**1.1 Technology Startups**

Mobilizing resources to build a new organization is an undertaking laden with uncertainty and unforeseeable hazards. It is also an inherently social process because entrepreneurs must access financial and social capital and other types of resources through relationships with parties beyond the boundaries of their organizations. Because the quality and promise of a new venture is always a matter of some debate, however, the decision of external resource holders to invest time, capital, or other resources in a new organization is one that must be made in the face of considerable uncertainty about the startup’s survival chances and financial prospects.

Many obstacles confront young companies (Stinchcombe, 1965). Startups often lack employee commitment, knowledge of their environment, and working relationships with customers and suppliers. Because they have little operating experience, startups frequently operate using immature and unrefined routines. Startups also tend to be small and so unable to withstand a sustained period of poor performance (Aldrich and Auster, 1986). These perils have led organizational sociologists to conclude that new organizations are highly vulnerable to direct selection, a notion succinctly portrayed as a liability of newness (Hannan and Freeman, 1984; Stinchcombe, 1965). Because startups encounter so many hazards and because they have short-track records by which outsiders can evaluate their potential, there is considerable uncertainty about their value. This uncertainty is compounded for firms established to pursue commercial applications of new technologies (Aldrich and Fiol, 1994). Added to the usual hazards of inexperience, technology startups often require substantial resources to fund early stage and speculative development projects, while revenues cannot be expected until well into the future. New technology is, moreover, by its very nature highly uncertain: undeveloped markets follow unforeseen turns; ‘‘hyped’’ technologies disappear; technologies obsolesce rapidly; and unanticipated ‘‘kinks’’ derail once-promising projects (Tushman and Rosenkopf, 1992). New technology startups are thus particularly risky and uncertain. Given these uncertainties, how do VCs assess the potential of startups and select their investments? VCs spend a great deal of time and effort seeking and assessing signals of a startup’s promise and quality (Amit et al., 1990; Hall and Hofer, 1993). When unambiguous measures of performance do not exist or cannot be observed, investors look for other signs or certifications of future promise and quality (DiMaggio and Powell, 1983; Podolny, 1993). Newly founded ventures must assemble a range of resources and relationships to survive and thrive (Stinchcombe, 1965). Biotechnology startups require access to human, intellectual, alliance, and financial capital (Baum et al., 2000;Walker et al., 1997) and are often portrayed as engaging in a series of ‘‘races’’ to win over desirable managers and researchers, garner valuable patent rights, develop relationships with desirable partners, and obtain the financial resources necessary to support technology development (Amburgey et al., 1996). VC investment is typically viewed as the most critical form of capital (Anderson, 1999; Shepherd et al., 2000); while consistent with the classic signaling literature in economics (Spence, 1974), access to the other forms of capital is seen more as an important signal to VCs of a startup’s future promise (e.g., Stuart et al., 1999). Thus, prior research implicates three broad types of signals that may affect VCs’ assessments of startups: alliance capital, intellectual capital, and human capital.

In evolutionary models of entrepreneurship, entrepreneurs generate variation by founding new firms, pursuing different strategies, and attempting to combine different bundles of assets to do so. Selection is then generated by the decisions of external resource holders to allocate their resources among these firms (Aldrich, 1999). In the entrepreneurial setting, financial intermediaries such as venture capital firms (VCs) have been cited as perhaps the dominant source of selection (Anderson, 1999). VCs affect selection by providing financial resources to cash-hungry startups and by favoring new firms with, or requiring them to adopt, particular strategies, practices, or other characteristics. VCs may also provide management expertise or access to other capabilities that bolster the competitive advantage of startups that they fund (Hellmann and Puri, 2002). Further, because they are perceived to be ‘‘informed agents’’ able to identify particularly promising startups, their provides a certification benefit that can enable the startup to obtain other resources (Megginson and Weiss, 1991). Thus, VCs can affect selection by acting as what we term a ‘‘scout’’ able to identify potential and as a ‘‘coach’’ (Hellmann, 2000) that can help realize it.

Given the importance of financial intermediaries to selection within an organizational population, this is an important gap in our knowledge and our research focus. One way to address this gap is to test the effectiveness of VCs predictive templates by comparing the effects of startups’ characteristics on VCs decisions to finance them with the effects of the same characteristics on future startup performance. If VCs affect selection primarily by picking winners, then the startup characteristics that attract VC investment should also enhance their future performance. If, instead, VCs affect selection primarily by building winners, then the startup characteristics that attract VC investment need not be associated with future startup performance and may even affect it negatively.

2.1.0

* Baum & Silverman (2004)
* Podolny (1993)
* DiMaggio & Powell (1983)

2.1.1

* Unger, Rauch, Frese and Rosenbusch (2011)
* Doms, Lewis & Robb (2011)
* Robb & Robinson (2014)
* Definition:
  + Identifying and exploiting business opportunities (Shane & Venkataraman, 2000)
  + Definining and realizing a venture’s strategy (Baum, Locke & Smith, 2001)
  + Acquiring additional resources (e.g. financial) (Brush, Greene & Hart, 2001)
  + Building a positive basis for future learning (Ackerman & Humphreys, 1990)
* Signals:
  + Experience and Management skills (Zacharakis & Meyer, 2000)
  + Educational degrees (Levie & Gimmon, 2008) (Backes-Gellner & Werner, 2007)
  + Board composition (Schjoedt, Monsen, Pearson, Barnett, & Chrisman, 2013)

2.1.2

* Baum & Silverman (2004)
* Hoang & Antoncic (2003)
* Chung, Singh & Lee (2000)
* Stages of Development
  + Network Founding Hypothesis
  + Network Success Hypothesis (Bruderl & Preisendorfer)

2.1.3

* Baumol (2002)
* Cefis & Marsili (2005)
* Baum & Silverman (2004)
* Silverman & Baum (2002)
* Signals:
  + Cohen & Lemley (2001)