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# THE USE AND CONTENT OF FORMAL RATING SYSTEMS IN ANGEL GROUP INVESTMENT INITIAL SCREENING STAGES

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**ABSTRACT**

*We examined the formal screening process of thirty-eight Angel Investment Groups. Within our sample, over eighty percent of the Angel Investment Groups used a committee of members to perform the initial screening of submitted business plans, while the remaining relied upon the managing partner or senior director to perform the initial screening. Of the Angel Investment Groups that use a screening committee, approximately half also employed a formal scoring system. With respect to the important dimensions used in the scoring systems, the quality/experience of the management team and the competitive advantage of the firm's product or service, including strength of intellectual property protection, were consistently the most common dimensions seen in the scoring systems examined. A content analysis of the scoring sheets was also performed in order to determine the various sub-topics and linguistic themes associated with Angel rating systems.*

**Keywords:** angel investors, investment criteria, screening process

## INTRODUCTION

Numerous researchers have discussed the investment decision making process of private equity investors, as well as providing criteria thought to be most critical to their successful decision making (Tyebjee & Bruno, 1984; MacMillan, Siegal & SubbaNarasimha, 1985; MacMillan, Zemann & SubbaNarasimha, 1987; Zacharakis &

Meyer, 2000; MIT, 2000; Benjamin & Margulis, 2000; Van Osnabrugge & Robinson, 2000; Payne & McCarty, 2002; Sudek, 2007). While the vast majority of past research in the private equity literature has focused on formal venture capital (VC) funds, the decision making processes and selection criteria of informal private equity, or Angel investors, has received increasing attention in recent years. In particular, a number of recent articles and books have noted the critical importance of the perceived "quality" of an applicant firm's management team in Angel investment decisions, with particular emphasis on the interpersonal style and perceived ethical behaviors of management (e.g., Benjamin & Margulis, 2000; Van Osnabrugge & Robinson, 2000; Payne & McCarty, 2002; Sudek, 2007, 2009). In a recent *Journal of Small Business Strategy* article, for example, Sudek (2007) surveyed the investors at one large Angel group, and found that the three top criteria for Angel investments were "trustworthiness/honesty of the entrepreneur", "management team", and enthusiasm/commitment of the entrepreneur" (p. 98). Extending this study, Sudek (2009) also investigated the direct relationship between the personalities of the presenting entrepreneur and the personalities of Angel members, finding that personality does influence the investors' interest in taking the potential deal to the due diligence stage.

While increasing our understanding of the final investment process, this stream of empirical research has focused primarily on the complexities of Angel investors' final evaluation based upon their interactions with entrepreneurs, such as during the due diligence process or the formal presentations of business plans to the full Angel group – of which most members haven't even read the presenters' business plan prior to the presentation. Not surprising, it is during these formal presentations, Q&A, and the related subsequent discussions among interested investors where the interpersonal dynamics of the entrepreneur/management team, such as "passion and trustworthiness" are assessed and debated by the members within an Angel investor group (e.g., Sudek, 2007, 2009).

In most investment decision making processes of Angel groups, however, there are multiple levels of screening mechanisms, of which the formal presentation to the Angel group and subsequent due diligence process, described by Payne & McCarty, 2002; Sudek (2007, 2009), Shane (2007) and others, are typically the final screening steps. For most Angel groups, a number of earlier screening mechanisms may also be in place, and it is these early-stage screening reviews that actually filter out the vast majority of applicants. In reality, only a few applicants will make it past these earlier screening stages to an actual presentation before the full Angel group membership. In effect, the deal flow of proposals, business plans, and applications can be considered similar to a funnel, where

various filtering mechanisms are needed to shrink the number of applicant enterprises to a manageable size for final presentations and discussions with the full Angel group membership. Similar multi-level screening protocols are also used by Federal granting agencies (Galbraith, Ehrlich & DeNoble, 2006; Galbraith et al, 2007), as well as in early-stage corporate R&D project decisions using a "stage-gate" process (Ozer, 1999; Linton, Walsh & Morabito, 2002; Ajamian & Koen, 2002; Cooper, 2001; Cooper, Edgett & Kleinschmidt, 2002).

