



A theoretical analysis of the role of social networks in entrepreneurship



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ABSTRACT

Entrepreneurship involves innovation and uncertainty. We outline a theory of entrepreneurship, which highlights the importance of social networks in promoting innovation and reducing uncertainty. Our findings suggest that this “social” aspect of entrepreneurship increases the probability of entrepreneurial success. The results also lend credence to theories of entrepreneurship that suggest that entrepreneurial opportunities are formed endogenously by the entrepreneurs who create them. We also consider the public policy implications of our findings.

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1. Introduction

Economists, sociologists, and management scholars have proposed numerous definitions of entrepreneurship (Hébert and Link, 2006), as well as different conceptual frameworks of the entrepreneurial process (Zahra and Wright, 2011). Shane and Venkataraman (2000) asserted that the study of entrepreneurship was hampered by the lack of a conceptual framework, with the primary failing being the lack of a definition of the entrepreneur who was process-oriented rather than simply descriptive. To address that failing, they proposed that the study of entrepreneurship be defined as “the study of sources of opportunities; the processes of discovery, evaluation, and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them.” (p. 218). In a follow up article, Shane (2013) reflects on the state of the entrepreneurship literature for more than a decade following that critique, and he concludes that while debates continue there has been a convergence around their notion of what constitutes the

study of entrepreneurship. This paper fits within that framework as well.

Based on these definitions and frameworks, we can identify two common characteristics of an entrepreneur: (1) an individual who embraces uncertainty and (2) an individual who is an innovator. The notion of an entrepreneur embracing uncertainty emanates from the early works of Cantillon (1931). Cantillon (1931, pp. 47–49) asserted that the farmer/entrepreneur decides how to allocate his land among various uses, “without being able to foresee which of these will pay best.” He also noted that, due to vagaries of weather and demand, “the price of the farmer’s produce depends naturally upon these unforeseen circumstances, and consequently he conducts the enterprise of his farm at an uncertainty.”

The concept of the entrepreneur as an innovator traces to the writings of Baudeau ([1767] 1910). Within an agricultural setting, Baudeau conceived of the entrepreneur as an innovator, in the sense that he/she invents and applies new techniques or ideas in order to reduce costs. However, many attribute the entrepreneurial characteristic of innovativeness to the work of Joseph Schumpeter. The entrepreneur as innovator is most clearly articulated in his *Theory of Economic Development* (1934) and echoed in his subsequent writings. Schumpeter defined innovation in several ways: the creation of a new good or new quality of good, the creation of a new method

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of production; the opening of a new market, and the capture of a new source of supply.

Given these two important characteristics of an entrepreneur, we conjecture that the entrepreneurial process involves innovation that occurs within the context of an environment of uncertainty.

The purpose of this paper is to advance a theory of entrepreneurship that incorporates both of these ideas, yet also considers the importance of the social context. Our model is based on the notion that an entrepreneur is searching for knowledge and that key to the acquisition of knowledge is access to social networks. When the entrepreneur acquires more knowledge, there is a greater probability that his/her innovative activity will be successful. Our notion of the entrepreneur's search for knowledge in social networks parallels Granovetter's (1973) notion of weak ties and what some entrepreneurship scholars have referred to as the social dimension of context (e.g., Hoang and Antoncic, 2003; Welter, 2011; Zahra and Wright, 2011).¹

The notion that social networks are, in the words of Granovetter (1973, p. 1378), “no luxury but of central importance” has important implications both for public policy as well as for the management of the research process by individual firms. In particular, it suggests that emphasis should be placed on nurturing the entrepreneur's ability to exploit social networks through what Burt (2005) terms brokerage and closure, that is, the bringing together of heterogeneous social ties to form social networks and the facilitating of the coordination of those networks for the purpose of innovation.

The remainder of the paper is organized as follows: In Section 2, we outline our theory of entrepreneurship in a heuristic manner. The technical elements of our model are described in mathematical terms in Appendix A. Our model shows that for the entrepreneur, the probability of a successful innovation is positively correlated with the size of the region to be searched for knowledge. The entrepreneur's ability to increase the size of the region to be searched depends on the expansiveness and heterogeneity of his/her effective social network. This social network yields experiential knowledge, which complements the innovation process.

