

A Study on Moderating Role of Business Incubating Service in Relationship between Entrepreneurs' Characteristics and Business Performance

Yun-Jae Lee^{1*}

기업가특성과 기업성과 간의 관계에 대한 창업보육서비스의 조절역할에 관한 연구

이윤재^{1*}

요약 본 연구는 창업보육센터 입주기업의 기업가를 대상으로 첫째, 기업가의 심리 특성(성취욕구, 위험감수성향)이 기업 성과에 영향을 미치는 영향을 알아보고, 둘째, 기업가의 역량 특성(비전, 기회인지, 사회적적응력, 네트워크빈도 및 신뢰정도)이 기업 성과에 영향을 미치는가를, 마지막으로 창업보육서비스가 기업가 특성(심리 특성, 역량 특성)과 기업 성과 간 조절효과가 있는가에 대하여 규명하였다.

연구결과에 의하면 기업가의 심리 특성 중 성취 욕구는 기업 성과에 유의한 영향을 미치는 것으로 나타났으나, 위험 감수 성향은 기업 성과에 유의한 영향을 미치지 않는 것으로 나타났다. 또한 기업가의 역량 특성 중 기업가의 비전과 사회적 적응력, 네트워크 신뢰 정도는 기업 성과에 영향을 미치지 않으나, 기업가의 기회 인지 능력과 네트워크 빈도는 기업 성과에 영향을 미치는 것으로 나타났고 기업가의 심리 특성 중 성취 욕구는 창업보육서비스 조절 효과에 부정적인 영향을 미치는 것으로 나타났으나 기업가의 역량 특성 중 비전과 네트워크 신뢰 정도와 기업 성과의 관계에서 창업보육서비스는 유의한 영향을 미치는 것으로 나타났다.

Abstract This study focuses on examination a) of impacts of entrepreneurs' psychological characteristics on business performance (need for achievement and risk-taking propensity), b) of impacts of entrepreneur's competency characteristics(vision, opportunity recognition, social deftness, frequency of networking and reliability) on business performance, and c) of controlling impacts of business incubator on the relationship between entrepreneurs' characteristics (psychological characteristics and competency) and business performance. According to a study, among entrepreneurs' psychological characteristics, need for achievement has a significant impact on business performance, whereas risk-taking propensity is found to have no significant impact on business performance. In addition, among entrepreneurs' competency characteristics, vision, social deftness, and network reliability have no impact on business performance, whereas opportunity recognition and frequency of network have an impact on business performance. On the other hand, need for achievement has a negative impact on controlling business incubator services. Business incubator services have a significant impact on the relationship between vision, network reliability and business performance.

Key Words : Entrepreneurs' Characteristics, Business Performance, Business Incubator.

1. Introduction

Business incubators were established by the support of Small and Medium Business Administration in order to

revitalize business and foster new businesses and has achieved a remarkable growth; the number of business incubators stood at 29 in 1998 and the number of companies in business incubators increased from 240 to

¹Dept. of Technology Licensing Office, Hoseo University
Received September 10, 2008 Revised October 12, 2008

*Corresponding author: Yun Jae Lee(yunjaelee@hoseo.edu)
Accepted October 16, 2008

269 as of August of 2007. However, despite such a quantity growth, quality growth has not kept up with a quantity growth. As a result, some small business incubators failed to stand up on their own feet and in 2005, Small and Medium Business Administration took measures to integrate and remove some business incubators with poor performance (Small and Medium Business Administration, 2005). The reason of restructuring is because the government took measures toward business incubators not based upon examination or evaluation of operational efficiency and effectiveness, but based upon only policy justification (Lee Hyunsook, 2003). Accordingly, multilateral research and response strategies are required to improve performance of business incubators. In order to revitalize and foster newly established companies, business incubators are set up under authorization of the government and business incubators saw the number of companies in business incubators increasing from 240 as of 1998 to 269 as of August of 2007 in terms of quantity.

Overseas and domestic researcher have studied various point of view on the success factor of venture business. In other words, early studies focused on a trait model based upon entrepreneurs' characteristics who founded venture business. However, recent studies set out that establishment or success of venture business depends on not entrepreneurs or entrepreneurs' characteristics, but contextual factors (Littunen, 2000). Naffziger, Hornsby, and Kuratko (1994) define entrepreneurship as the interaction between personal characteristics (motivation for achievement, internal control, risk-taking propensity), personal backgrounds (family, gender, and so on), personal goals, the business environment, and ideas of business in a multi dimensional way.

However, all research that focus entrepreneurship on personal characteristics (Begley and Boyd, 1987), emphasize that personal characteristics and experience of entrepreneurs are important than industrial structures, products, or financial resources (MacMillan, Siegal, and Narasimha, 1985). For example, Ahn Sangyoon (2005) states that the reason of insolvent venture businesses is mentioned as immature management of a business founder or CEO apart from other reasons such as the faltering market environment. That is, a CEO have relatively less knowledge and experience for the whole management

because they do not career development for an CEO qualification unlike small and mid companies and big companies. If the market environment is not stable, competency of entrepreneurs who have courage to challenge with firm conviction is vital in business survival and its persistent growth. The important factor that venture capital companies consider is an evaluation of entrepreneurs (Bide, 2001; MacMillan, Siegal, and Narasimha, 1985). This is expected to be effective to businesses that are supported by business incubators

In particular, it is significant to examine what entrepreneurs' characteristics of companies in business incubators are and which factors influence business performance in a sense that entrepreneurs' characteristics have an impact on performance of companies, business, or financial performance.

However, there are a few domestic studies on entrepreneurs' characteristics because most of studies focus on systematic approach to ensure necessity of business incubating (Bae Jongtae, 1994; Bae Kyunhwa, 1999; Park Sangmoon et al, 2000) and support service and on evaluation of effective management and performance (Cheong Haejoo, 2006; Shin Changho, 1999; Yang Hyunbong et al, 2002). For example, Cheong Daeyong, Yoo Bongho(2007) study impacts of entrepreneurship on organization flexibility and business performance. Lee Jaehoon, Lee Dohyung, Park Taekyung (2006) note that innovation influences organization performance. Accordingly, the study focuses on what entrepreneurs' characteristics influence business performance of business incubators and helps business incubators decide business contents and levels of incubating services for companies in business incubators.

2. Theoretical background and hypothesis

2.1 Entrepreneurs' Characteristics

An entrepreneur is the person who takes the risk properly for unstable markets and considers the future outcomes through patience (Knight, 1921). Some argue that an entrepreneur is defined as only a business founder (Gartner, 1988), but many business founders fail to create

values (Gartner, 1988). Even though a transformer creates values, not a founder, he/she can be defined as a founder-cum-underwriter who intends to sustain and develop business (Carland, Hoy, Boulton and Carland(1984).

Most of studies on entrepreneurs' characteristics have focused on a) demographical b) psychological c) background d) behavioral characteristics, but recent studies are moving toward behavioral, skill, and competency characteristics (Robert and Markman, 2002). The study deals with recently emerging behavioral and competency characteristics as well as entrepreneurs' psychological and background characteristics.

In general, studies on psychological characteristics are related to need for achievement, internal control, risk-taking propensity and patience toward ambiguity.

Need for achievement is the most dominant theory among studies in relation to entrepreneurs' psychological characteristics and was defined as what to achieve something for the first time by Henry Murray(1938). Since then, McClelland(1965) says that an entrepreneur with high need for achievement prefers being charge with decision making in general, try to attain goals through efforts and has need for feedback for the outcome (Amit et al., 1993 Recited). In addition, an individual with high need for achievement plays a critical role in development of venture enterprise and the economy (Chang Sudeok, 2001).

