University Spin-offs Fundraising: The Impact of Entrepreneurial Capabilities and Social Networks of Founding Teams during Start-Ups

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ABSTRACT

University spin-offs have increasingly received attention from academia, governments, and policymakers in studying the financing policies, venture capital investment decision making, the roles of venture capitalist in the development of new ventures, and the contributions of entrepreneur's social capital to the fundraising activities. However, the limited number of studies in understanding of the contribution made by the entrepreneurial capabilities and social networks of a founding team to its fundraising ability still remains, especially within university spin-off context. Employing resource-based view theory and social networks approach, this paper enriches the knowledge by exploring university spin-offs in Spain. The results of this study empirically demonstrate that by exploiting social networks a founding team can improve its entrepreneurial capabilities, which in turn enhance its fundraising ability.

INTRODUCTION

According to Smilor, Gibson, and Dietrich (1990), a university spin-off refers to a new venture founded by current students or faculty members of a university to develop and exploit their inventions based on an entrepreneurial process. The economic theory of entrepreneurship emphasises the entrepreneurial function as the roles of a single person reflecting on his/her decision making, preferences, beliefs and actions. Although this research approach has long been appreciated, the idea that new ventures are more likely to be created by founders plural, rather than singular (Gartner & Vesper, 1994), and that entrepreneurial teams are at the heart of any new venture have emerged (Cooper & Daily, 1997). Moreover, founding teams have become more popular and important modes of new business development (Cooney, 2005); their importance also is reflected in the prevalent insights from venture capitalists who constantly consider the quality of teams as an important funding criterion (Meseri & Maital, 2001).

Despite the prevalence of team's importance in the entrepreneurial process (Clarysse & Moray, 2004), prior entrepreneurship studies have emphasised the individual entrepreneurs or the firms as the main unit of analysis (Hmieleski & Baron, 2009; Shane & Stuart, 2002). Studies that have investigated entrepreneurial teams have either focused upon the formation and composition of founding teams and/or their relative homogeneity in terms of education, industry experience, functional expertise, and skill sets (Ensley & Hmieleski, 2005). Further research is therefore required to understand the capabilities and resources of the founding team and the contribution they make throughout the entrepreneurial process. Drawing upon the resource-based view and social network theory, this research studies the entrepreneurial capabilities and social networks of

founding teams. Followed the definition of Smilor and his colleagues (1990) on university spin-off, in this study a founding teams refers to a subset of individuals who are involved with the academic entrepreneur in founding an university spin-off (Grandi & Grimaldi, 2003). At stat-up, most founding team members know each other within the university environment, have little contacts with nontechnical people, and possess limited industry experience leading to the investor's sceptic about the success of the new ventures (Clarysse & Moray, 2004). Therefore, establishing a new and quality founding team not only serves the purpose of creating an effective venture but is also more attractive to the early-stage investments.

Early-stage financing is a major issue of university spin-offs to develop their inventions and knowledge into practical applications (Lindstrom & Olofsson, 2001). The imperfections of capital market caused by the uncertainty of investment returns, the asymmetric information between entrepreneurs and potential investors, and the lack of collateral create financial constraints and funding gaps for university spin-offs (Carpenter & Petersen, 2002). However, most of current research studying the early-stage financing of new ventures has been oriented towards supply side (the investors) (Lindstrom & Olofsson, 2001) despite the fact that the issues of new firms representing the investment readiness levels of demand sides (Murray, 1999) significantly impact the business development. Thus, to answer the question in how entrepreneurs can improve the possibility of obtaining early-stage investments, Rasmussen and Sørheim (2012) propose (untested) that the perceptions, preferences, networks, and relationship of entrepreneurs, and the business's content and presentation are an important key from the demand-side perspective. Inspired by the idea of focusing on demand-side perspectives, this study will investigate the early-stage financing of university spin-offs under through the lens of the entrepreneurial capabilities and social networks of founding teams.