In spite of their critical importance in filtering out applicant business plans, these earlier screening processes of Angel investor groups have not been examined in detail. We know very little about the differences in Angel investor group initial screening processes, and perhaps most importantly, we know even less about the criteria used in initial screens to filter out applicant business plans.

A number of descriptive studies have suggested that many of these early assessments now involve some type of multidimensional scoring sheet or rating process (MIT, 2000; Payne & McCarty, 2002; Cooper, Edgett & Kleinschmidt, 2002). In fact, within the past decade there has been a stream of complex technology readiness check-lists or calibrated scoring models designed for early stage, or "fuzzy" front-end assessments (Mock, Kenkeremath & Janis, 1993; Koen et al, 2002; Heslop, McGregor & Griffith, 2001; White, Hertz & D'Souza, 2009).

Our study explores this important part of the pre-presentation Angel screening process and the use of formal scoring systems for early-stage screening and filtering of potential equity investments by Angel groups. The stage of screening that we are investigating is prior to any significant interaction between Angel investors and the entrepreneur, and is typically based solely upon information in the business plan or executive summary provided to a screening committee or panel. Thus, our study attempts to fill an important gap in understanding the full sequence of actions and evaluation criteria after the initial submission of an applicant business plan to an Angel group.

**Early-Stage Equity Investment**

It is increasingly evident that informal private equity has become a critically important source of funding for early-stage firms, particularly those with a high growth or "scalability" potential. The *Venture Support Systems Project: Angel Investors* (MIT, 2000) notes, "Angel investing is the major source of funding for the seed ($25,000-$500,000) and start-up phases ($500,000 - $3,000,000)", (2000: 9). Similarly, the Angel Capital Association notes, Angel investing bridges "the gap between "family and friends" and institutional venture capital rounds" (2002: 1) While estimates of the total annual equity funding from Angels varies dramatically,

it is generally agreed that Angel investment in early-stage investments exceeds formal venture capital funding (Sohl, 2005), with a large percentage, if not the majority, of Angel investment in "pre-revenue firms." A recent survey by the ACA of Angel group members found that about 80% indicated preferences for investing in seed to early-stage enterprises, with only a minority of members showing preferences for expansion stage enterprises (Shane, 2007). Research by Wong (2002) found that 69% of his sample of Angel funded firms were in "pre-revenue" phases of development, while in their analysis of the ACA survey data Wiltbank & Boeker (2007) found 45% of the Angel investments were in pre-revenue firms.

While there are many individual investors who take equity positions as "arms-length" transactions in early-stage firms, an increasingly popular form of organizing private equity investors is through the formation of "Angel groups". Angel groups are formal networks of SEC defined "accredited investors." As of 2008, the Angel Capital Association identifies about 200 Angel groups within the United States and Canada. Most of the published literature on informal private equity decision making processes, however, tends to either focus on the very large and well-known Angel groups, such as *Tech Coast Angels* located in Southern California (e.g., Sudek, 2007, 2009; Payne & McCarty, 2002), or concentrate on investment returns (e.g., Wiltbank & Boeker, 2007) and demographic characteristics (e.g., Shane, 2007) for the broader Angel member population. Very little has been published about the screening and decision making process of smaller, and more typical Angel groups in the United States.

Most Angel groups, regardless of size, have developed a formal process of screening, evaluating and selecting deals (MIT, 2000). For example, a typical multi-level screening process is used by the *Wilmington Investor Network* (WIN) Angel investment group. Founded in 2003, WIN is located in the Cape Fear coastal region of Southeastern North Carolina, and is a member of the ACA. WIN's current membership consists of approximately forty-five SEC accredited investors that invest in approximately 2 to 3 deals per year. The median size of the member groups in the Angel Capital Association is approximately 37 members, with annual investments of around 2 to 3 deals per year (see Shane, 2007 for descriptive data regarding the recent ACA's survey of members). This places WIN as a typical, mid-sized regionally-based Angel investment group. To date WIN has invested approximately $7 million (about $1.3million for each year of operation) in early-stage, seed or *Series A* financing in nine different firms and a number of follow-on investments including convertible debt bridge financing and *Series B* investments in the previously funded enterprises. Several of the funded firms are located in the Raleigh-Durham-Chapel Hill research triangle area of North Carolina. In comparison,

the often profiled and much larger *Tech Coast Angels* of Southern California has been in existence since 1997, has almost 300 members with over $85 million invested in approximately 130 firms (Tech Coast Angels, 2009).

