



Conceptualizing academic-entrepreneurial intentions: An empirical test

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ABSTRACT

Policy makers are increasingly recognizing the catalytic role of academics' spin-off companies in a national economy, which derives from their innovativeness that result in new value generation, and job creation. Although research on academics' spin-off companies has been increasing, knowledge gaps exist as to the specific determinants and processes that characterize the emergence of academics' entrepreneurial intentions that lead them to spin off companies. This research aims to fill this gap. Drawing from psychological and entrepreneurship research on intentionality, the authors propose a conceptual model of academics' entrepreneurial intentions. They empirically test the model using structural equation modeling and a robust data set collected in two European academic settings to guide future research on this important topic.

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1. Introduction

Academic spin-offs have been shown as an important means of transferring technology from academia. Prior research in academic spin-offs has focused predominantly on the contribution of spin-offs to the national economy at large; little attention has been directed to the nature of the processes that lead to their emergence. The following catalytic roles, among others, have been attributed to academic spin-offs: boosting economic activity (Di Gregorio and Shane, 2003; Nicolaou and Birley, 2003a; Roberts and Malone, 1996), generating new jobs (Perez Perez and Sanchez, 2003; Steffensen et al., 2000; Walter et al., 2006), creating new wealth (Perez Perez and Sanchez, 2003; Roberts and Malone, 1996; Steffensen et al., 2000; Walter et al., 2006), providing a strong tie between industry and science (Debackere and Veugelers, 2005), contributing to regional economic development (Mian, 1997; Nicolaou and Birley, 2003a), and helping introduce new commercial products to the marketplace (Pressman and AUTM Survey Statistics and Metrics Committee, 2002). To illustrate the importance of such companies, Carayannis et al. (1998) quote a Bank of Boston survey (BankBoston, 1997) that observed that the Massachusetts Institute of Technology (MIT) had spun off approximately 4000 companies, employing 1.1 million people and generating annual worldwide sales of US\$ 232 billion. Furthermore, Mustar (1997) reported that 200 French academic spin-offs have created 3500 jobs. Policy makers in many

developed countries have also responded to the importance of academic spin-offs by erecting infrastructures intended to facilitate the commercialization of scientific research output (Goldfarb and Henrekson, 2003).

Probably the most important gap in the literature on academic spin-offs concerns robust empirical studies of spin-off processes and characteristics. In specifics, the review of the literature reveals a lack of empirical evidence that investigates this important phenomenon at the individual level; that is, how academics' entrepreneurial intentions, which are key to the creation of spin-off companies, emerge. This research proposes a theoretical model of academic-entrepreneurial intentions to gain insight into the determinants of academic-entrepreneurial intentions, and perform its empirical test. Entrepreneurial intentions have been in entrepreneurship research shown as the most viable precursor of entrepreneurial behavior that results in business incorporation. Measuring entrepreneurial intentions among academics provides an assessment of expected dynamics in emergence of firms with high growth potential given the research and technological environment that incubates gestation of such start-ups. We use cross-national empirical data from academics employed in the technical departments of two major universities in the United Kingdom and Slovenia.

The paper is structured as follows. We first review prior literature on intentionality and its determinants, and then present entrepreneurial intentions model grounded in social cognitive theory and hypotheses. We then describe our research setting and methods, as well as the results of our hypotheses testing. The paper concludes with discussion, implications, limitations and future research opportunities.

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2. Academic-entrepreneurial intentions: a conceptual model

One of the key aspects of the entrepreneurship process is the opportunity recognition process, when “opportunities to create future goods and services are discovered, evaluated, and exploited” (Shane and Venkataraman, 2000, p. 218). To understand how opportunity recognition occurs, we focused on the cognitive processes that align perceptions of opportunity, ability, and control with entrepreneurial intentions. Entrepreneurial intention can be according to the theory of planned behavior (Fishbein and Ajzen, 1975) seen as an accurate predictor of planned behavior towards starting a new business. Prior theoretical research on entrepreneurial intentions has analyzed different populations of potential entrepreneurs to understand their decision-making processes with respect to becoming entrepreneurs. Because of the economic importance of high-tech companies, it is particularly important to understand the intentionality of potential academic entrepreneurs, since they have a critical role in the identification of commercializable technologies and in the subsequent transfer of the technology (Hoye and Pries, 2009).