THEORETICAL BACKGROUND AND HYPOTHESES

The entrepreneurial capabilities and social networks of founding teams

To study the entrepreneurial capabilities of a founding team, this research employs resource-based view, which emphasizes the internal idiosyncratic capabilities of a firm and explains how a firm utilizes the available capabilities to be successful (Barney, 1991). In this study, the entrepreneurial capabilities of a founding team consist of comprising entrepreneurial technology, organizational viability, human capital, strategy, and commercial resources.

Besides these internal capabilities, the quality of a team's social networks, external resources, in the entrepreneurial process are also important (Shane, 2004; Vohora, Wright, & Lockett, 2004). A social network includes single nodes (actors) and linkages between these nodes (dyads), and is "a sum of actual and potential resources embedded within, available through, and derived from the networks of relationships possessed by individual social units" (Nahapiet & Ghoshal, 1998). The analysis divides the network into three components structure, governance, and content as suggested by Amit and Zott (2001) and Hoang and Antoncic (2003).

Social network can be useful as explicit or tacit knowledge to enhance the strategic management skills and knowledge to support the entrepreneurial process (Yli-Renko, Autio, & Sapienza, 2001).

By exploiting information and advice related to human resources, founding teams encompass their human resource and improve the managerial skills (Tolstoy & Agndal, 2010). For the above reasons, this study hypothesizes that the social networks with structure, content, and governance and the entrepreneurial capabilities of founding teams have mutual relationships.

H1: The social networks and entrepreneurial capabilities of founding teams mutually affect each other.

Early-stage financing and capital market imperfections

The early-stage financial needs of new ventures develop through three phases: Seed, start-up, and early-growth (Lindstrom & Olofsson, 2001). In the university spin-off process model from studies of Shane (2004) and Vohora et al. (2004), the seed capital is typically provided by the host institution or public funding sources to support the research activities and develop the initial business concept. The start-up finance is needed for early organizing efforts in business registration to create a legal entity. The early-growth finance is needed for the initial product development and market entry. However, this paper solely considers early-stage financing as the financing activities of spin-offs to fulfil the early-growth financial needs. Undercapitalization can be one of the consistent causes of failures not only in the stage of foundation but also in the growth period of new ventures (Rosman & O'Neill, 1993).

Financial sources are classified into existing investors who provided capital to create spin-offs and potential investors whose may invest to new ventures in the future (Harrison & Mason, 2000; Shane, 2004). Lindstrom and Olofsson (2001) suggested that while these resources are available, how to access them has become a key challenge for early-stage firms because of the effects of capital market imperfections. Carpenter and Petersen (2002) indicated three reasons for these effects. First, the low probability of financial success and the high failure rate of university spin-offs generate the uncertainty of investment returns which impact upon the investment decisions of the investors. Second, the university spin-offs, in themselves, have the limited collateral value because they have little salvage values in the event of failure. Third, it is difficult for financial providers to evaluate and frequently embody new knowledge because high-tech-based university spin-offs cannot disclose all relevant information leading to the information asymmetry between new ventures and potential investors that impede the financing activities of new firms. Thus, to surmount the effects of capital market imperfections, this paper proposes that founding teams can attract more financial providers by constructing their entrepreneurial capabilities as investment readiness and exploiting their social networks as the solution for information asymmetry problems.

Investment readiness and the entrepreneurial capabilities of founding teams

In management study, Mason and Harrison (2004) define investment readiness as the venture's state of willingness or preparedness to take on new investors. However, in entrepreneurship research, the potential investors assess the readiness of new ventures to move to the next level (Wiltbank, Read, Dew, & Sarasvathy, 2009). Each investor has different scales and ratings of the new venture's readiness basing upon technology, market, and management stage (Douglas &

Shepherd, 2002), or the business, risk/returns ratio, and time to exit (Wiltbank et al., 2009). In general, potential investors trend to look for the signal of future success from the new ventures when making funding decisions (Meseri & Maital, 2001). However, investors and entrepreneurs, each has different perception of readiness to evaluate and move forward (Douglas & Shepherd, 2002). Taking the founding teams as the unit of analysis, this study proposes the stage of team's entrepreneurial capabilities as the investment readiness. To study the entrepreneurial capabilities of a founding team, this study employs resource-based view, which emphasizes the internal idiosyncratic capabilities of a firm and explains how a firm utilizes the available capabilities to be successful (Barney, 1991). The entrepreneurial capabilities of a founding team thus comprise entrepreneurial technology, organizational viability, human capital, strategy, and commercial resources.