In relation to need for achievement, many studies found that successful entrepreneurs have a distinct need for achievement (Sexton and Bowman, 1985). Smith & Miner(1983) identified the significant relationship between need for achievement and business growth and Begley & Boyd(1986) found that successful entrepreneurs have high need for achievement through empirical analysis. Furthermore, Cho Hyungrae(1995), Lee Jangwoo, and Chang Sudeok (1998) emphasize that there is the significant relationship between need for achievement and business performance.

Rotter (1996) introduced locus of control; internal locus of control (outcomes for something can be decided by behavior or characteristics) and external locus of control (luck or destiny can have huge influence on efforts or behavior). Some studies suggest that an entrepreneur have priority in terms of internal locus of

control over non entrepreneurs of other small and mid businesses (Begley and Boyd, 1987), whereas others note that there is not relationship between locus of control and outcomes (Low and McMillan, 1988). In this regard, the previous studies have not suggested consistent outcomes over locus of control.

Risk-taking propensity is referred as to propensity to be afraid of risk and take it easy, rather take it as interesting stimulation. Slevin and Covin(1989) defines risk-taking propensity in relation to innovation as a tendency to prefer high risk project to low risk project and to seek opportunity actively. Sexton and Bowman(1985) found that there was no significant difference between professional managers and risk-taking propensity. In addition, Baum(1994) found that there was no relevance between risk-taking propensity and business performance. On the other hand, entrepreneurs with high risk taking propensity achieve high performance (Begley and Boyd, 1987) and entrepreneurs who tend to pursue rapid growth have high risk-taking propensity than ones who tend to pursue stable growth (Smith and Miner, 1983). Accordingly, it is not possible to obtain consistent results in relation to the relevance between risk-taking propensity and business performance.

Patience toward ambiguity can be defined as the degree of patience in uncertain situations and the ability to deal with something in the situation. Entrepreneurs have high competency for patience toward ambiguity compared to managers (Sexton & Bowman, 1985) and successful entrepreneurs accept uncertain situation as stimulation and make efforts to overcome the situation (Gasse, 1982). In addition, there are studies that patience toward ambiguity influence business financial outcome (Begley and Boyd,1986). On the other hand, some studies note that there is no significant relevance between patience toward ambiguity and business performance (Bird, 1989).

Another characteristic of entrepreneurs, competency is a concept in relation to enough knowledge, skills and ability to bring about effective outcomes. Boyatzis(1982) regards competency as individuals' potential trait to conduct effective or excellent work, whereas Spencer and Spencer(1998) define competency as personal characteristics conducive to effective and excellent work in certain situations or works. Furthermore,

Summers(2004) defines competency as behavior modes, knowledge, or motivation for all organization members to conduct effective works. That is, competency can refer to behavior based upon internal traits motivation, skills, self-image, social roles, and knowledge system stemming from effective or excellent performance.

Locke et al.(1990) regards recognitive ability, specialized skills, knowledge, decision-making and problem-solving ability as the most important competency (Baum, 1994, pp.54-64; recited), whereas Ibrahim and Goodwin(1986) see transfer ability of authority, customer management ability, and networking ability as the most important competency. Yulk et al.(1990) think of decision-making ability, information processing skills, networking skills, specialized knowledge, and technical ability as the most important competency of entrepreneurs.

Entrepreneurs of venture companies require to establish various and cooperative networks and raise money from outside in order to supplement the lack of internal resources. Baron and Markman(2003) think of this ability as social recognition, social deftness, power of expression and conducted empirical studies on the relevance between the ability and financial outcome of businesses. Furthermore, Chandler & Jansen(1992) divide competency of entrepreneurs into opportunity recognition, conceptual ability, political ability, and technical-functional competency.

On the other hand, entrepreneurs are found to raise funds through formal networks such as government agencies and financial institutions and social networks such as family, relatives, friends and those networks are useful in seeking business opportunity and development of business. In particular, more companies supported by business incubators prefer social networks to formal networks (Birley, 1985).

2.2 Business Incubating Service

Business Incubators provide resources necessary for management through various services, such as human resources, skills, funds, and know-hows for enterprise founders, thereby fostering talents for entrepreneurs, accelerating development of new enterprises and commercialization speed of technology (Smilor 1987). Korea defines business incubators as the workplace to

provide various supports such as facilities and places to business founders in order to enhance possibility of business success (Support for Small and Medium Enterprise Establishment Act Article No.2). The critical role of business incubators is to rent places and facilities to new companies with relatively weak ground and enhancing competency of business by providing resources to companies via various supporting services such as management, technology, funds, marketing and human resources.

In general, supporting services of business incubators are divided into facilities(places), equipment, management supporting service, technology supporting service, financial supporting services, and administration services. Those services are provided through direct and indirect networks or business incubators with their own resources.

Facilities and equipment services can be defined as the basic infrastructure and the place to provide facilities and spaces at affordable prices. Those services include various officework equipment, other amenities (bank, restaurant, post office, and public health center), conference rooms, seminar rooms.

Management supporting services are very crucial factors in determining success of business (Mian, 1997). Fry (1987) emphasizes management supporting services including business plans, promotion, marketing, employment, job training, risk management, insurance, management-labor relations, employees' health and welfare, exports development, government regulation, information service, government procurement. According to Fry (1987), 93 percent of business incubators' managers have been supporting business plans of companies in business incubators. According to Bruno(1998), business incubators should provide management (book loan system, management organization), business plans (business plan development and analysis of profitability), human resources (employment policy and procurement), legal support (organization structure, contracts, patent * trademark), marketing (marketing plan, market survey, homepage, and sales), consulting education, employee training, staff development in connection with universities to satisfy companies in business incubators.

Technology supporting services include technology transfer programs (Smilor, 1987), R&D (Doutriaux, 1987), intellectual property rights (OECD, 1997), processing

development, product development, consulting, various testing and examination supports. Most of technology supporting programs are being provided through utilizing internal and external infrastructure inside business incubators. In Korea, the Ministry of Commerce, Industry, and Energy have been provided support to help companies develop necessary technology through a wide range of technology development under the initiative of the TBI and Small and Medium Business Administration.

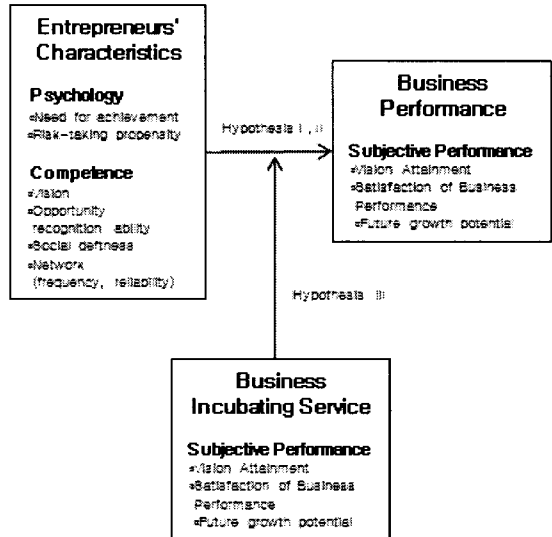
New companies have a difficulty in raising funds and are not good at financial management, accounting and taxation. Accordingly, a wide range of services, such as fund raising and support, related consulting, taxation services, loan guarantee programs, venture companies funds are utilized as the means of fund raising. In addition, financial supporting services of business incubators offer opportunities to companies in business incubators in close connection with policy fund providers, the source of corporate fund providers, financial institutions, venture capital companies, and the angel club (Campbell, 1988). In fact, companies in business incubators say that fund supporting services of business incubators provide more opportunities of interaction with the source of fund raising (Lee Chungseop, Cheong Yanghyun, Choi Suil, Kwon Cheolhong, 2003).