Social cognitive theoretical origins of planned behavior postulate several building blocks to formation of entrepreneurial intentions and three theoretical frameworks have predominated in explanations of entrepreneurial intentions: Ajzen’s (1991) theory of planned behavior, Shapero’s model of entrepreneurial event (Shapero, 1975; Shapero and Sokol, 1982), and the entrepreneurial intentions model (Bird, 1988; Boyd and Vozikis, 1994). The intention is based on desirability (attitude toward the behavior, subjective norm), and feasibility (perceived behavioral control), with each predictor weighted for its importance in relation to the behavior and population of interest (Ajzen, 2006). As a general rule, the more favorable the attitude and subjective norm and the greater the perceived control, the stronger is a person’s intention to perform the behavior in question (Ajzen, 2002). For intentionality to become a behavioral intention, an individual must cognitively process it, which results in a decision to perform a given behavior (Ajzen, 2002).

In entrepreneurship, Katz and Gartner (1988) define intention as the search for information that can help fulfil the goal of venture creation. Intentionality is a state of mind that directs a person’s attention (and therefore experience and actions) toward a specific object (goal) or path in order to achieve something (an outcome) (Bird, 1988; Bird and Jelinek, 1988).

In studying why people choose to become entrepreneurs the entrepreneurial intention model advanced by Krueger and his colleagues (Krueger, 1993; Krueger et al., 2000) remains one of

the most explanatory. Recognizing that starting a business is an intentional act (Krueger et al., 2000), and that intentions are the single best predictor of any planned behavior, including entrepreneurship (Krueger et al., 2000), the entrepreneurial intention’s model had substantial implications for intentionality research in entrepreneurship. This model acknowledges that entrepreneurial event is a result of a dynamic interaction between individual and environment (Shane and Venkataraman, 2000), which is in agreement to social cognitive perspective of entrepreneurship. Several empirical studies have since explored and supported the relationship between entrepreneurial intentions and entrepreneurial behavior (e.g. Arenius and Minniti, 2005; Autio et al., 1997; Douglas and Shepherd, 2002; Kolvereid, 1996; Kolvereid and Isaksen, 2006; Krueger, 1993; Krueger et al., 2000).

Building on existing findings on characteristics of planned behavior in psychology and intentionality in entrepreneurship, Fig. 1 presents our proposed model of academic-entrepreneurial intentions that draws from entrepreneurial intentions model originally proposed by Bird (1988) and Krueger (1993). According to assertions of the theory of planned behavior in the context of entrepreneurship, formation of entrepreneurial intention in general is dependent on an individual’s perceived ability to execute the intended behavior (that is expressed through entrepreneurial self-efficacy) of entering entrepreneurship, attitudes toward the desirability of an entrepreneurial career (that is expressed through perceived role models), and subjective norms (that are formed through interactions in one’s personal networks). Prior empirical studies of academic entrepreneurs have highlighted importance of prior academic experience, experience with patenting activity, interaction with industry and overall research focus as important determinants emergence of academic-entrepreneurial intentions. In what follows we present hypotheses that describe specific relationships conceptualized in the model. We begin with entrepreneurial self-efficacy that has been demonstrated as one of the strongest drivers of goal-oriented behavior (Baum and Locke, 2004).

2.1. Entrepreneurial self-efficacy and academic-entrepreneurial intentions

Wood and Bandura (1989) argue that perceived self-efficacy refers to people’s beliefs in their abilities to mobilize the motivation, cognitive resources, and courses of action needed to exercise control over events in their lives. Boyd and Vozikis (1994) suggest that the concept of self-efficacy, derived from social

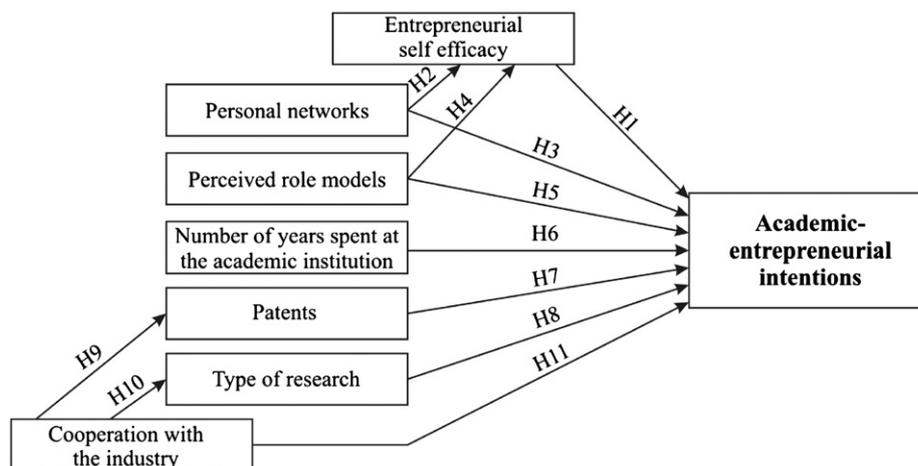


Fig. 1. The conceptual model of academic-entrepreneurial intentions.

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