H2: The entrepreneurial capabilities of founding teams as the investment readiness affect the early-stage financing of university spin-offs.

Information asymmetry and the social networks of founding teams

Beside the uncertainty of the investment returns, information asymmetry importantly impacts the financial markets (Leland & Pyle, 1977). Entrepreneurs and investors unequally access to the information about the new ventures leading to the absence of perfect information (Certo, 2003). In fact, entrepreneurs possess more inside information about the true intentions, planned activities, and value of the firms than outside investors (Prasad, Bruton, & Vozikis, 2000); this asymmetric information can lead to the rejection of good investment opportunities or underinvestment (Myers & Majluf, 1984). Because of the ultimate purpose of an investment is to maximize the benefit, financial providers prefer investing in the projects that minimize the risks (Cable & Shane, 1997). An investment is likely to be undertaken when the financial providers are able to mitigate the risks derived from the information asymmetry problems (Cumming & Johan, 2008).

Financial providers can reduce the information asymmetry regarding to the intentions and planned activities of entrepreneurial teams, and the value of new ventures through contingency (incentive) contracts and monitors (Kreps, 1997). The asymmetric information can be alleviated via signals (Certo, 2003) conveyed by the knowledgeable parties or/and through screening activity which seeks for additional information from uninformed parties (Lee & Venkataraman, 2006). These parties can have direct or indirect relationship with entrepreneurs, and they thus can receive relevant information about the entrepreneurial teams. Many scholars have proved that social ties provide a potential mechanism to reduce the information asymmetry between potential investors and entrepreneurs (Freiburg & Grichnik, 2012; Uzzi, 1996). Social networks also provide additional information about the value of new ventures (Granovetter, 2005), and leverage the trust between entrepreneurs and financial providers (Kautonen, Zolin, Kuckertz, & Viljamaa, 2010) eventually positively influence the investment decision.

H3: The social networks of founding teams leverage the early-stage financing of university spin-offs by reducing information asymmetry.

METHODS

Sample and data collection

We draw the sample from 69 Spanish universities, each has an office for the transfer of research results (OTRI), located in 17 autonomous communities. The OTRIs were created by the public or private universities within the first Spanish National Plan of R&D 1988-1999 to enhance the relationships between the scientific world and productive sectors. OTRI's engage in a wide range of R&D activities but only 35 are involved in the creation and development of spin-offs. While university spin-offs can be created by individuals or teams those spin-offs participating in this research were created by teams that included at least one academic member from a university.

With the help of the OTRIs, a database of 862 spin-offs was conducted from which 181 responses were received (21 per cent of research population) from a web-based survey. All respondents were members of the founding teams and have a position on the executive board of the spin-off. The spin-offs are in various sectors: 33.8% in information, computing and telecommunications, 16.1% in engineering and consultancy, 15.3% in medicine and health, 15% in agriculture and biotechnology, 8.9% energy and environment, 4.3% in aeronautics and automotive, 3.4% in electronic, and 3.2% in other industries. The majority of spin-offs, 98%, were created inside university incubators, and after 2003; the actual breakdown is: 20% in 2009, 16% in 2010, 14% in 2006, 13% in 2008 and 2007, 7% in 2005, 5% in 2011 and 2004, and 7% in 2003 or earlier.

Measurements

To ensure the content validity of measurements, this study uses questions that employ seven-point Likert scales from existing entrepreneurship and management studies (Antoncic & Hisrich, 2001; Tsai & Ghoshal, 1998), and require respondent to self-report on a variety of issues that relate to a founding team's capabilities and social networks during the creation period against the early-stage financing ability of spin-offs.