2.3 Business Performance

The study benchmarks the measurement index for new companies in business incubators as the subjective performance index. According to Rice(1992), it is difficult to measure outcomes based upon financial indices in that most of companies tend to stay in business incubators for two or three years. Cooper(1971) notes that because data of small and mid sized companies are not available to be interpreted, subjective evaluations may be appropriate based upon goal attainment, rather than financial outcomes. In addition, Robinson et al.,(1984) maintains that subjective measurement methods should provide reliable indices for actual outcomes of companies. Thus, the study adopts the degree of achieving the original expectation and satisfaction of employees as subjective measure indices.

3. Study Design

3.1 Study Model



[Figure 3-1] Research Model

3.2 Study Hypothesis

3.2.1 Relationship between Entrepreneurs' Characteristics and Business Performance

There have been many studies on psychological and background characteristics including educational background of entrepreneurs, family, experience, need for achievement, risk-taking propensity, and control (Smith and Miner, 1984; Begley and Boyd, 1986; Bird, 1988). For this, Sexton and Bowman(1985), Begley and Boyd(1987) suggest that need for achievement of entrepreneurs, autonomy, patience toward ambiguity, and independence have huge impacts on business performance. In addition, Cho Hyungrae (1995) found through empirical studies that high need for achievement is related to outcome and risk-taking propensity and patience toward ambiguity are negatively related to business performance. Hofer and Sandberg(1987) reviewed experiences of entrepreneurs and their career characteristics and founding experiences of entrepreneurs have significant impacts on outcomes. Also, they maintain that management experiences of related industries are important characteristics of successful entrepreneurs and are related to business performance (Cooper and Bruno, 1977;

Sandberg, 1986; Box et al., 1994). Smith and Miner(1983) stated that entrepreneurs with high risk-taking propensity are likely to achieve high outcomes and Lee Jangwoo, Chang Sudeok(1998) found that need for achievement is significantly related to business performance. Thus, the study set up a hypothesis as the following by using need for achievement and risk-taking propensity as psychological characteristics of entrepreneurs.

Hypothesis I. Psychological characteristics of entrepreneurs may have an impact on business outcome.

I-1. Need for achievement of entrepreneurs may influence business performance.

I-2. Risk-taking propensity of entrepreneurs may influence business performance.

Chandler and Jenson(1992) maintain that entrepreneurs' competence have significant impacts on business performance, whereas Naffziger and Kuratko(1994) note that vision, goals, and differentiation from others have impacts on business performance.

Among competency characteristics of entrepreneurs, the early studies found that vision has been emerging as the core fact in determining success of businesses (Collins and Lazier, 1992). In addition, enterprises with vision are able not to take risk in uncertain situations and calculate risk according to risk recognition ability and respond to rapidly changing environment, thereby showing high business performance (Erikson, 2002; Lee Jangwoo and Chang sudeol, 1998).

Cho Hyunrae (1994) regards risk-taking propensity, possibility recognition of development and failure as behavioral characteristics of entrepreneurs and risk-taking propensity and risk recognition are significantly related to profitability. Baron(1998) emphasizes that among competency of entrepreneurs, social ability is the most important factors in determining business performance and Baron and Markman(2000) prove that social deftness has a significant impact on financial performance of business.

Won Jongha (2000) finds that the degree of reliability toward the network source of venture entrepreneurs has significant impacts on management performance of venture businesses and considering the degree of reliability with network sources for each source, management support-business, technology provision-universities and research centers, and financial

support-government agencies have positive impacts on business performance. That is, networks based upon reliability, rather than the frequency of contact with network sources have positive impacts on business performance. Accordingly, networks of entrepreneurs (frequency and reliability) are likely to have positive impacts on business performance.

The study sets up hypotheses by using vision, opportunity recognition ability, social deftness, and network (frequency and reliability) as competence characteristics of entrepreneurs.

Hypothesis II. Competency characteristics of entrepreneurs will likely influence business performance.

II-1. Vision of entrepreneurs will have influence business performance.

II-2. Opportunity recognition ability of entrepreneurs will have influence business performance.

II-3. Social deftness of entrepreneurs will have influence business performance.

II-4. The network frequency of entrepreneurs will have an impact on business performance.

II-5. The reliability degree of entrepreneurs' networks will have an impact on business performance.

3.2.2 Controlling Impacts of Business incubating service on entrepreneurs' characteristics and business performance

Supporting services of business incubators are generally divided into facilities, equipment service, management supporting services, technology supporting services, financial support services, network services, and administration services. Such supporting services are provided indirect or direct ways by business incubators with their own resources.

Management supporting services are very crucial factors to new businesses based upon technology and the main services include business plans, promotion, marketing, consulting services, and legal services. Technology supporting services are provided by business incubators with their internal and external infrastructures and their main services include technology transfer services, joint research development services, various testing services, industrial property services. In addition,

financial supporting services that are offered by business incubators include arrangement of financial support services, related consulting services, contact opportunity of financial resources, various financial resources information and referral makeup.

Such business incubating services such as management supporting, technology supporting, and financial supporting services can lead to increase business performance and the degree of using business incubating services may depend on entrepreneurs' characteristics.

The study sets up hypotheses as the following based upon the assumption that business incubating services will have controlling impacts on the relationship between entrepreneurs' characteristics and business performance.

Hypothesis III. Business incubating services will have controlling impacts on the relationship between entrepreneurs' characteristics and business performance.

- III-1. Business incubating services will have controlling impacts on the relationship between psychological characteristics of entrepreneurs and business performance.
- III-1-1. Business incubating services will have controlling impacts on the relationship between entrepreneur's need for achievement and business performance.
- III-1-2. Business incubating services will have controlling impacts on the relationship between entrepreneur's risk-taking propensity and business performance.
- III-2. Business incubating services will have controlling impacts on the relationship between entrepreneur's competency characteristics and business performance.
- III-2-1. Business incubating services will have controlling impacts on the relationship between entrepreneurs' visions and business performance.
- III-2-2. Business incubating services will have controlling impacts on the relationship between opportunity recognition of entrepreneurs and business performance.
- III-2-3. Business incubating services will have controlling impacts on the relationship between social deftness of entrepreneurs and

business performance.

- III-2-4. Business incubating services will have controlling impacts on the relationship between the network frequency of entrepreneurs and business performance.
- III-2-5. Business incubating services will have controlling impacts on the relationship between the degree of network reliability of entrepreneurs and business performance.

3.2.3 Operational Definition measurement and of Variables

A. Entrepreneurs' Characteristics

Entrepreneurs' characteristics are divided into psychological characteristics of entrepreneurs and competency characteristics of entrepreneurs. Psychological characteristics are identified as need for achievement and risk-taking propensity and need for achievement is defined as the level of needs to achieve something, whereas competency characteristics is defined as the degree of preference of rapidly changing environment or adventurous or challenging tendency. Competency characteristics of entrepreneurs are measured by visions, opportunity recognition, management goals of businesses, vision presentation, social ability, and networks.