All of the firms funded by WIN can be considered medium to high technology, and include biotechnology, medical technologies, software development, and technology-based services. Most of the investments are syndicated with one or two other Angel investment groups in the Carolinas or with state supported funding sources, such as *NC Idea*, so that the total investment in a particular funding round is typically over $1million. The screening process of WIN is described below.

First the managing director of WIN screens about 300 potential investments per year. These firms generally come from two primary sources: a) the managing director attends various regional private equity forums where companies present to a large audience of representatives from venture capital and Angel networks – if any of the presentations seem of interest, these are then sent to the next level of WIN screening, and b) WIN receives a number of unsolicited applicants through referrals and its web-page – the referrals usually originate from other regional Angel groups, VC funds, local attorneys, and occasionally from members. The managing director screens these applicants, and eliminates those applicants that are not within the general published interest areas of WIN, such as start-up restaurants, feature length film and TV pilot financing (Wilmington, NC has a large film sector, with the largest movie studio in the U.S. outside California), and retail stores, as well as applicants who are located outside the geographical Southeastern U.S. region – the remaining firms are sent to the next level of screening.

Second, a screening committee of approximately five to six WIN members formally meets once per month for breakfast. Out of the original 300 applicants, approximately 60 applicant business plans are sent to the screening committee per year (4 to 6 applicants typically discussed during each screening meeting). All members of the WIN screening committee read the applicant's submitted documents (typically business plans, executive summaries, *pro-formas*, and PowerPoint presentations). The majority of applicant documents are in the form of five to ten page detailed executive summaries, oftentimes combined with a separate document describing the technology in more detail. Detailed, long business plans, once the dominant start-up firm document, appears to be falling in popularity for submission to Angel investor groups. The WIN screening committee uses a web-based document management system (*AngelSoft*) to facilitate pre-screening on-line dissemination of, as well as, encouraging on-line discussions by the screening

committee regarding the applications. A five question formal rating sheet is available to the screening committee members, primarily to organize their thoughts for the formal screening committee breakfast meeting. Based upon the screening committee discussions and recommendations, approximately 15 to 18 firms per year are invited to present to the full WIN membership.

Third, the selected candidate firms present to the full WIN membership during its monthly dinner meeting. The typically presentation is 30 minutes, followed by a Q&A period. This is similar to the average amount of time allocated to presentation and Q&A reported in the ACA survey (Shane, 2007). After the presentation, an informal hand vote is taken to determine the level of interest. If there is general interest to fund the presenting firm, this is confirmed by follow-up e-mails which also ask for specific dollar commitments from the individual members. WIN is not a fund, so individual members decide whether or not to invest, and how much.

Fourth, if the committed amount meets the solicited amount from the firm, then WIN performs a typical "due diligence" procedure on the firm. If the firm "passes" the due diligence process, the final agreement of valuation and investment terms is then formalized in a "term" sheet. Since many of the investments are partnered with other Angel groups, WIN may take either a lead or secondary role in the due diligence process and subsequent negotiations. Thus from a screening perspective, approximately 30% of the business plans that go to the screening committee are invited for a formal presentation, with about 5% of the screening committee applicants actually funded.

**EMPIRICAL STUDY**

In 2008, a list of U.S.-based Angel Investment Groups was obtained from Angel Capital Association web-page. The list was screened to include only member-based Angel groups (for example, fund based groups, government funded groups, individuals, or organizations that typically "charge" for a presentation were excluded). An electronic questionnaire was sent to the remaining ninety-two Angel Investment Groups asking for: a) a description of their pre-due diligence early screening process of business plans, b) whether or not a formal rating or scoring process was used for their initial screening of business plans, c) if a formal scoring system was employed then a copy of the scoring sheet was obtained, and d) if a formal system was not used, what was the general criteria that was used to screen business plans.

