneurial professors (Lam, 2007), academic entrepreneurs and entrepreneurial scientists (Viale and Etzkowitz, 2010).

Although it is quite difficult to decide whether research idea comes first or an idea of commercialization comes first. Looking at the recent developments in the field where it is quite evident to see that academics pursue the commercialization activities as part of their jobs, it can be argued that the academics pursue scientific research on idea that has the potential value of commercialization instead of publication only because the scientists seek the economic value from their research along with the reputation in the scientific community (Audretsch and Aldritch, 2009). The academics spot the opportunities of new avenues of research and act creatively to raise funds for their research (Wright *et al.*, 2012). The potential idea which is commercialized results into the publication. Building on this argument, it can be generalized that the

researchers identify an opportunity like the entrepreneurs that has the possible economic and social value, conduct scientific research and exploit that opportunity for economic and social value. This value can be for individual academic, organization like university or the industry and the society as a whole.

The discovery and exploitation of the entrepreneurial opportunities are the core entrepreneurial activities performed by the entrepreneurs. These opportunities are either created or discovered by the entrepreneurs (Alvarez and Barney, 2007). For scientists, Baglieri and Lorenzoni (2014) suggest that they create these opportunities by utilizing their scientific knowledge to solve different problems because the clients are unable to specify their needs. The scientists need the opportunity recognition and opportunity exploitation capabilities to exploit the knowledge entrepreneurially (Zahra and George, 2002) because entrepreneurship is all about identification and exploitation of previously unexplored opportunities (Ireland *et al.*, 2001). The intrapreneurs within organizations develop and seize the opportunities to create value while innovation is the key behind such opportunities. This intrapreneurial behaviour of employees within organizations includes the identification and exploitation of entrepreneurial opportunities.

Exploitation of entrepreneurial opportunities is equally important for scientists along with the creation of new knowledge in an area unexplored earlier. The academic scientist should be able to exploit the opportunities emanating from his academic research. Therefore, it can be concluded that opportunity recognition and opportunity exploitation are the key aspects of academic entrepreneurs along with their ability to conduct scientific research and produce new knowledge.

From economic value to social value: University scientists generally are interested to gain recognition for the discovery of knowledge but the financial gains and raising funds for university also motivate them to pursue academic entrepreneurship (Seigel *et al.*, 2003). Academic entrepreneurs act entrepreneurially to earn profits and self-employment by combining academic thinking and scientific activities. Academic entrepreneurship transforms knowledge into products and processes which ultimately contributes to economic growth and innovations. Academic entrepreneurship is a mechanism that creates the market value of university knowledge through innovation (Urbano and Guerrero, 2013).

The value of academic entrepreneurship is well recognized in the literature. Etzkowitz (2003) recommends the inclusion of economic and social development into the academic missions of universities. Academic

entrepreneurs innovatively exploit the internal and external opportunities to generate the economic resources for their universities and for themselves and also create the social and political changes within academia (Mars and Aguilar, 2010). The academics establish spin-off companies to exploit the opportunities emanating from their research. It is similarly like non-academic entrepreneurs who take risk willingly and identify and exploit the opportunities to create the social and economic value (Lounsbury and Glynn, 2001). The academic scientists enter into commercialization process of their knowledge when they realize the personal economic benefit and the commercial value of the knowledge (Acs and Sanders, 2012). Therefore, the earnings for academic entrepreneurs are higher than the academics not involved in academic entrepreneurship (Astebro *et al.*, 2012). In addition to private benefits to individuals the social benefits are created by the academics when they establish the start-ups resulting from the technology transfer activities (Baglieri and Lorenzoni, 2014). The spin-off companies produce innovative products, generate local jobs and attract the investment to the locality to create economic impact (Shane, 2005).

Universities today are required to create the economic and social impact for the region they exist. Universities attain these impacts by partnering with the industry and contribute to the economic development (Liefner and Schiller, 2008) and the employment opportunities for university graduates. Universities possess the infrastructure and scientists having the expertise in scientific research. The academic scientists having the expertise can be useful for the industry in the region and source of new scientific knowledge. The creation of knowledge and the commercialization of knowledge reinforce each other in the growth process (Michelacci, 2003; Acs and Sanders, 2012).