Visions are defined as the ability to recognize the future image of a company and let employees know the image and motivated (Chandler and Jansen, 1992; Noble et al. 1999) and are based upon data made by Chang Sudeok (2001).

Opportunity recognition is based upon a definition of Hills(1995) and is identified as the ability to find new products and market opportunity development. This is measured based upon competency dictionaries (Baum, 1994, Noble et al. 1999, Spencer and Spencer1993)

Social ability is measured by social deftness and social deftness is defined as the ability that people can feel or be adapted to various social situations. Variables of social ability are measured by data of Baron and Markman's study (2000b).

Networks are referred as to activities for businesses to utilize resources or abilities that various organizations provide and are defined as all activities including helps or resources to resolve management problems from

individuals outside businesses, organizations, or government agencies. The study focuses on businesses in business incubators. Thus, those businesses are expected to obtain the necessary resources through the source of formal network sources. Sources of private networks are divided into family, relatives, friends, or colleagues, whereas sources of formal outside networks are divided into government agencies, government supported research institutions, universities, financial institutions, venture capital companies or private investors, non-competitive business, customers and clients, providers, marketing consultants, consultants of general management and human resources, financial consultants, technology and R & D experts, and legal professionals.

What's more, the existing studies mainly adopted the frequency of networks (Granovetter, 1973; Nelson, 1989), whereas Won Jongha (2000) states that strong relationship between sources of networks may depend on the frequency (contact) and degree of interaction reliability.

Reliability can be defined as expectation of behaviors between each other and intention not use other people in unreasonable ways and to cooperate with others accordingly (Gambetta, 1988). The study deals with the frequency of networks and reliability and measured by the contact frequency of network sources and the degree of reliability of entrepreneurs' toward network sources.

B. Business Incubating Services

Business incubating services are measured by main supporting services, management supporting services, technology supporting services, and financial supporting services.

Management supporting services are identified by business plans, information services, management consulting services, education and seminar, promotion and marketing and are measured by the frequency of each supporting services.

Technology transfer supporting services are defined as technology consulting, joint development of technology in connection with research, business and universities, arrangement of technology transfer, and intellectual property rights supporting and are measured by the frequency of each supporting services.

Financial supporting services are defined as development of trial products, loan arrangement, referral

provision of funds raising, information provision, opportunity of contact with venture capital business, tax related services, and related consulting services. The services are measured by the degree of each supporting services.

C. Business Performance

Business performance is measured as subjective outcomes as the overall average of goals of business development or vision attainment, the future growth potential, entrepreneurs' satisfaction toward business performance, satisfaction of employees toward business performance, evaluation and responses of industry and venture capital companies toward the future growth potential. The survey is made up based upon studies of Won Jongha (2000) and Cheong Haejoo (2005).

3.2.4 Selection of Samples and Collection of Data

The study targets CEOs of companies that have more than one year history since establishment among 294 businesses in business incubating services designated by mall and Medium Business Administration as of July of 2006 and used 304 samples. General characteristics of the analysis data are divided into demographical characteristics of entrepreneurs and general characteristics of businesses and are found to be in [Table 4-1] and [Table 4-2] respectively.

[Table 4-1] Demographical Characteristics of Entrepreneur

Item	Composition	Number of Respondents	Composition Ratio (%)	
Demographical Characteristics of Entrepreneur	Educational Background	High school	15	4.9
		BA	168	55.3
		MA	66	21.7
		Dr	55	18.1
		N	304	100
	Age	less than 30	11	3.6
		30-39	97	31.9
		40-49	132	43.4
		50-59	51	16.8
		more than 60	13	4.3
		N	304	100
	Work experience in industry	average	43.01	-
		YES	197	64.8
		NO	107	35.2
	N	304	100	

[Table 4-2] General characteristics of Businesses

Item	Composition	Number of Respondents	Composition Ratio (%)	
General characteristics of Businesses	Industry	ICT	49	16.1
		Semiconductor	10	3.3
		Computer	13	4.3
		S/W	30	9.9
		Bio·Environment·Medical	73	24.0
		Electric ·Electronics	52	17.1
		Machinery·Metal	32	10.5
		Others (chemical/design)	45	14.8
	N	304	100	
	Establishment Year	before 1996	5	1.6
		1996~1999	23	7.6
		2000~2002	89	29.3
		2003~2005	187	61.5
		N	304	100
	Number of employees	less than 5	151	49.7
		more than 5 ~ less than 9	110	36.2
		more than 10 ~ less than 14	30	9.8
		more than 15 ~ less than 19	7	2.2
		more than 20 ~	6	1.8
		N	304	99.7
		Mean	5.89	-
	Region	Seoul	26	8.6
		Kyunggi Province	66	21.7
		Kangwon Province	16	5.2
		Chuncheong Province	69	22.7
		Kyungsang Province	76	25.0
		Cholla Province	51	16.8
	N	304	100	
	Stay period in business incubators	less than 1 year	36	11.8
		more than 1 yr ~ less than 2 yr	103	33.9
		more than 2 yr ~ less than 3 yr	62	20.4
		more than 3 yr ~ less than 4 yr	55	18.1
		more than 4 yr ~ less than 5 yr	28	9.2
more than 5 yr		20	6.6	
N		588	193.4	
Mean		2 years and 3 months	-	

4. Empirical Analysis

4.1 Factor Analysis and Reliability Analysis

For psychological and competence characteristics of entrepreneurs measured by multiple items, a factor analysis and reliability analysis has been conducted in order to examine whether the factors are put together and there is internal consistency among factors. As a result of the analyses, a correlation analysis has been conducted in order to identify a correlation between the induced factors and the degree of business incubators service and business performance.

A. Factor Analysis and Reliability Analysis

As a result of factor analyses for psychological characteristics of entrepreneurs, as shown in [Table 4-3], two variables (I want to do something new that others avoid and I make endless efforts to attain better goals than others.) are excluded from need for achievement and are based upon two factors. The first factors have four variables: I proactively respond to uncertain situations to seek and maximize potential opportunity. I take decisive actions, rather than hesitating or take actions step by step in a given situation. I prefer leading other people to following others. I prefer highly profit making business to the average, but certain profit making business. Those factors are named need for achievement.

According to eigen values that explain the degree of factors, risk-taking propensity records 1.968, need for achievement records 1.685, distribution values (percent) records 32.793% and 28.091%. The total distribution values stand at 60.884%. The figure exceeds 60% that is the generally required standard. On the other hand, as for reliability values for two factors, risk-taking propensity stands at 0.645 and need for achievement stands at 0.802. Those figures exceed more than 0.6 that is the generally required standard.