In the concluding section of the paper, we reflect on Zahra and Wright's (2011) claim that the link between entrepreneurship and economic growth could be strengthened by implementing public policies that strengthen the entrepreneur's knowledge base. We also further develop the policy implications of our theoretical results. Finally, we comment on how social networks affect the classic debate (e.g., Alvarez and Barney, 2007) regarding the discovery vs. creation views of entrepreneurial opportunities.

2. A theoretical model of the entrepreneurial process

The innovation process is inherently uncertain. An entrepreneur identifies the desired innovation and then engages in an exploratory process of discovery to develop that innovation. The notion of uncertainty is that identified by Knight (1921), and anticipated by Cantillon (1931); i.e., a circumstance in which possible outcomes and their probabilities cannot be determined through deductive or empirical inductive analysis. This is in contrast to risk in which the future may not be known, but outcomes and probabilities can be determined through such methods.

Given such uncertainty, the identification of the desired innovation, as well as the conduct of the exploration process, will be based on the entrepreneur's subjective expectations. Knight (1921) observed that the source of these subjective probabilities of success

is intuition, that is, the result of the entrepreneur's (often non-conscious) reflections is based on direct experience and knowledge of the experiences of others.² Knight also observed that through experience, entrepreneurs may bundle experiences to form their subjective probability estimates. To the extent that such subjective probability estimates become stable or are shared by others, they may come to be viewed as objective. Nonetheless, these estimates are by their very nature subjective, though in terms of explaining *ex ante* plans, this distinction may not matter; but, the distinction is certainly relevant for *ex post* outcomes. Indeed, Knight argued that it is differences between expected and eventual outcomes that provide the source of entrepreneurial return. Were expectations objective, the entrepreneurial process would, albeit with risk, be predetermined; the process would simply be one of production amenable to usual market processes and devoid of the potential for entrepreneurial return. This distinction between risk and uncertainty is thus crucial in understanding the entrepreneurial process.

As Nelson and Winter (1977) argued, the approach of treating innovation within a neoclassical equilibrium production context, even if couched in terms of known risks and risk aversion misses the point. The problem of understanding innovation and entrepreneurship is fundamentally about uncertainty and not about definable risk. Thus, any analysis that seeks to provide insight and guidance must accept a “diversity and disequilibrium of choices” (p. 47), that is, an analysis in which decisions *ex ante* cannot be evaluated as being correct or incorrect.

We characterize the process of discovery as a two-step process of problem formulation and search within and across sources of knowledge. Nelson and Winter (1977, pp. 52–53) describe this set of heuristics that essentially embody an R&D search strategy as a “set of procedures for identifying, screening, and honing in on promising ways to get to [an] objective.” The ability of the entrepreneur to search within and across sources of knowledge is determined by the size and heterogeneity of his/her effective networks; the greater the heterogeneity of social ties and past knowledge and experiences, the more creative will be the entrepreneur.

2.1. The sequential decision-making process³

The entrepreneur's decision making process is a costly one, which is developed sequentially against a background of social and professional experiences as well as resource constraints. If we begin with the choice of the desired innovation already in place, we can conceive of the entrepreneur's efforts as being focused on the exploration of various combinations of knowledge, actions, and resources thought to have a reasonable chance of yielding the desired innovation. For ease of exposition we refer to possible knowledge, actions, and resources as “inputs.” Sequentially, then, the entrepreneur searches over time for a combination of inputs that will generate the desired innovation. If success—achieving the desired innovation—is not achieved initially, the entrepreneur widens the range of inputs over which to explore. This search process is illustrated by Fig. 1 for the case of two inputs, x_1 and x_2 . Initially the entrepreneur begins with the relatively small search region, A_1 . If success is not achieved exploring in that initial search

² See Wasserman (2012; 7:09 minute mark) for contemporary support for Knight's observations, particularly with regard to knowledge of past failures and successes of both the entrepreneur and others.

³ This model characterizes the behavior of a single entrepreneur, and so for the sake of clarity we omit from our analysis idiosyncratic characteristics that would differentiate one entrepreneur from another. In general, however, individual entrepreneurs will differ from each other, with each entrepreneur's prior knowledge set being one of several factors (innate abilities, for example, being another) that would differentiate one from the other.

¹ For similar analyses in the psychology literature, see, for example, Ward et al. (1999) and Shalley and Perry-Smith (2008).

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