A total of thirty-eight usable responses were obtained, for a response rate of 41.3%. No significant response bias was evident based upon region. In almost every case the respondent was the senior director or managing partner of the Angel Investment Group. In about

fifteen cases, the authors subsequently interviewed the senior director after the questionnaire was returned (to obtain information regarding the use of web-based document management programs, follow-up information if survey was not complete, etc.).

Within our sample, 81.5% (n=31) of the Angel Investment Groups used a committee of members (similar to the WIN process described above) to perform an early screening of submitted business plans, while the remaining 18.5% (n=7) of the sample relied solely upon the managing partner or senior director to perform early screening (see Table 1).

**Table 1 - Screening Process and Scoring**

| | **Sample (N=38)** |
|---|---|
| **Screening Committee Decision** | **31** |
| **Scoring System with No Weightings** | **13** |
| **Scoring System with Weightings** | **2** |
| **No Scoring System** | **16** |
| **Individual Manager Decision** | **7** |

Of the Angel Groups that used a screening committee, approximately 48% (n=15) also employed a formal scoring system. Here we define a formal scoring system as a Likert-style numerical rating scheme on multiple dimensions. Of these, however, only two groups used a scoring system that also employed a weighting system reflecting the importance for the various dimensions. In a weighted scoring system, for example, a ranking of "5" on "management team" might be weighted differently than a ranking of "5" on "intellectual property."

Nine of the committee-based screening processes employed the ranking system available in the *AngelSoft* software program. In fact, within our sample, the *Angelsoft* program was clearly becoming an increasingly common way to distribute documents and allow member feedback, including rankings, of the business plans by screening committee reviewers. Several respondents indicated that they had just starting

using *AngelSoft* within the past six months. One Angel screening committee also reported "beta testing" a specialized social network system as their document management system.

All of the Angel groups (except two) that used a rating system for their early screening, however, reported that the rating process was not final but used as a process to facilitate the screening committee's discussion, after which a vote was taken whether or not to forward the applicant to the general membership. In theory, formalized assessment used in this manner during a screening procedure should focus the decision-making process by providing a set of cues that individuals attend to in the evaluation of early stage technologies. In the case of most Angel groups, the membership of SEC accredited investors provides an experienced, highly educated and diverse pool of reviewers. These reviewers each bring different "experience sets" that should enable them, in principle, to recognize antecedent patterns associated with the success or failure of commercialization efforts. These patterns or cognitive schemas presented in formalized rating sheets should simplify the decision-making process and allow experts to sort through a complex set of cues regarding the technology's prospects for commercialization to quickly develop summary judgments.

Two of the Angel groups reported using a web-based multi-dimension rating process as a first level screening process to filter applicants down to a manageable number for the subsequent screening committee discussions. This first level, web-based early screening, is based upon an average score of the reviewing committee (above or below a threshold rating), thus filtering out the majority of the applicants. In addition, about half of the other Angel groups that were currently using web-based programs for document management also reported plans to implement a similar web-based rating and filtering procedure, followed by an in-person screening committee meeting.

The remaining 52% (n=16) of the committee-based early screening process used either a consensus or simple voting process during a screening committee meeting, or a simple ranking or rating on the overall proposal (rather than on multiple dimensions).

With respect to the important dimensions used in the scoring systems, Table 2 indicates what dimensions were most commonly identified within the scoring sheet. Clearly the quality/experience of the management team and the competitive advantage of the firm's product or service were consistently the most common broad dimensions seen in the scoring systems examined in this study. This is consistent with many of the studies that have examined the general criteria for selection (e.g., MIT, 2000; Payne & McCarty, 2002; Wiltbank, 2005; Sudek, 2006).

**Table 2 - Scoring Dimensions for Screening**

| | Percentage Mentioned in Scoring Sheet (N=15) |
|---|---|
| **Quality/Experience of Management Team** | **100.0%** |
| **Characteristics of Product or Service (Including IP Protection)** | **93.3%** |
| **Market and Competitive Characteristics** | **86.7%** |
| **Completeness/Quality of Business Model/Strategy** | **80.0%** |
| **Transaction/Valuation Characteristics** | **53.3%** |
| **Quality of Pro-Forma Financials** | **46.7%** |
| **Geographical Location** | **26.7%** |
| **Exit Strategy** | **20.1%** |
| **Prior Performance** | **13.4%** |
| **Stage of Technology Development** | **13.4%** |

It is also interesting to note, however, that in the two formal weighted scoring systems examined, the competitive advantage of the firm's product or service, including strength of intellectual property protection, were weighted somewhat higher than the quality/experience of the management team. In contrast, in the early screening processes that did not use a formal scoring system, the senior director or managing partner respondent almost always mentioned that, in his or her opinion, quality/experience of management team was the most important dimension.

