

Densification mechanisms of UO2 consolidated by spark plasma sintering

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Digital Startup Access to Venture Capital Financing: What Signals Quality?

ABSTRACT

What signals quality for digital startups seeking access to external finance? Analyzing a unique dataset from India, we investigate the impact of traditional quality signals (e.g., the founders' years of experience, prior industry experience); networking signals (e.g., degrees from elite educational institutes, the breadth of an entrepreneurial team); and digital signals (e.g., the social media presence of the startup on multiple social media sites) on the access to venture capital financing. We find that while networking and digital signals positively impact access to financing, traditional human capital signals do not have any significant impact on the process.

Keywords: Startups; Entrepreneurship; Financing; Digital Signals; Human capital, Social media networking; Venture capital; Signals

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1. INTRODUCTION

Entrepreneurial startups play a fundamental role in the promotion of innovation and economic growth (Acs & Audretsch, 1988; Acs et al., 2008; Audretsch, 2007a and 2007b; Audretsch et al., 2009; Baumol, 1996; Chavis et al., 2011; Cumming & Johan, 2014; Cumming et al., 2014; Fairlie & Chatterji, 2013; Klapper & Love, 2011; Marcotte, 2012; McMullen, 2011; Naude, 2010; Stam & Wennberg, 2009; Thurik et al., 2008). The creation of new entrepreneurial and innovative ventures requires capital financing and, as such, there is a large body of research looking into access to entrepreneurial finance for entrepreneurs and startups (Bhide, 1992; Bonini et al., 2012; Fossen, 2014; Nahata, 2008; Wang & Wang, 2012; Li et al., 2016). We know that sustained financing can ensure high levels of growth and survival of new ventures (Cosh et al., 2009; Smallbone et al., 2003; Storey, 2016; Van Auken & Carter, 1989) while lack of financing can result in low levels of growth and an increased likelihood of failure (Alsos et al., 2006; Basu & Parker, 2001). As financing is crucial for startups not only at the initial stages but also at the later stages for continued growth and survival, extant research has sought to determine the factors that play a significant role in access to finance, such as the human capital of the founders (Almus & Nerlinger, 1999; Colombo & Grilli, 2005; Cressy, 1996; Cumming & Johan, 2008a; Stuart & Abetti, 1990; Westhead & Cowling, 1995) and founders' social networks (Goh et al., 2013; Hochberg et al., 2007; Luo et al., 2013) .

Human capital plays a significant role in entrepreneurial endeavors. Researchers have divided human capital into two broad categories: formal and informal. Formal signifies individual educational qualifications, skills, and abilities, whereas informal signifies human capital developed through work and familial experiences. We know that educational investments and work experience can translate into economic advantages (Becker, 1964; Killeen et al., 1999; Langelett, 2002) and, if applied towards an entrepreneurial activity, can result in improved entrepreneurial judgment (Baron & Ensley, 2006; Corbett, 2005; McGrath & MacMillan, 2000; Parker, 2006; Ronstadt, 1988; Shane, 2000; Wiklund & Shepherd, 2003) and forecasting ability (Clement, 1999; Mikhail et al., 1997). It is clear that the impact of human capital on entrepreneurial activity and judgment has been previously widely studied in more developed economies. There is however limited empirical evidence on the role of human capital in startup financing for firms in developing or emerging markets where institutions are arguably weaker, and informal quality signals are much more important to mitigate information asymmetry. In this paper we analyze Indian tech startups to determine the extent formal and informal human capital signals serve as positive signals to mitigate information asymmetries and potentially impact access to venture capital (VC) for Indian entrepreneurs. Our formal and informal measures include total years of experience, the type of work experience (technical, founder, or consultant), the degree to which an elite educational institute provides access to a network of resources, and the breadth of the entrepreneurial team.

In India, technology has been a major driver of innovation for the last 25 years. Major business opportunities have surfaced in the technological front; consequently, there has been exponential growth in the number of startups, which has attracted investments from a large number of venture capitalists (VCs). From 2012-2017, reports show a significant increase in investments by VCs in Indian startups. The transaction value has increased over 13.5 times (from $94 million in 2011 to $1.275 billion in 2016)[1]. In 2017, investments by VCs in the country reached record levels at $26.5 billion.

With such rapid growth, policymakers face considerable challenges. One challenge is mitigating the inefficiency of the matching process between investors and new technological startups, especially in a financial market which still largely remains imperfect (e.g. Colombo & Grilli, 2005, 2009). In India, graduates from top engineering colleges are no longer restricted to only joining the corporate world; thus, those with engineering, mathematical, and analytical skills are increasingly incentivized to create their own entrepreneurial firms. A report published by NASSCOM[2] states that 50% of the founders of new firms have engineering backgrounds, 25% of them have management backgrounds, and 25% have other educational qualifications. In 2018, nearly half of the startups in India had one or more founders who studied in one or more of the country's top four engineering and management colleges: the IITs[3], IIMs[4], BITS[5], or the Indian School of Business[6]. In the United States, we observe the same trend in relation to Harvard, Stanford, and MIT[7] according to Pitchbook[8] and Crunchbase statistics. These considerations raise our initial question of whether the traditional human capital signal of previous work experience continues to signal quality to investors, as suggested by extant research. Our follow-up question is whether a degree from an elite institute, which may signal quality and increased social capital due to a

[1] PwC report 2016

[2] NASSCOM stands for the National Association of Software and Service Companies, a nonprofit organization established in 1988. It initiated a program called 10000 Startups in 2013. The purpose is to support the impact of 10000 startups in India by 2023.

See the full report at: https://smartnet.niua.org/sites/default/files/resources/nasscom-start-up-report-2017.pdf.

[3] Indian Institute of Technology, a premier engineering college.

[4] Indian Institute of Management, a premier business college.

[5] Birla Institute of Technology, a premier engineering college.

[6] See the full report on at: https://www.kalaari.com/magazine/india-tech-founders-does-alma-mater-matter

[7] Massachusetts Institute of Technology, United States of America.

[8] PitchBook Data, Inc. is a SAAS company founded in March, 2007. It delivers data, research, and technology covering the private capital markets. To collect data, it uses machine learning and natural language processing. The company's core product is the PitchBook Platform, a subscription-only database.