Combining a test of start-up capital resources of university spin-offs with suggestions of Shane (2004), and Harrison and Mason (2000), this study constructs the early-stage financing measurements including existing investors who provided seed capital (private investors or angels, venture capitalists, government grants, and strategic partners), and potential investors (initial public offering, employees, and customers). The capability construct is derived from previous research (Antoncic & Hisrich, 2001; Lumpkin & Dess, 2001; McGrath, 1997) and employs measures for entrepreneurial technology, organizational viability, human capital, strategy, and the commercial resource of founding teams. By adapting prior management research, eight social network measurements are constructed in the areas of: ties, density, centrality, reputation, reciprocity, trust, information quality, and diversity (Parks & Floyd, 1996; Tsai & Ghoshal, 1998; Uzzi, 1996).

Control Variables

To ensure that one person from the founding team worked or was a student at a university, a binary code was used one for at least one founder in the team, at the creation time, and zero for no member. To manipulate for the potential negative effect on the early-stage financing ability of a

spin-off created outside the university's incubator, this study will include a dummy variable coded one if spin-offs created inside the parent incubators and zero otherwise. Moreover, we consider the age of a spin-off as a control variable that can influence its early-stage financing.

Validity and reliability

To reduce common method bias, previously validated measurements were employed (Spector, 1987) and a pilot test on five spin-offs from the university of Granada was undertaken which resulted in the survey being to avoid potential question confusion by respondents. There is a potential error generated by the use of self-reporting from respondents especially as many of the measures are complex in nature and require post-hoc assessment. To reduce this issue, Harman's one-factor test was employed on all variables and the results suggest that the relationships among social network, entrepreneurial capability, and early-stage financing factors are unlikely to be caused by this common method bias in this study.

We construct the CFA of sixteen first-order factors: density, centrality, tie, reputation, reciprocity, trust, information quality, information diversity, technology, organizational viability, human capital, strategy, commercial resource, and existing and potential investors. These factors indicate five second-order variables: structure, governance and content of networks, entrepreneurial capability, and early-stage financing. The results revealed that both first- and second-order CFA of measurement models are acceptable fit, and each item loads on a single factor and is significant at 0.01 levels. To assess convergent validity, the extent to which the indicators of measurement converge to a high proportion of variances in common, we examine construct loadings and average variance extracted. The results from the first-order CFA of social network, entrepreneurial capability, and spin-off's early-stage financing models reveal that all standardized loadings estimates are higher than 0.5. Moreover, all indexes of average variance extracted (AVE), the amount of construct variance relative to measurement error, are greater than 0.5 (Table 4) suggesting adequate convergent validity.

Discriminant validity (i.e., unidimensionality) is to test whether a construct is truly distinct from other constructs. The results revealed that all AVE estimates are larger than the corresponding squared interconstruct correlation estimates (SIC) (Table 4) inferring discriminant validity of the hypothesized structure are supported by our data.

We compute the composite reliability, analogous to Cronbach's alpha, of all first-order factors by the formula of (Fornell and Larcker (1981)). Most factors revealed sufficient composite reliabilities (above 0.70) except the reputation (0.632) and potential investor factors (0.668) (Table 4). However, according to Hatcher (1994), the cut-off level of 0.6 is acceptable for a new conceptual variable. Thus, the measurements of this research are reliable.

RESULTS

Model estimation and fit

Exploratory factor analysis (EFA) is used to construct the research indicators. The results from the EFA of network structure model revealed that item loadings were mostly significant (over 0.5) and the four items that had loadings under 0.5, trust, information quality and diversity, and strategy factors that loadings were removed. The EFA is not considered as an sufficient method to evaluate the dimensions because it cannot test the models with higher-order factors (Rubio, Berg-Weger, & Tebb, 2001). Therefore, in this study, we will utilize first-order confirmatory factor analysis (CFA) to construct the lower-order factors, and the second-order CFA to construct the higher-order factors by applying the AMOS program. The research employs CFA based on the maximum likelihood method to test the hypotheses as the normality test revealed that all of the observed variables have significant kurtosis and skewness p-values, and the relative multivariate kurtosis is within an acceptable range (1.036). Moreover, the sample size, 181, is more than the minimum requirement for the CFA (The models with latent variables require at least 150 observations for normal distribution with no missing data) (Muthen & Muthen, 2002).