A "descriptive" content analysis was performed on the various Angel scoring sheets following the process described by Neuendorf (2002) and Krippendorff (2004). While not common, several researchers have performed content analysis of questionnaire wording, such as in public opinion surveys (e.g., Fan, 2003), to better understand the importance and evolution of the underlying dimensions employed, while other scholars have called for more content analysis of questionnaire and rating instrument wording (e.g., Inkelas et al, 2000). To our knowledge, rating instruments and systems for private

equity investments have not been analyzed in this manner.

Following Neuendorf (2002), a codebook was established for the top four categories of scoring shown in Table 2. In general there were three types of Angel scoring sheets coded, a) scoring sheets that simply had broad categories, such as "management," b) scoring sheets that had broad categories, but with descriptive phrases associated with the categories, and c) scoring sheets that had sub-scoring or ranking under each general category. All three of these scoring sheet forms were coded according to the codebook. Due to the relatively small sample size, the coding analysis was done manually. Two coders were used, with an inter-coder reliability coefficient (kappa coefficient) of 86.7% for intra-category coding (e.g., phrases within "Management" etc.), which is generally considered good overall agreement in content analysis studies (Kvalseth, 1989; Stemler, 2001).

We then used the revised "General Inquirer" (GI) software program originally developed by Stone et al (1966) to identify word roots and linguistic orientations or "textual themes" within the Angel scoring systems. The GI analysis provides a mapping tool with tag counts for dictionary-supplied categories and themes (Harvard IV-4 dictionary; Lasswell dictionary, etc.), and is commonly used to provide a simple linguistic profile of statements or phrases (e.g., Gibbs, 2004; Montgomery et al, 2005) based on sophisticated word count algorithms. Ignoring words such as prepositions, articles, and high-context words, the remaining words are stripped of their suffixes and compared with the various GI dictionaries. This technique is useful to identify various dictionary-supplied "textual themes" associated with the word usage in a particular category of analysis, such as "strong" words versus "hostile" words versus "activity" words, etc. In effect, GI uses different disambiguation routines to analyze a particular phase, then separate words into these different themes depending on their use within a phrase or sentence. Since GI employs a large library of categories and themes, it differs from purely inductive content analysis mapping tools such as *TextSmart* and various neural-net procedures that are sometimes used on more voluminous, and less defined texts such as a political speech or a novel. Based upon the GI analysis it becomes possible to provide empirical evidence embedded in the coding and rating sheets as to what "textual themes" become most important to private equity screening committees when analyzing a submitted business plan.

All descriptive phrases, explanations, and other language/wording found in the various Angel scoring systems for the categories of "management", "product", and "market" were inputted in the GI program; there were an insufficient number of phrasings to perform a reliable GI analysis on "business plan/model" category.

Table 3 provides a summary of the most common sub-factors, descriptors, or statements for each of the top four general early screening categories found in the rating systems, as well as the most common thematic root word tags from the GI analysis. Important "textual themes" are identified by the percentage of tags identified by GI falling within that theme category. With the GI metrics, it is possible to perform an analysis of variance on proportions, comparing the proportions of the different themes between the different categories.