[Table 4-3] Factor Analysis Result of Psychological Characteristics

Variables	Factors	Risk-taking propensity	Need for achievement
I proactively respond to uncertain situations to seek and maximize potential opportunity.		0.775	
I take decisive actions, rather than hesitating or take actions step by step in a given situation.		0.757	
I prefer leading other people to following others.		0.628	
I prefer leading other people to following others.		0.580	
The more my job is difficult, the more I do my best.			0.907
I make endless efforts to attain more enhanced results than the past.			0.887
Eigen value		1.968	1.685
Distribution Value (%)		32.793	28.091
Total Distribution Value(%)			60.884
Reliability Values (α)		0.645	0.802

As a result of factor analyses for competency characteristics of entrepreneurs, as shown in [Table 4-4], variables are classified into three factors. The first factors have three variables: I am able to recognize new areas for growth potential. I am able to grasp market opportunity for new products. I am able to look for ideas for new technology and products and develop them. Those variables are named opportunity recognition. The second factors have three values: I clearly understand the future image of my company as a CEO and often talk about the image to employees. I emphasize the management idea that differentiates from other companies as a CEO. I am able to set forth clear management goals and visions as a CEO. Those variables are named vision. Finally, the third factors have two variables: I am able to get along with everyone. I am able to talk to anyone about a wide range of topics. Those variables are named social deftness. According to eigen values that explain the degree of factors, opportunity recognition records 2.240, vision records 2.039, social deftness records 1.507. For distribution values that explain factors, opportunity recognition stands at 28.000%. Vision stands at 25.486%. Social deftness stands at 18.836%. The total distribution

values stand at 72.322%. The figure exceeds 60% that is the generally required standard. On the other hand, as for reliability values for three factors, opportunity recognition stands at 0.812 and vision stands at 0.785 and social deftness stands at 0.630. Those figures exceed more than 0.6 that is the generally required standard.

[Table 4-4] Factor Analyses Results for competency characteristics

Factors Variables	Opportunity Recognition	Vision	Social Deftness
I am able to recognize new areas for growth potential.	0.816		
I am able to grasp market opportunity for new products.	0.814		
I am able to look for ideas for new technology and products and develop them.	0.776		
I clearly understand the future image of my company as a CEO and often talk about the image to employees.		0.855	
I emphasize the management idea that differentiates from other companies as a CEO.		0.741	
I am able to set forth clear management goals and visions as a CEO. Those variables are named vision.		0.725	
I am able to get along with everyone.			0.840
I am able to talk to anyone about a wide range of topics. .			0.828
Eigen value	2.240	2.039	1.507
Distribution Value (%)	28.000	25.486	18.836
Total Distribution Value(%)			72.322
Reliability (α)	0.812	0.785	0.630

On the other hand, for five variables that explain subjective performance, factor analyses and reliability analyses have been conducted. As shown in [Table 4-5], distribution values recorded 57.003%, but for

research purpose, five items are included in the analyses. The reliability values for subjective performance stands at 0.809 and are appropriate for the analyses.

[Table 4-5] Factor Analyses Results for Subjective Performance

Variables	Factors	Subjective Performance
Our company has attained a goal or vision to some extent.		0.710
Our company has the potential to be listed in the future.		0.630
I am satisfied with management performance of our company.		0.822
Our employees are satisfied with management performance.		0.882
Industries and venture capital companies find that our company has the growth potential in the future.		0.705

Management support, technology support, financial support service items are composed of business incubating services and 15 items are composed of the contact frequency of networks and reliability of network sources. Because they are not reflective scales, the mean values are used for analyses.

B. correlation Analysis

correlation analyses have been conducted in order to review whether psychological characteristics of entrepreneurs (need for achievement and risk-taking propensity), competency characteristics (vision, opportunity recognition, social deftness, and network), subjective performance factors are consistent with the direction of the study hypotheses.

As a result of analyses, as shown in [Table 4-6], relationships among each unit are found to be positive at significant level ($p=0.01$) and are use for analyses.

[Table 4-6] Mean, Standard Deviation, and analysis results of correlation

Item	1	2	3	4	5	6	7	8	9
1. Subjective Performance	1.000								
2. Need for achievement	0.285a	1.000							
3. Risk-taking propensity	0.301a	0.370a	1.000						

4. Vision	0.370a	0.401a	0.560a	1.000					
5. Opportunity Recognition	0.443a	0.384a	0.519a	0.603a	1.000				
6. Social Deftness	0.208a	0.226a	0.320a	0.344a	0.321a	1.000			
7. Network Frequency	0.350a	0.208a	0.197a	0.324a	0.164a	0.197a	1.000		
8. Reliability	0.377a	0.258a	0.286a	0.355a	0.312a	0.259a	0.509a	1.000	
9. Business Incubating Service	0.304a	0.062	0.176a	0.167a	0.286a	0.101	0.199a	0.328a	1.000
Mean	4.68	6.22	5.36	5.76	5.75	5.44	3.87	4.55	4.50
Standard Deviation	0.97	0.91	0.89	0.91	0.91	1.00	0.90	0.81	1.35

a) $p < 0.01$

4.2 Verification of Study Hypothesis

A hierarchical moderated regression analysis has been conducted step by step in order to examine impacts of psychological characteristics of entrepreneurs and the degree of business incubating services on subjective performance.

- ① Multiple regression analyses have been conducted by setting independent variables as need for achievement, risk-taking propensity, vision, opportunity recognition, social deftness and subjective performance as subordinate variables.
- ② Multiple regression analyses have been conducted by including business incubating services that were set up as moderating variables to independent variables.
- ③ Multiple regression analyses have been conducted by including the use of business incubating services, interaction values among characteristics of entrepreneurs (for example, need for achievement \times the use of business incubating services to independent variables.

Herein, the use of business incubating services is measured by three variables: management supporting, technology supporting, and financial supporting services and the average values of three items combined are divided into low groups (≥ 4.67) and high groups (<4.67) based upon the median (4.67).

In the above process, if a ②s the value of R^2 increases significantly more than a ①s value of R^2 and a ③s the value of R^2 increases significantly more than a ②s value of R^2 , controlling effects

will be justified.

[Table 4-7] implies the result of a hierarchical moderated regression analysis. First of all, as for the result of Model I, the value of R² stands at 0.292 (29.2%) and is used for the analysis (F = 41.247, p = 0.000). On the other hand, as a result of relative beta of independent variables, opportunity recognition has the biggest influence on subjective performance (beta= 0.359, p < 0.01), followed by the frequency of networks (beta = 0.211, p < 0.01) and reliability of networks (beta = 0.158, p < 0.01).

Next, considering Model II, the value of R² stands at 0.304 (30.4%) and statistically significant and is used for the analysis (F = 32.681, p = 0.000). Model II have the increased value of R² (by 0.012), compared to Model I and F change is 4.707 and significantly increases (p < 0.05). On the other hand, considering the relative beta of independent variables, opportunity recognition has the biggest influence on subjective performance (beta = 0.344, p < 0.01), followed by the frequency of networks (beta = 0.215, p < 0.01) and reliability of networks (beta = 0.129, p < 0.05), and use of business incubating services (beta = 0.116, p < 0.05).

Finally, considering Model III, the value of R² stands at 0.344 (34.4%) and statistically significant and is used for the analysis (F = 25.993, p = 0.000). Model III has increased value of R² by 0.040 compared to Model II and F change is 7.039 and significantly increases ((p < 0.01).

On the other hand, considering the relative beta of independent variables, opportunity recognition has the biggest influence on subjective performance (beta = 0.275, p < 0.01), followed by the frequency of networks (beta = 0.215, p < 0.01) and need for achievement (0.222, p < 0.05). Looking through interaction terms, A * E (need for achievement * use of business incubating services) have a negative influence on subjective performance (beta = -1.189, p < 0.01), V * E (vision * business incubating services) and T * E (vision * use of business incubating services) have positive influence on subjective performance (beta = 0.728, p < 0.01 and beta = 0.618, p < 0.01) respectively.

