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CEO human capital, top management teams, and the acquisition of venture capital in new technology ventures: An empirical analysis

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ABSTRACT

We combine signalling and human capital theory to analyze how competencies of new venture CEOs impact the amount of money technology ventures acquire in venture capital (VC) financing rounds. Using data on 117 financing events in the biotechnology industry, we show that education in management, founder-based firm-specific experience, international experience, and industry-specific experience of the CEO impact the VCs' financial commitments. Moreover, we find that the effects of management education and industry experience are moderated by the size of the venture's top management team. We discuss the implications of these findings for the research literature on technology ventures and venture capital.

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1. Introduction

In high technology industries, product development is often an extremely time- and money-consuming process. For example, the development of biopharmaceutical products requires several hundreds of millions $US and more than 10 years, with most product candidates failing during the R&D process (DiMasi, 1995; DiMasi et al., 2003). Therefore it is one of the major challenges for technology venture managers to acquire sufficient capital to finance the product development process (Fildes, 1990; Nosella et al., 2006). Since most high-technology ventures turn to the venture capital (VC) market to finance their R&D activities (Gompers and Lerner, 2004) the scope of this research is to

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understand the determinants of VCs' financial commitments to new ventures. This is important because it helps new venture managers to maximize the amount of capital acquired from their investors.

Existing literature on investment decisions of VCs suggests that the experience and skills of the ventures' top management team are crucial for VCs' financial commitments (Tyebjee and Bruno, 1984). However, so far existing literature has paid little attention to how the characteristics of the leader of that team – that is, the CEO – impact the VCs' investment decisions. This is surprising given that several studies have emphasized the impact of CEO competencies on the performance of small and new ventures (Andrews and Welbourne, 2000; Boone et al., 1996; Eisenhardt and Bourgeois, 1988; Merz et al., 1994; Miller and Toulouse, 1986b; Wasserman, 2003).

Our study combines signalling theory (Spence, 1974) and human capital theory (Becker, 1975) to investigate how CEO competencies influence the financial commitments of VC investors to new technology ventures. We argue that education and experiences of the CEO signal to the VC market future growth and performance potential of the venture (Spence, 1974) and thereby impact the amount VCs are willing to invest in that venture. Moreover, we argue that the size of the venture management team moderates the strength of these signals and thus the impact of the CEO's education and experience on the amount of finance VCs commit to the venture. We test our hypotheses with data on 117 financing events of 84 entrepreneurial ventures in the biopharmaceutical industry. In short, this article makes the following contributions.

First, scholars have investigated how characteristics of the new venture top management team influence the investment decisions of VCs, but neglected the specific competencies of the CEO as the leader of that team. We focus on the CEO. Second, while studies have analyzed the direct impact of managerial characteristics on capital acquisition success, only recently they have started to investigate potential interactions between variables (Dimov et al., 2007; Shepherd et al., 2000). We show that the impact of CEO competencies on investors' financial commitments is moderated by the size of the venture's TMT. Finally, existing literature has focused on distinguishing ventures that receive VC funding from ventures that fail to do so, but has mainly neglected that ventures that receive funding do so to a varying extent. Our article explains variance in the amount of money new ventures acquire in VC financing rounds.

We proceed as follows. In the next section, we develop our theory and hypotheses. We then describe our data and methodology before we present our results. Subsequently, we discuss our findings, highlight limitations of our study, and draw final conclusions and implications.

2. Theory and hypotheses

Signalling theory suggests that the attributes of an organization provide investors with information that reduces the uncertainty associated with investments in that organization (Spence, 1974). This appears particularly important for new ventures that are not established at the markets yet and therefore miss legitimacy, that is, acceptance by their environment (Baum and Oliver, 1991; Hannan and Freeman, 1989). For example, ties to prominent strategic alliance partners (Stuart et al., 1999) and a well developed technology (Deeds, 2001) allow new ventures to signal high quality of developed products to the capital markets and positively influence the ventures' performance at the Initial Public Offering (IPO). Moreover, ventures' network ties to prominent private equity investors and investment banks can constitute an important IPO signal (Gulati and Higgins, 2003). Signalling the potential of above average performance to investors is important for young firms not only at founding when information asymmetries are particularly high, but also at later venture development stages such as later financing rounds or the IPO stage when more information about the venture is available and due diligence is more extensive (Sahlman, 1990).

Organizational human capital – the education and experiences of organizational members (Becker, 1975) – constitutes an important signal for investors. Education and experiences allow individuals to accumulate a stock of skills and knowledge that, when embedded in an organizational context, can constitute valuable, non-imitable, rare, and non-substitutable resources which are a source of competitive advantage for the organization (Barney, 1991). The more skilled and competent the organization's employees, the more likely the organization will meet its strategic goals and

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