**Table 3 - Content Analysis: Sub-Topics and "General Inquirer" Thematic Word Tags**

| **Top 5 Sub-Topics Referenced in Scoring Sheets (times mentioned)** | **Thematic Word Tags (percentage of word tags)** |
|---|---|
| *Quality/Experience of Management Team*<br>1. Management experience in industry (14)<br>2. Past experience in running a business (12)<br>3. Completeness of management team (7)<br>4. Depth of board (6)<br>5. Coachability of CEO (2) | *Quality/Experience of Management Team*<br>1. Strong (demonstrate, experience, strong, much, depth, complete, aggressive, fill, experience, etc, 25.6%)<br>2. Active (build, commit, demonstrate, implement, work, do, lead, propose, sell, etc., 16.8%)<br>3. Power (advisor, board, management, director, etc., 10.5%)<br>4. Affiliation (commitment, team, etc., 7.7%) |
| *Characteristics of Product or Service*<br>1. Uniqueness or differentiation (10)<br>2. Technology/intellectual protection (8)<br>3. Ability to solve market problem (7)<br>4. Proven in marketplace (6)<br>5. Barriers to protect position (6) | *Characteristics of Product or Service*<br>1. Strong (benefit, fulfill, prove, significant, etc, 15.3%)<br>2. Active (do, pay, solve, etc., 10.2%)<br>3. Human (customer, 8.4%) |
| *Market and Competitive Characteristics*<br>1. Market size (12)<br>2. Market growth (10)<br>3. Low competition (6)<br>4. Ease of market entry (2)<br>5. Segmented market/niche (2) | *Market and Competitive Characteristics*<br>1. Active (growth, demonstrate, achieve, implement, provide, size, etc., 23.3%)<br>2. Economic (customer, buy, market, company, etc., 17.8%)<br>3. Positive (favorable, understand, respect, etc., 10.0%)<br>4. Space (Segment, niche, etc., 7.2%)<br>5. Solve (believe, evaluate, think, understand, etc., 6.7%)<br>6. Solve Negative (competition, 4.4%) |
| *Completeness/Quality of Business Model/Strategy*<br>1. Business plan viability (11)<br>2. Realistic (10)<br>3. Scalable (9)<br>4. Well defined (8)<br>5. Milestones given/reached (5) | |

The individual factors, or statements, for each of the general categories are useful to understand since they likely represent the underlying, latent factors or criteria that screening members use to assess the broader categories of evaluation. From Table 3 we can see that management experience in industry and past experience running a business are the primary sub-areas with the general category of "management." In addition, from the thematic analysis, it appears that Angel screeners may be looking for linguistic themes in the applicant business plans that evoke "strong" emotions, such as *demonstrate, aggressive, depth* and *experience*, combined with "action" themes such as *build, commit, demonstrate* and *implement*. Similarly, under characteristics of product/service, the general sub-areas appear to be uniqueness or differentiation, intellectual protection, and ability to solve market problems. These sub-areas are also reflected in the thematic language, such as "strong" word tags that emphasize *benefits, fulfilling*, and *proving* combined with "active" linguistic themes, such as *solving* customer needs. For the market and competitive characteristics, the thematic categories appeared more diverse -- six different themes had over a 4.0% frequency, with the dominant linguistic theme again being "active" using related words such as *growth, demonstrate, achieve* and *provide.*

Using a weighted average of percentages based upon the number of words for each sub-topic inputted into the GI, overall Angel screening committees appear to be grounding their analysis of submitted business plans in the context of "strong" linguistic themes (15.64% of all word tags) and "active" linguistic themes (14.3%) -- no other linguistic theme had a total proportion greater than 5.0% across the combine data. However, using a test of equality of several population proportions (e.g., Kullback, 1968) there were significant differences (against the null hypothesis of equal proportions) between the proportions of the different themes (e.g., strong versus active) across the categories of management team experience, characteristics of product, and market and competitive characteristics ($p<0.01$, $\chi 2=19.74$). This clearly suggests that while both "active" textual themes and "strong" textual themes dominate in Angel screeners' rating systems, screeners are also certainly looking for different textural themes, and ultimately different evoked emotions, across the different sections of the business plan.

## CONCLUSION AND IMPLICATIONS

All decisions for equity investment by Angel groups involve some form of early screening. While there have been many recent empirical examinations of the final investment and decision making process for both Angel and VC investors (e.g., Shepard and Zacharakis, 2002;

Sudek, 2006, 2009), the complexity of the initial screening process has been largely ignored, a somewhat surprising phenomenon since the vast majority of business plans and proposals are screened out in these earlier stages. One of the more objective processes employed in early stage screening is the use of formal rating systems.