[Table 4-7] Hierarchical moderated regression analysis

Item	Model I		Model II		Model III	
	beta	t	beta	t	beta	t
Need for achievement (A)	0.076	1.425	0.085	1.593	0.222	3.696 ^a
Risk-taking (R)	0.040	0.701	0.039	0.674	0.001	0.011
Vision (V)	0.051	0.804	0.054	0.857	-0.075	-1.003
Opportunity Recognition (O)	0.359	7.012 ^a	0.344	6.715 ^a	0.275	5.035 ^a
Social Deftness (S)	0.012	0.237	0.016	0.302	0.000	0.003
Frequency of Networks (C)	0.211	3.735 ^a	0.215	3.834 ^a	0.215	4.268 ^a
Reliability of networks (T)	0.158	2.693 ^a	0.129	2.170 ^b	0.042	0.589
Business incubating services (E)			0.116	2.288 ^b	0.026	0.062
A * E					-1.189	-4.147 ^a
R * E					0.241	0.925
V * E					0.728	2.704 ^a
O * E					0.143	0.371
S * E					0.076	0.372
C * E					0.275	1.069
T * E					0.618	2.654 ^a
R ²	0.292		0.304		0.344	
F	41.247		32.681		25.993	
p	0.000		0.000		0.000	
ΔR ²			0.012		0.040	
F Change			4.709 ^b		7.309 ^a	

a) p < 0.01, b) p < 0.05

The detailed analyses of hypotheses are as the following.

A. Verification of Hypothesis I

Hypothesis I is used to verify that need for achievement and risk-taking propensity will have an impact on business performance. As a result of analysis, need for achievement has a significant impact on business performance and this support Hypothesis I-1 that higher need for achievement is, the higher business performance is. This is consistent with early studies that need for achievement has an impact on business performance (Sexton & Bowman, 1986; Begley & Boyd, 1986). On the other hand, risk-taking propensity is not likely to have a significant impact on business performance (Sexton &

Bowman, 1986; Begley & Boyd, 1986).

On the other hand, risk-taking propensity has no impact on business performance. This is not consistent with Hypothesis I-2 that the higher risk-taking propensity is, the high business performance is. This is consistent with studies of Baum (1994) that there is not relation between risk-taking propensity and business performance. In addition, early studies find that companies in business incubators have relatively less uncertainty for the market environment (Lee Chungseop et al, 2003). Accordingly, it is fair to say that entrepreneurs of companies in business incubators have low recognition of actual risk.

B. Verification of Hypothesis II

Hypothesis II is used to verify that vision, opportunity recognition, social deftness, and networks (frequency and reliability) will likely have impacts on business performance. As a result of the analysis, vision is found to have no significant impact on business performance and Hypothesis II-1 is not true. Most of companies in business incubators are newly established. They have been putting efforts in realizing their visions for its growth, but more importantly, they are putting their survival before their growth. Considering the fact that most of the companies have less than 3 years of history, it may not be easy to attain their goal based upon their visions in a short period of time. In addition, about 70 percent of study samples include general manufacturing, bio, environment, medical industries that require longer time to obtain business performance. In this regard, it is not easy to enhance business performance through visions during a short period of time. Therefore, it may not say that entrepreneurs' visions have significant impacts on business performance. As a result of the analysis, opportunity recognition has a significant impact on business performance and is consistent with Hypothesis II-2.

It may say that the better opportunity recognition entrepreneurs have, the more opportunities of good business they have and accordingly, business performance will be enhanced. Social deftness of entrepreneurs has not significant impacts on business performance and is not consistent with Hypothesis II-3. Social deftness refers to the ability to make other people feel comfortable and interact with others. In general, many companies in

business incubators are established based upon core technologies that entrepreneurs have, but entrepreneurs with high social deftness are highly likely to establish business through relations with personal networks, rather than their own core technologies. In this case, the companies are likely to have low technology and less reliable products. Entrepreneurs may tap the market easily at the initial stage, but customers may not satisfy with quality of products and services. It may lead to poor business performance because it is difficult to expect continuous growth in products and revenues. Therefore, this may not be consistent with the hypothesis that high social deftness of entrepreneurs will likely have a positive impact on business performance.

The network frequency of entrepreneurs is found to have a significant impact on business performance and is consistent with Hypothesis II-4. On the other hand, network reliability of entrepreneurs is found to have no significant impact on business performance and is not consistent with Hypothesis II-5.

Most companies in business incubators are newly established with the lack of resources and will offset the lack of resources through networks. This will help business performance enhanced and the higher the network frequency is, the more positive impact it has on business performance.

C. Verification of Hypothesis III

Hypothesis III is used to verify that business incubating services will have a impact on the relation between entrepreneurs' characteristics (psychological and competency) and business performance. According to the analysis of the relation between entrepreneurs' characteristics and business incubating services, A * E (need for achievement * business incubating service, $\beta = -1.189$, $p < 0.01$) have a negative impact on the relation, whereas V * E (vision * business incubating services, $\beta = 0.728$, $p < 0.01$) and T * E (reliability of network sources * use of business incubating services, $\beta = 0.618$, $p < 0.01$) have positive impacts on the relation. R * E (risk-taking propensity * business incubating services), O * E (opportunity recognition * business incubating services), S * E (social deftness * business incubating services), C * E (contact of network sources * business incubating services) have no significant

impacts on the relation.

Accordingly, Hypothesis III-1-1 (A * E) is found to have a significantly negative impact on the relation and is true. However, Hypothesis III-1-2 (R * E) is not justified.

A * E (need for achievement * business incubating service) is found to have a significantly negative impact on the relation. This means that even though the use of business incubating services is low and if need for achievement is high, it may enhance business performance.

Early studies (Lee Chungseop et al,2003) found that companies in business incubators have a sensitive response to the business incubating services and need more services under the unfavorable market environment. That is, entrepreneurs with high risk-taking propensity are less likely to use business incubating services and this means that the services have no significant impacts on business performance.

Hypothesis III-1-2 (R * E) is found to have no significant impacts on business performance. Entrepreneurs have a wide range of work experience with high educational background as well as skills and have strong confidence about business. They tend to have high risk-taking propensity and decide to stay inside business incubators. So, they do not think that business incubating services are necessary and accordingly, tend to use less business incubating services. However, in the case that the entrepreneurs face management difficulties, they can ask managers of business incubating services to help themselves and with the referral of business incubators, they can obtain consultation with outside experts or financial support. So, they can resolve their problems.

Thus, business incubators should provide services that help entrepreneurs with relatively high risk-taking propensity overcome difficulties or risks via methods such as consultations or case studies at the initial stage so that business incubating services are available to entrepreneurs at an appropriate time and have a positive impact on business performance.

Furthermore, as a analysis result, Hypothesis III-2-1 (V * E) and III-2-4(T * E) have significant impacts on business performance and is consistent with the result. On the other hand, Hypothesis (O * E), III-2-3(S * E), and III-2-4(C * E) are found to have no significant impacts on business performance and is not consistent with the result.

Hypothesis II-1 that was verified before indicates that visions of entrepreneurs have significant impacts on business performance, but as a result analysis of Hypothesis III-2-1(V * E), due to moderating effects of business incubating services, visions of entrepreneurs have significant impacts on business performance. Entrepreneurs tend to change visions of their companies in a relatively realistic manner through information exchange between companies or contact with managers at business incubators and various services that are provided by business incubators. Accordingly, through business incubating services, entrepreneurs can have positive impacts on establishment of realistic and specific visions and achievement of business goals. As the analysis of Hypothesis III-2-3 (S * E), the result is not consistent with the hypothesis. As mentioned before, entrepreneurs with social deftness are highly likely to develop business items and establish business through interpersonal relations and have the core technology, rather than their core technologies. In this case, due to the lack of professional technology, reliability of products is also low. Therefore, technology development of new products or services of new product development should be provided based upon business incubating services. In reality, entrepreneurs have less competency of product development and at the same time, technological services that are offered by business incubating services do not satisfy companies. In addition, such companies look for new items when staying in business incubators and finally many of them withdraw from business incubators. Thus, business incubators should provide more enhanced technological supporting services to help companies develop new products such as technology transfer.

