MAKING PROGRESS THROUGH THE ANGEL INVESTMENT PROCESS: THE EFFECT OF EXTERNAL CERTIFICATION

Linda F. Edelman  
*Bentley College, ledelman@bentley.edu*

Tatiana S. Manolova  
*Bentley University*

Candida G. Brush  
*Babson College*

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Linda F. Edelman, Bentley University, USA
Tatiana S. Manolova, Bentley University, USA
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ABSTRACT

Drawing on signaling theory and using a certification lens, we examine how new ventures credibly communicate their underlying quality, using a unique dataset of 627 new ventures that sought investment from a prominent angel group located in the greater Boston, MA area during 2007-2010. Findings suggest that signals of quality are multi-dimensional, that they are more important when accompanied with a reliable referral, and that they are dynamic, with different types of signals mattering at different times in the angel investment decision-making process. Implications are discussed.

INTRODUCTION

Consider the plight of the early stage angel investor trying to make the decision to invest in a new technology venture. Technology start-ups do not have a record of accomplishment that investors can use to evaluate their potential. They are often years away from first revenues, their assets are mostly intangible, and they are plagued by a high failure rate (Ibrahim, 2008). Once the investment decision is made, the investment is illiquid and success rests on the ability of a small number of entrepreneurs/managers to execute on their growth plan. In addition, entrepreneurs seeking funding have both psychological and financial incentives to convince investors that their opportunity is worthwhile. Entrepreneurs may consume investors’ cash (Cable & Shane, 1997) or exploit the reputation of successful investors for their own personal gain (Sahlman, 1990). These perils force potential angel investors to expend a great deal of effort in seeking and then assessing signals of the new ventures’ quality and growth potential (Amit, Glosten & Muller, 1990; Hall & Hofer 1993; Shane & Cable, 2002). Quality new ventures, concurrently, struggle with ways to credibly communicate their value to angel investors.

In this paper, we use signaling theory to help us better understand the ways in which new ventures credibly communicate their suitability for investment to angel investors. However, we focus on one particular type of signal, external certification. Certification is defined as “a process whereby an unobservable quality level of some [firm] is made known to the [investor] through some labeling system, usually issued by a third party” (Auriol and Schilizzi, 2003:3). Similar to other signals, for third-party certification to be reliable the certifier must have reputational capital at stake, the value of that reputation must be greater than the largest possible one-time side payment which could be obtained by certifying falsely, and it must be costly for the firm to obtain the certification (Megginson and Weiss, 1991). External certification can take many forms, such as certification of the patenting office in IP protection (Hsu and Ziedonis, 2008), certification in the form of customers buying the new ventures product or service (Johnson, Kang, and Yi, 2010), or certification in the form of referrals (Plummer, Allison and Connelly, 2016).

To test the study’s hypotheses, we use a unique dataset of 627 new ventures that sought angel investment from the members of a prominent angel investment group in the greater Boston, MA area.
during 2007-2010. We track their progress through the angel investment decision-making process, from initial submission through presenting to the entire angel group to selection for due diligence.

**HYPOTHESES DEVELOPMENT**

For investors, signals offer a means of discerning among options. External certification is one type of signal of quality (Auriol & Schilizzi, 2003). By revealing information about organizational attributes that would otherwise be hidden from external audiences (King, Lenox, and Terlaak, 2005), certifications provide assurance that the firm is trustworthy and that its actions are aligned with socially prescribed values and actions (McDonnell and King, 2013).

**Previous Investment**

Despite the potential importance of friends and family finance in the early stage financing of a new venture, it is less important to a potential outside investor. This is due in part to the lack of qualifications of the private investor, who may not be skilled in screening investments (Hsu, 2007), or may be investing for reasons that are not strictly financial. To mitigate investment risk, angel investors are increasingly syndicating their investments (Lerner, 1994). Previous investment by individuals outside the family and friends’ circle acts as a certification of quality in that third-party reputational capital is at stake, the value of that third-party reputation is greater than potential one-time side-payments and the investment is costly to obtain. Formally,

\[ H1a: \text{Previous investment by friends and family only decreases the likelihood of the new venture moving through the angel investment decision-making process.} \]

\[ H1b: \text{Previous investment by individuals or institutions other than friends and family increases the likelihood of the new venture moving through the angel investment decision-making process.} \]

**Current Customers**

One way in which new ventures signal that they are viable entities is through the existence of current customers. In addition to providing much needed cash, the existence of customers indicates that the new firm has entered the market exchange domain, and has the potential to grow and become sustainable (Reynolds & Miller, 1992). As a signal of quality, having current customers is easily observable to potential external investors, reliable, as customers are difficult to secure, and costly to imitate (Reuber & Fischer, 2005). In essence, it certifies the quality of the new venture to potential external investors. Therefore,

\[ H2: \text{Having current customers increases the likelihood of the new venture moving through the angel investment decision-making process.} \]