Entrepreneurs within organizations combine the various resources to generate the value in terms of benefits at different levels; these can be the individual benefits to entrepreneurs like wealth creation, organizational benefits like competitive advantage and the social benefits for the society like providing the innovative solutions to existing problems (Hitt *et al.*, 2011). Entrepreneurial scientists in these universities weigh the social issues faced by the people. They develop the solutions to improve the accessibility and quality of products for low-income citizens (Sooampon and Igel, 2014) to create the social value for the society with their research commercialization activities. This may sound like social entrepreneurship which involves the innovative use and combination of resources to explore and exploit entrepreneurial opportunities to address social change (Mair and Marti, 2006; Lepoutre *et al.*, 2013).

Thus, overall, entrepreneurial activity by individuals and groups can help to build new economic, social, institutional and cultural environments and thereby provide significant benefits to society (Rindova *et al.*, 2009).

Therefore, the entrepreneurial activities by the academics should be targeted to achieve the social benefits to society in addition to economic returns for universities. The contribution to society with the innovation and its commercialization had the positive motivation on the academics' belief (Sooampon and Igel, 2014). The academics as individuals, research teams and the entrepreneurial universities can create such environment within and outside universities where entrepreneurial activities flourish and add economic and social value to society. Academic entrepreneurship has the multiple benefits for the individual academics, the universities as organizations and the society as a whole.

The universities are required to create the economic and social impacts on society therefore; academic entrepreneurship also aims to create economic and social value in the society. The study synthesizes that the academic entrepreneurs may identify and exploit the entrepreneurial opportunities emanating from their scientific research to create economic and social value in the society.

P₁: The academics engage into the identification of entrepreneurial opportunities emanating from their research and exploit these opportunities to generate the economic and social value for individuals, universities and society.

P₂: The economic and social problems in society encourage the academics to identify and explore the entrepreneurial opportunities to overcome these problems with their research.

The academics being part of the entrepreneurial university deliberately pursue the entrepreneurial activities along with teaching and research to create the economic value for themselves, their students, their university and the society as a whole. The entrepreneurial activities of academics result into the social value for the stakeholders of the society.

CONCLUSION

The study reviewed the earlier literature on academic entrepreneurship and identified the research gap in defining academic entrepreneurship in the different context of developed and developing countries. The study proposes a different definition in the context of

developing countries that includes the economic as well as the social value for the individuals, universities and society. The universities are expected to play their role in both economic and social development of societies they exist in. The study proposes some future research areas.

RECOMMENDATIONS

Although, the study presents a pragmatic definition of academic entrepreneurship on the basis of current literature, the study has certain limitations. First of all this is a conceptual study presenting the definition therefore, future research is recommended to test and validate this definition quantitatively. The future research is recommended to test this definition into both developed and developing economies because the nature of economic and social issues is different. The study will also help academic entrepreneurs to create and exploit the entrepreneurial opportunities within their scientific research that have the potential economic value and social value. The value of scientific research could help the society develop economically and socially. This will turn around the process of research commercialization that the opportunities are created first and followed by the scientific research instead of conducting scientific research first and then finding the commercial use of the research. For policy making, the study recommends that the universities may encourage the academics to look into the locality of universities and address the social issues that may result into the economic value for universities, local economies and regions. This may be achieved by identifying the priority areas for research and commercialization policy. Future research may be conducted into the innovations in the field of social sciences to address the social issues which can be the source of economic value. The study recommends future research to look into how the academics address the social issues with their scientific research and how successful they are in addressing such issues. The future research may be conducted that how universities value these social issues besides the economic values generated by them. This may be achieved by applying social entrepreneurship perspective for academic entrepreneurship. The universities are advised to work closely with the industry and the Non-Governmental Organizations (NGOs) to solve the social problems of society.

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