Before constructing our structural model, the average scores of eight first-order factors of social networks are estimated by using all items identified from the first-order CFA of structure, governance, and content models. The first-order CFA results from the social network model revealed an acceptable fit and all factor loadings (Density, centrality, tie, reputation, reciprocity, trust, and quality and diversity of information) are significant at 0.01 levels (Table 1). The results also demonstrate that these structure, governance, and content factors are valid and reliable (CR>0.7 and AVE>0.5>SIC) to indicate the social network variable. Thus, these factors can be used as observed variables that construct the social network endogenous latent variable.

The first-order CFA of the measurement model revealed an excellent fit (the ratio chi-square/degrees of freedom is smaller than two; RMSEA is smaller than 0.8; and all fit indexes are greater than 0.9) (Table 2). Moreover, the factor loadings are greater than 0.5 and significant at 0.01 levels, and CR>0.7 and AVE>0.5>SIC leading to a conclusion that the construct passes the validity and reliability tests. Thus, all constructs are adequate for use to test the research hypotheses.

The result from null model test reveal that the goodness-of-fit is not acceptable (CMIN/DF=13.402) leading to a rejection of null model in which no relationships are posited. The analysis results of hypothesized model also reveal an acceptable goodness-of-fit (CMIN/DF=1.324, RMSEA=0.042, NFI=0.931, CFI=0.982, and GFI=0.938), thus it is appropriate to test hypotheses 1, 2, and 3 with research data.

Hypothesis tests

Hypothesis 1 states that the entrepreneurial capabilities and social networks of founding teams positively affect each other. The results indicate that the path between social networks and entrepreneurial capabilities is positive and significant inferring that hypothesis 1 is supported. Hypothesis 2, that the entrepreneurial capabilities of a founding team positively influence its early-stage financing, is also supported. However, the results reveal that the relationship between the social networks of a founding team and its early-stage financing is not significant leading to a

rejection of hypothesis 3 (Table 3). Thus, this study constructs a next-best model in which eliminates the path between social network and early-stage financing pushing the entrepreneurial capabilities of the entrepreneurial teams to a mediate role. To understand how a founding team can exploit its social networks to improve its entrepreneurial capabilities and enhance its early-stage financing, the indirect paths of this model then will be analysed (Table 3).

Social networks, consistent with hypothesis 1 appear to influence positively and significantly entrepreneurial capabilities with respect to technology (0.265, $p < 0.01$), organizational viability (0.320, $p < 0.01$), human capital (0.185, $p < 0.01$), strategy (0.362, $p < 0.01$), and commercial resource (0.362, $p < 0.01$). The results also suggest that social networks are likely to exert stronger influences on the entrepreneurial technology, organizational viability, strategy, and commercial resource of founding teams, but a much more limited effect on early-stage financing. Entrepreneurial capability appears to have a significant positive direct effect on the existing investor and potential investor factors of early-stage financing (0.184, 0.196, $p < 0.01$) (table 3).

From the above results, we construct a mediation model that considers the mediate role of a team's entrepreneurial capabilities between its social networks and early-stage financing. In other words, founding teams exploit their social networks to improve their entrepreneurial capabilities during start-up and subsequently enhance their early-stage financing activities. These results from the above analyses have demonstrated that the entrepreneurial capabilities and social networks of founding teams, respectively, directly and indirectly improve the spin-off's early-stage financing. However, the above results have not depicted the relationships of each factor of capabilities and networks with each component of early-stage financing. To address this question, a fine-grained analysis has been undertaken based upon the correlation test technique. The results (see Table 5) show that only the centrality, reciprocity, and trust of entrepreneurs within social networks have significant relationships with the investments from existing investors. Four factors of entrepreneurial capabilities of founding teams (technology, organizational viability, strategy, and commercial resources) significantly relate to the funds from existing investors, meanwhile there are only two entrepreneurial capabilities of founding teams (technology and strategy) significantly affect the decision of potential investors. However, findings suggest that the human capital of the founding teams is unlikely to be associated with the early-stage financing of spin-offs. Additionally, the centrality, reciprocity, and trust of entrepreneurs, and quality and diversity of information within networks are likely to leverage the relationship between entrepreneurial technology and both existing and potential investor's decisions. Moreover, most of social network characteristics (except strength of ties) of entrepreneurs have positive influence on the relationships between strategy of founding teams and the decisions of both existing and potential investors, and between organizational viability of founding teams and the returning investments of existing investors. In addition, the relationship between the commercial resource of founding teams and existing investor's decisions was leveraged by the influences of centrality, and reputation of founders, and the quality and diversity of information within social networks.