**Intellectual Property Protection**

Venture capital researchers have found that an important selection criterion for firms is proprietary products or products that can be protected (MacMillan, McCaffery & VanWijk, 1985), especially in early financing rounds and with prominent investors (Hsu and Ziedonis, 2008). The patent process is designed to provide a certification function through the rejection of inventions that fail to meet the standard for patentability (Hsu and Ziedonis, 2008). Therefore,

\[ H3: \text{Intellectual property protection increases the likelihood of the new venture moving through the angel investment decision-making process.} \]
Referrals and their Moderating Effects

In the angel community, angel groups routinely refer investments to other groups. The quality of the investment is a reflection of the reputation of the referrer; hence, only high quality opportunities are likely to be brought to the attention of other groups. Since there is high uncertainty over the quality of the investment, an investment referral from an angel group or venture capitalist provides a strong signal of quality of the new venture. In other words, having a reputable reference is a form of certification in that it provides valuable information for the investor as well as a means for the firm to overcome liabilities associated with asymmetric information (Blau, 1964). Therefore, we hypothesize:

H4: New venture referrals increase the likelihood of the new venture moving through the angel investment decision-making process.

We surmise that referrals will enhance the translation of external certifications as signals of quality into progress through the angel investment decision-making process. While referrals are singularly important, consider the magnitude of the certification of quality when, for example, the investment is not only referred to the angel investment group by a known and trusted investor, in addition to having other certifications of quality. In this case, referrals act as a standard in that in the presence of a referral other certifications of quality are likely to become even more prominent. Formally,

H5a: New venture referral positively moderates the previous investment by individuals or institutions other than friends and family signal, thereby increasing the likelihood that the new venture will progress through the angel investment decision-making process.

H5b: New venture referral positively moderates the current customer signal, thereby increasing the likelihood that the new venture will progress through the angel investment decision-making process.

H5c: New venture referral positively moderates the intellectual property signal, thereby increasing the likelihood that the new venture will progress through the angel investment decision-making process.

METHOD

Data for the study came from the investment proposals submitted to a large angel-financing group located in the Northeast over a four-year period (2007-2010). The angel group provided us with the pool of investment proposals submitted over the period, the desk reject decisions, screening committee decisions and outcome of the formal presentations. The investment proposals were between one and five pages in length and offered detailed information about the qualifications of the founding team, the nature of the business, the amount of capital sought, cash flow, and the intended use of the funds, as well as a variety of additional product, intellectual property, market, and financial projections. We deleted 16 duplicate and 51 withdrawn entries to arrive at an initial sample size of n = 627. Missing data in some of the categories as well as zeros in the variables that were log-transformed brought the usable sample size to n=475, for which we report the results from statistical testing.

To track the progress of the new venture through the angel investment process, we generated a four-level ordinal variable which captured whether the angel group decision was to “desk reject” the proposal, accept the proposal for screening, accept the screened proposal for presentation, or accept the presented proposal for due diligence. In our examination, we limited our focus to those signals that relate to the process of external certification of the new venture as opposed to signals that might
indicate a particularly attractive market opportunity. Specifically, we measured if the new venture was referred to the angel investment group by another angel group or venture capitalist (coded as “1” if yes and “0” otherwise); sources of previous investment (extracted from the “Previous Investors” section of the proposal and transformed into two binary variables, one coded as “1” if the investment was made by friends or family only, “0” otherwise; and the other one coded as “1” if the investment was made by angels, venture capitalists or business partners, “0” otherwise); current customers (extracted from the “Customers” section of the proposal and coded as “1” if the new venture had at least one current customer and “0” otherwise), and intellectual property (extracted from the “Competitive Advantage” section of the proposal and coded as “1” if the new venture reported a patent, patent-pending technology, trademark, or proprietary technology and “0” otherwise). We controlled for the location of the new venture, year effects, as well as industry (consumer goods, technology, or medical sector) and firm-level factors which prior empirical research has found to affect the angel financing process.

RESULTS

Funding by friends or family only did not significantly affect the likelihood of passing through the angel investors’ selection process. Thus, H1a was not supported. However, prior investment by an angel, venture capitalist, or business partner significantly increased the odds of passing through the large group presentation round and into due diligence, rendering partial support to H1b. The presence of current customers and intellectual property significantly increased the likelihood of passing through the desk-rejection stage, rendering partial support to H2 and H3. Referral by an angel or venture capitalist significantly increased the odds of progressing through all stages of the angel investors’ decision-making process. Thus, H4 received full support (see Table 1). To test H5a-c, we ran a series of three sequential logit regressions, entering each interaction (referral by previous investment, referral by current customers, and referral by intellectual property) separately in the regression function (results available from the authors upon request). The effect of prior investment by an angel, venture capitalist, or a partner, is stronger in the absence of prior referral by an angel or venture capitalist, hence H5a is not supported. The effect of having at least one current customer is stronger in the presence of prior referral by an angel or venture capitalist, rendering support to H5b. The effect of having intellectual property is stronger in the presence of prior referral by an angel or venture capitalist, in support of H5c.