According to the analysis results of Hypothesis II-4, the network frequency is found to have significant impacts on business performance. However, Hypothesis III-2-4(C * E) implies that the network frequency has no significant impact on business performance. This means that reliability is more important in network activities than network frequency. In addition, despite frequent contact with network sources, if the meeting is not based upon reliability, it has no positive impact on business performance. Hypothesis III-2-5 (T * E) is found to have significantly moderating impacts on the relation between reliability of network sources and business performance.

This indicates that most of newly established companies in business incubators are likely to offset necessary resources via networks. They tend to have higher reliability toward networks established by external and internal infrastructures in business incubators (government agencies, experts groups, and research institutions) than other network sources. The reliability toward such network sources will have significant impacts on business performance. The verification results are found in [Table 4-8]

[Table 4-8] Summary of Hypothesis Verification

Hypothesis	Independent Variables	Moderating Variables	Subordinate Variables	Verification Results	
I	Psychological	-	Business Performance	Need for achievement	Accepted
				Risk-taking propensity	Rejected
II	Competency	-	Business Performance	Vision	Rejected
				Opportunity Recognition	Accepted
				Social Deftness	Rejected
				Network Frequency	Accepted
				Network Reliability	Rejected
				Need for achievement	Accepted(-)
III	Psychological	Business Incubating Services	Business Performance	Risk-taking propensity	Rejected
				Vision	Accepted
	Competency			Opportunity Recognition	Rejected
				Social Deftness	Rejected
				Network Frequency	Accepted
				Network Reliability	Accepted
				Need for achievement	Rejected
				Risk-taking propensity	Rejected

5. Conclusion

There have been numerous previous studies on entrepreneurs' characteristics, but few studies on entrepreneurs who own companies in business incubators. Compared to the existing studies on psychological and motivation characteristics, the study on competency characteristics of entrepreneurs is all more the meaning. Furthermore, the existing studies on business incubators have mainly focused on phenomenon description including running business incubators and supporting companies in business incubators or case studies. Accordingly, the study seeks to a) identify impacts of

psychological characteristics of entrepreneurs (need for achievement and risk-taking propensity) on business performance b) examine whether competency characteristics of entrepreneurs have an impact on business performance and c) find whether business incubating services have moderating impacts on entrepreneurs' characteristics (psychological and competency) and business performance. For this, empirical studies have been conducted targeting entrepreneurs who run companies in business incubators. Finally, the study concluded that the use of business incubating services have a moderating impact on business performance. The conclusion is summarized as the following:

First, among psychological characteristics of entrepreneurs, need for achievement have a significant impact on business performance. However, risk-taking propensity has no significant impact on business performance. This is consistent with the fact that high need for achievement of entrepreneurs has a positive impact on business performance, whereas risk-taking propensity of entrepreneurs has no relation to business performance.

Second, some of hypotheses that competency characteristics of entrepreneurs have an impact on business performance are adopted. Vision, social deftness and network reliability have no influence on business performance, whereas opportunity recognition and network frequency have an impact on business performance.

Third, business incubating services have partially moderating impacts on the relation between entrepreneurs' characteristics (psychological and competency) and business performance. Among psychological characteristics of entrepreneurs, need for achievement has a negative impact on moderating business incubating services. On the other hand, among competency characteristics of entrepreneurs, business incubating services have significant impacts on the relation between vision, network reliability and business performance.

The analysis results of the study have several implications as the following.

There are opinions that business incubators are aimed to foster business revitalization and new companies, but their quality levels fall short of expectations compared to

quantitative growth. Small and Medium Business Administration integrated or closed business incubators with poor performance. Such opinions challenge effectiveness of business incubating centers and partially, there may be problems in relation to business incubating services that are offered by business incubators.

Currently, various supporting services that business incubators offer is the most important element in running companies, but do not consider characteristics of entrepreneurs that greatly influence business performance. However, the study found that entrepreneurs' characteristics have actual impacts on business performance. Also, it implies that business incubating services have positive impacts on shaping reliable networks and help entrepreneurs formulate realistic and systemic visions, thereby having a positive impact on business performance. In addition, the use of business incubating services depends on entrepreneurs' characteristics. Accordingly, various supporting services that business incubators offer should be planned and be provided allowing for entrepreneurs' characteristics. Since business performance can be different for each industry, business incubators should prepare for differentiated business incubating service systems for each industry and provide demand-on services to entrepreneurs.

On the other hand, the study has limitations like: 1) Since there are not enough objective financial data for business performance in relation to companies in business incubators, the study focuses on only subjective opinions from respondents. 2) the study failed to deal with moderating impacts of business incubators for each supporting service. This indicates that the future studies should focus on demand-on business incubating services as well as examine moderating impacts by subdividing business incubators services based upon entrepreneurs' characteristics and business performance. 2) among competency variables, networks are simply measured by the network frequency and reliability, but the future studies should take more academic approaches toward networks. 3) since most of companies in business incubators are newly established, studies should adopt methodological research in order to induce objective responses from respondents by coming up with additional variables for effective measurement. 4) By adding interviews or observations to surveys, it is necessary to

make up weak points of samples or surveys.

References

- [1] Amit, R., Glosten, L. & Muller, E.(1993), "Challenges to Theory Development in Entrepreneurship Research", *The Journal of management studie*, Vol.30 No.5, p.815.
- [2] Ahn, S. Y.(2005), "A Study on the Relationships Between Managerial Skills and Performance in Venture Companies", *Productivity review*, Vol.19 No.1, pp.23-51.
- [3] Bae, J. T. (1994). Plans of business incubators to foster and support newly established small and mid sized companies, *Journal of Business Research* , *First Ed.*, pp.11-28.
- [4] Bae, K. H.(1999). *Study on effective management strategies and supporting programs of Korean business incubators*, Small Business Corporation.
- [5] Baron, R. (1998). Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people. *Journal of Business Venturing*, 13, pp.275 - 294.
- [6] Baron, R. A. & Markman, G. D., (2003). Beyond social capital: The role of entrepreneurs' social competence in their financial success, *Journal of Business Venturing*, 18 (1), pp.41-60.
- [7] Baron, R. A., & Markman, G. D. (2000). Beyond social capital: How social skills can enhance entrepreneurs' success, *Academy of Management Executive*, 14 (1), pp.106-116.
- [8] Baum, W. M. (1994). Introduction to molar behavior analysis, *Mexican Journal of Behavior Analysis*, 21, pp.7-25.
- [9] Begley, T. M., & Boyd, D. P. (1986). Psychological characteristics associated with entrepreneurial performance, In Ronstadt, R., Hornaday, J., Peterson, R., & Vesper, K. H. (Eds.), *Frontier of Entrepreneurship Research*, Wellesley MA: Babson College, pp.146-165.
- [10] Bide, A. (2001). *Harvard Business Review* (Ji, Y. H., Trans). Seoul: Book21, pp.50-55.
- [11] Bird, B. (1989). *Entrepreneurial Behavior*, Glenview, IL:Scott Foresman and Company.
- [12] Birley, S. (1985). The role of networks in the entrepreneurial process, *Journal of Business Venturing*, 1(1), pp. 107-117.
- [13] Boyatzis, R. (1982). *The Competent Manager: A Model*