Our study indicated that there were extreme differences in opinion regarding the use of formal scoring systems in early stage, pre-due diligence screening decisions. On one hand, a number of Angel groups utilized a formal scoring system, with two groups even formalizing the process to the point of providing different weights to the different dimensions, then ranking the proposals based upon a weighted sum of the ratings for the different dimensions. Other Angel groups utilize ratings as a first-level web-based screening process prior to a screening committee discussion. And the trend appears clear from our research – as the use of sophisticated and dedicated document management programs, such as *AngelSoft*, becomes more dominant, more Angel groups are likely to move to web-based early screening procedures that utilize multi-dimension, and possibly weighted rating schemes, to filter applicant business plans and executive summaries.

On the other hand, several respondents clearly challenged the validity of any scoring process, or as one manager from an Angel group located in the Northeast United States wrote, "we specialize in early stage deals and question the utility of a scoring system in our environment."

At another level, there was great consistency between the Angel groups within our sample. Every group that used a formal rating system for their initial screening decision had quality/experience of the senior management team as one of their dimensions in the rating sheet. Similarly, all the respondents of the Angel groups that did not use a formal scoring system indicated that they thought that the quality/experience of the management team was most important to the screening process. As one respondent succinctly argued, "I'm sure we could quantify the weightings but don't because it probably wouldn't add much value since it would be highly skewed to the management team."

From a research point of view, however, Angel groups that use formal rating systems offer an excellent objective framework to analyze the criteria used in initial screening, particularly since the majority of applicant business plans are filtered out during this stage prior to any "face-to-face" contact between the entrepreneurship and the actual members of the private equity group. Although there have been several recent, albeit small sample, content analyses of business plans and subjective decision-making descriptions from private equity investors (e.g., Smart, 1999; Diaz de Leo

& Guild, 2003; Silva, 2004; Kollmann & Kuckertz, 2004; Christina, Cornet & Asandei, 2006), to our knowledge the actual instruments and rating systems for private equity investors have not been analyzed in this manner. And as Inkelas et al (2000) and Fan (1998, 2003) suggest, using the objective descriptions in questionnaires and rating sheets measures for a content analysis provide an important foundation to better understand the actual dimensions being used, regardless of subjective opinions.

While there is certainly a difference of opinion regarding formalized screening and scoring systems for early stage equity investment screening, there remains an even broader question that still needs to be answered: do early stage reviewers, Angel investors, and screening committee members actually have any ability to predict future success? This, after all, is the underlying assumption behind all screening meetings.

Almost all empirical research to date that attempts to examine the actual criteria leading to successful private equity investment is *ex-post* in nature. Given the hindsight and memory decay biases inherent in *ex-post* analysis, however, a few researchers are starting to examine technology commercialization and early-stage enterprise success within an *ex-ante*, longitudinal framework that tracks early stage firm success years after the firms were evaluated and rated by investors. Some of the *ex-ante* research has examined the decision making process among equity investors, such as venture capitalists (e.g, Zacharakis & Meyer, 2000; Zacharakis & Shepherd, 2001; Shepard & Zacharakis, 2002; Baum & Silverman, 2004), while other *ex-ante* research has investigated additional early stage funding mechanisms, such as government grants (e.g. Astebro, 2004; Galbraith et al, 2006). While only a few *ex-ante* screening studies have been published, these findings tend to challenge both the validity of many early-stage screening processes and the importance of often-repeated evaluation criteria, like "management quality." Clearly, much more *ex-ante* research needs to be accomplished in this area, particularly in the areas of accuracy of prediction and assessments by equity investment investors and business plan screeners.

Regardless of whether the screening process actually produces better investments or not, this study provides important information for the entrepreneur seeking funding. In order to get past the initial screening stage, entrepreneurs need to incorporate and emphasize the top factors typically seen in screening rating systems. In fact, Table 3 could be used as a check list for entrepreneurs when writing their executive summaries or business plans for submission to an Angel network. Business plan writers not only need to concentrate on the sub-topics that are important to the Angel screeners, but also employ the linguistic phrasing that evokes the desired profiles that

screeners are looking for. And while it might be true, as Sudek (2007, 2009) emphasizes, that interpersonal dynamics are important to progress to the final due diligence stage, a critical step for most entrepreneurs is to get past the initial screening stage, and simply be invited to make a presentation.

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