Control Variables

All spin-offs in this study were created by academic teams and received support from their universities. Moreover, a spin-off's created location (within universities' incubators) does not significantly influence its early-stage financing (Table 3). Thus, these control variables do not affect the analysis of relationships among founding team's social network and entrepreneurial capability, and early-stage financing factors.

CONCLUSIONS

This paper investigates the impact on early-stage financing spin-offs as a consequence of the entrepreneurial capabilities and social network exhibited by teams associated with their start-up and development. The research is distinctive in its focus upon university spin-offs and the use of teams as the unit of analysis; previous literatures have focused upon new ventures in general and on the impact of the capabilities and social network associated with the new venture not the start-up team. This research posited that the entrepreneurial capabilities and social networks of a founding team would be positively related to improvements of early-stage financing ability, this hypothesis was tested on survey data from 181 spin-offs of 35 universities in Spain. The results indicate that a founding team is likely to improve its entrepreneurial capabilities by exploiting its own social networks and that these improved capabilities can help a spin-off to access early-stage financial resources. However, we could not find a significant direct relationship between the social networks of a founding team and its early-stage financing. Further, we found support for a mediating role of entrepreneurial capabilities between social networks and spin-off's early-stage financing. In general, this research strengthens the roles of entrepreneurial capabilities of founding teams in early-stage financing, and recognises the indirect influences of the teams' social networks in decreasing the problems of uncertainty and asymmetric information in the fundraising processes of university spin-offs.

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Table 1: First-order CFA of Social Network Model

Paths	Loadings	CR	AVE
Network Structure →		0.7678	0.5249
Density	0.756**		
Centrality	0.739**		
Ties	0.676**		
Network Governance →		0.7776	0.5416
Reputation	0.621**		
Reciprocity	0.829**		
Trust	0.743**		
Network Content →		0.7219	0.5650
Information quality	0.736**		
Information diversity	0.767**		

Model fit (CMIN/DF=1.416, RMSEA=0.048, NFI=0.946, CFI=0.980, GFI=0.961)
** Loading significant at the 0.01 level

Table 2: First-order CFA of Measurement Model

Paths	Loadings	CR	AVE
Social Network →		0.9196	0.7930
Structure	0.904**		
Governance	0.799**		
Content	0.961**		
Entrepreneurial Capability →		0.8436	0.5292
Technology	0.682**		
Organizational Viability	0.821**		
Human Capital	0.520**		
Strategy	0.915**		
Commercial Resource	0.725**		
Early-stage financing →		0.8894	0.8027
Returning investors	0.989**		
Potential investors	0.792**		

Model fit (CMIN/DF=1.186, RMSEA=0.032, NFI=0.940, CFI=0.990, GFI=0.945)
** Loading significant at the 0.01 level

Table 3: Path analysis results: Direct and indirect effects

Paths	Standardised Direct Effects	Standardised Indirect Effects
Social Network ↔ Entrepreneurial Capability	0.198**	
Social Network → Early-stage Financing	0.166	
Entrepreneurial Capability → Early-stage Financing	0.184*	
Social Network → Early-stage financing		0.067
Social Network → Existing Investors		0.067
Social Network → Potential Investors		0.071
Entrepreneurial Capability → Existing Investors		0.184**