DISCUSSION AND IMPLICATIONS

In this study we explore the impact of external certification on the likelihood of making it through the angel investment decision-making process. In the first decision-making process round, reached screening, we found support for two signals of quality, referrals and intellectual property. At this initial decision point, the angel group is trying to determine if the young firm is worth considering further. At the early and middle stages of the angel investment decision-making process, having a referral also acts a signal of quality of the new venture. Interestingly, the only individual signal that was significant at the later stages of the angel investment decision-making process was prior investment by an angel, venture capitalist, or business partner.

We also hypothesized that having referrals would enhance the effect of external certifications as signals of quality on the progress through the angel investment decision-making process. When we tested our ideas, our findings were not as we had expected. We found a positive and significant interaction effect between referral and previous investment in the earliest stage of the angel investment decision-making process. This is in-line with our expectation that having a referral coupled with previous investment by an angel or venture capitalist would enhance the signal of quality. However, the moderating effect of referrals wanes as the new venture progresses through the angel investment
decision-making process. From this, we can conclude that initially referrals and previous investment together influence the new ventures’ progress through the angel decision-making process, but that after the initial move from desk-reject to screening, together they become less critical to the decision-making process.

In summary, we see that the importance of certain signals changes as the new venture moves through the angel investment decision-making process. In particular, with respect to the role of referral, we find that generally referrals are most helpful in the initial stages of the angel investment when the new venture is trying to be noticed by the angel group. Prior research has suggested that at the initial stages of the angel investment decision-making process most investors are looking for a “fatal flaw” (Maxwell et al., 2011), that can be used as a reason to quickly reject unfeasible projects and trim the number of investment opportunities that require further attention. The referral of the new venture by another angel investor suggests that the firm is viable and helps pass the “fatal flaw” test.

Our study has important theoretical and practitioner implications. For scholars, our findings suggest that signals of quality are multi-layered and dynamic, with different types of signals of quality mattering at different times. Hence, this study calls for finer-grained analyses of signaling activities. For entrepreneurs, this study not only provides them with vital information on which signals are more important to investors, but also when those signals matter in the decision-making process. In addition, entrepreneurs should note that signals are not limited to activities in which the new venture is involved such as engaging customers or protecting intellectual property, but referrals and prior investments by angels or venture capitalists are also important certifications of venture quality.

CONTACT: Linda Edelman; ledelman@bentley.edu; 781.891.2530; 319 Adamian Academic Center, 175 Forest Street, Waltham MA 02452 – 4705.

### TABLE 1

**SEQUENTIAL LOGIT ESTIMATES: MAIN EFFECTS ONLY (n = 475)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Stage 1: Pass Desk Rejection</th>
<th>Stage 2: Pass Small Group Presentation</th>
<th>Stage 3: Pass Large Group Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds Ratio</td>
<td>S.E.</td>
<td>Odds Ratio</td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>3.16***</td>
<td>0.87</td>
<td>1.86</td>
</tr>
<tr>
<td>Year 2008</td>
<td>1.18</td>
<td>0.37</td>
<td>0.37</td>
</tr>
<tr>
<td>Year 2010</td>
<td>2.50**</td>
<td>0.76</td>
<td>0.06***</td>
</tr>
<tr>
<td>Technology Sector</td>
<td>1.98*</td>
<td>0.64</td>
<td>2.37</td>
</tr>
<tr>
<td>Medical Sector</td>
<td>3.15**</td>
<td>1.23</td>
<td>3.47</td>
</tr>
<tr>
<td>Number of Employees (ln)</td>
<td>0.97</td>
<td>0.04</td>
<td>0.86†</td>
</tr>
<tr>
<td>Company Age</td>
<td>0.89</td>
<td>0.15</td>
<td>2.00†</td>
</tr>
<tr>
<td>Stage of Product Development</td>
<td>1.03</td>
<td>0.11</td>
<td>1.01</td>
</tr>
<tr>
<td>Percent Women on TMT</td>
<td>2.37</td>
<td>1.38</td>
<td>4.16</td>
</tr>
<tr>
<td>Amount of Capital Raised (ln)</td>
<td>0.99</td>
<td>0.08</td>
<td>1.13</td>
</tr>
<tr>
<td>Amount of Capital Sought (ln)</td>
<td>0.78†</td>
<td>0.11</td>
<td>0.60</td>
</tr>
<tr>
<td>Independent Variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Referred by Angel/VC</td>
<td>2.18***</td>
<td>0.53</td>
<td>3.49*</td>
</tr>
<tr>
<td>Prior Investor: Friends and Family</td>
<td>0.89</td>
<td>0.34</td>
<td>0.33</td>
</tr>
<tr>
<td>Prior Investor: Angel, VC, or Partner</td>
<td>1.52</td>
<td>0.44</td>
<td>0.69</td>
</tr>
<tr>
<td>Current Customers</td>
<td>2.78***</td>
<td>0.75</td>
<td>0.42</td>
</tr>
<tr>
<td>Intellectual Property</td>
<td>2.40***</td>
<td>0.60</td>
<td>1.57</td>
</tr>
</tbody>
</table>

**Regression Function**

Log likelihood = -324.52
Likelihood Ratio chi²(df = 48)= 164.43***

*significant at p<.1; †significant at p<0.05; ** significant at p<0.01; *** significant at p<0.001