Entrepreneurial Capability → Potential Investors		0.196**
Social Network → Entrepreneurial Technology		0.265**
Social Network → Organizational Viability		0.320**
Social Network → Human Capital		0.185**
Social Network → Strategy		0.362**
Social Network → Commercial Resource		0.362**
Control		
Within incubator → Early-stage Financing	0.191	

** denotes *p<0.01;* denotes p<0.05; Two Tailed significance0.*

Table 4: Reliability and validity tests

	Construct Reliability (CR)	Composite Reliability [a]	Average Variance Extracted (AVE)	Squared Interconstruct Correlation (SIC)
Social Network				
Structure	0.7940		0.5634	
Density	0.8949	0.888	0.7431	0.0751; 0.2025
Centrality	0.8076	0.736	0.5129	0.1475; 0.2052
Ties	0.8499	0.840	0.6576	0.0751; 0.1475
Governance	0.7825		0.5485	
Reputation	0.8020	0.632	0.5054	0.1043; 0.1246
Reciprocity	0.8379	0.850	0.5678	0.1043; 0.3894
Trust	0.8523	0.879	0.6647	0.1246; 0.3894
Content	0.7220		0.5650	
Infor. Quality	0.9182	0.926	0.7379	0.2767
Diversity Infor.	0.9053	0.922	0.6580	0.2767
Entrepreneurial Capability	0.8427		0.5249	
Technology	0.8668	0.839	0.5221	0.3204; 0.2927
Organizational	0.8384	0.794	0.5113	0.1069; 0.5083
Viability	0.8279	0.808	0.5498	0.0320; 0.1069
Human Capital	0.8109	0.702	0.5195	0.0600; 0.5083
Strategy	0.8135	0.708	0.5226	0.0841; 0.3881
Commercial Resource				
Early-stage Financing	0.8108	0.724	0.5191	0.4045
Existing Investors	0.7557	0.668	0.5079	0.4045
Potential Investors				

[a] analogous to Cronbach's Alpha

Table 5: Means, standard deviation, ranges, and correlations for variables in the measurement model

	Variables														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
(1) Density															
(2) Centrality	.503**														
(3) Ties	.294**	.445**													
(4) Reputation	.087	.344**	.110												
(5) Reciprocity	.297**	.643**	.351**	.400**											
(6) Trust	.279**	.612**	.254**	.410**	.677**										
(7) Info Quality	.353**	.652**	.417**	.279**	.692**	.395**									
(8) Info Diversity	.371**	.496**	.517**	.036	449**	.318**	.564**								
(9) Entrepreneur Technology	.042	.161*	.109	.082	.182*	.171*	.149*	.215**							
(10) Organizational Viability	.070	.289**	.189*	.254**	.268**	.270**	.314**	.272**	.388**						
(11) Human Capital	.028	.156*	.150*	.136	.162*	.162*	.070	.201**	.190*	.393**					
(12) Strategy	.050	.225**	.155*	.217**	.193**	.241**	.211**	.256**	.589**	.835**	.289**				
(13) Commercial Resource	.123	.160*	.035	.215**	.120	.134	.158*	197**	.553**	.558**	.333**	.729**			
(14) Existing Investors	.011	.167*	.012	-.024	.198**	.170*	.119	.119	.154*	.160*	.027	.186*	.154*		
(15) Potential Investors	.023	.108	-.006	.003	.119	.145	.095	.055	.178*	.106	-.061	.159*	.095	.784**	
Mean	4.03	4.83	3.51	3.53	5.82	5.68	4.03	3.45	5.58	5.76	5.10	5.14	5.63	2.01	2.39
S.D.	1.77	.89	1.63	.36	.89	.69	1.01	1.27	1.13	.97	1.50	.90	1.25	.93	1.15
Min.	.30	1.95	1.08	2.25	2.82	2.74	.83	.82	1.77	2.43	1.66	1.67	1.63	.89	1.00
Max.	6.78	6.13	6.14	4.08	7.05	6.39	5.74	6.69	7.32	7.53	8.25	6.81	8.06	4.41	5.44

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).