- for *Effective Performance*, New York: John Wiley & Son Publishing.
- [14] Bruno, M.S. (1998). Technological improvements and beachfill design: Coastal engineering in the Information age, *Proceedings, Littoral Society Meeting*, Sandy Hook, New June 22.
- [15] Campbell, C. (1988). *Change agents in the new economy: Business and economic development*. Minneapolis, MN: H. Humphrey Institute of Public Affairs, University Minnesota.
- [16] Carland, J. W., Hoy, F., Boulton, W. R., & Carland, A. C. (1984). Differentiating entrepreneurs from small business owners: A conceptualization, *Academy of Management Review*, 9 (2), pp.354-359.
- [17] Chandler, G. N., & Jansen, E. (1992). The founder's self-assessed and venture performance. *Journal of Business*, 7 (3), pp.223-236.
- [18] Chang, S. D. (2001), "Change of business performance of venture enterprises depending on entrepreneurs' characteristics, environment, strategy, and organizational characteristics", The graduate school of Kyungpook National University Doctorate Degree Thesis.
- [19] Cho, H. R. (1995), "Contextual relations among founders' characteristics, innovation of products, and business performance of venture enterprise," KAIST Doctorate Degree Thesis,
- [20] Collins, J. C., & Lazier, W. C. (1992). *Beyond Entrepreneurship*, Englewood cliffs, NJ: Prentice Hall.
- [21] Cooper, A. C. (1971). Spin off and technical entrepreneurship. *IEEE on Engineering Management, EM-18*, pp.2-6.
- [22] Cooper, A. C., & Bruno, A. (1977). Success among high technology firms, *Business Horizons*, 20(2), pp.16-22.
- [23] Doutriaux, J. (1987). Growth pattern of academic entrepreneurial firms. *Journal of Business Venturing*, 2(4), pp.285-297.
- [24] Erikson, T. (2002). Entrepreneurial capital: The emerging venture's most important asset and competitive advantage, *Journal of Venturing*, 17(3), pp.275-290.
- [25] Fry, F. L. (1987). The role of incubators in small business planning. *American Journal of Small Business*, 12(1), pp.51-61.
- [26] Gambetta, D. (1998). Can we trust?, In Gambetta, D. (Ed.), *Trust: Marking and Breaking of Cooperative Relation*, England: Oxford.
- [27] Gartner (1988), "Who is an entrepreneur? is the wrong question", *Am. J. Small Bus.* 13. pp.11-32.
- [28] Granovetter, M. (1973). The strength of weak ties, *American Journal of*, 78 (6), 1360-1380.
- [29] Hills, G. E. (1995), "Opportunity Recognition by Successful Entrepreneurs: A Pilot Study," in *Frontiers of Entrepreneurship Research*. Wellesley, MA: Babson College.
- [30] Hofer, C. W. & Sandberg, W. R. (1987). Improving new venture The role of strategy, industry, and ther, *Journal of Business Venturing*, 2 (1), 5-28.
- [31] Ibrahim, A. & Goodwin, J. (1986). Perceived causes of success in small business, *American Journal of Small Business*, 11(2), pp.41-50.
- [32] Jung H. J., (2005) "Study on deciding factors of performance of business incubators", The graduate school of Pukyong National University Doctorate Degree Thesis,
- [33] Knight, F. H. (1965)[1921]. *Risk, Uncertainty, and Profit*. Harper Torchbooks, The Academic Library. New York: Harper & Row.
- [34] Lee, C. S., Cheong, Y. H., Choi, S. I., & Kwon, C. H. (2003). Analysis of characteristics of companies in business incubators and business performance depending on business incubating services, *DAEHAN Association of Business Administration, Korea*, 41, pp.2405-2420.
- [35] Lee, J. W and Chang, S. D. (1998), "Theoretical review on success of venture enterprises", *Venture Research Institute*, Vol.1 No.2, pp.69-95.
- [36] Lee, J. H., Lee, D. H and Park, T. K. (2006), "Innovativeness and Learning Orientation: Their antecedents and impact on business performance.", *The Korean Small Business*, Vol.28 No.2, pp.75-108.
- [37] Lee, H. S. (2003). *Relation between entrepreneurship network and business performance with involvement of business incubators*, Unpublished M.Ed. dissertation, Kyungpook National University.
- [38] Littunen, H. (2000). Entrepreneurship and the Characteristics of the Entrepreneurial Personality, *International Journal of Entrepreneurial Behaviour and Research*, 6(6), pp.295-310.
- [39] Locke, E. A., & Latham, G. P. (1990). *A Theory of Goal Setting and Task Performance*, Englewood Cliffs, NJ: Prentice Hall.
- [40] Low, M. B. & MacMillan, I. C. (1988). Entrepreneurship: Past Research and Future Challenges, *Journal of Business Management*, (2), 139-161.
- [41] MacMillan, I. C., Siegal, R., & Narasimha, P. N. (1985). Criteria used by Venture Capitalists to Evaluate New Venture Proposals, *Journal of Business Venturing*, 1(1), pp.119-128.

- [42] Mian, S. A. (1997). Assessing and managing the university technology business incubator: An integrative framework, *Journal of Venturing*, 12 (4), pp.251-285.
- [43] McClelland, D. C. (1965). Achievement and entrepreneurship, *Journal of Social Psychology*, 1, 389-392.
- [44] Naffziger, D. W. Hornsby, J. S. and Kuratko, D. F.(1994), "A proposed research model of entrepreneurial motivation, *Entrepreneurship: Theory & Practice*, Vol.18 No.3., pp.29-42.
- [45] Nelson, R. E. (1989). The strength of strong ties: Social networks and intergroup conflict in organizations, *Academy of Management Journal*, 32(2), 377-401.
- [46] Noble, A. F., jung, D. & Ehrlich, S. B., Entrepreneurial The development of a measure and its relationship to entrepreneurial Action, in Reynolds, P.D. (Eds), *Frontiers of Entrepreneurship Research 1995*, Babson University, Babson Park, MA.
- [47] OECD (1997). *Technology Incubators: Nurturing Small Firms*, OECD Paris.
- [48] Park, S. M. (1996). *Study on network activities and performance of domestic venture entrepreneurs*, Unpublished M.Ed. dissertation, KAIST.
- [49] Park, S. M.,(2000) "Study on status and development of management systems of domestic business incubators", *Venture Research Institute*, Vol. 3, No. 1, pp.39-71.
- [50] Rice, M. P. (1992). *Intervention Mechanisms used to influence the critical success factors of new ventures: An Exploratory study*, Troy. New York: Centre for Entrepreneurship of New Technology Ventures, Rensselaer Polytechnic Institute
- [51] Robinson, R. B., & Pearce, J. A. (1984). Research thrust in small firm planning. *Academy of Management Review*, 9 (1), pp.128-137.
- [52] Robert A. Baron and Gideon D. Markman(2002), "Beyond social capital: the role of entrepreneurs' social competence on their financial success", *Journal of Business Venturing*, 18(1), pp.41-60
- [53] Rotter, J. 1966. Generalized expectancies for internal versus external control of reinforcements. *Psychological Monographs*, Whole No. 609:80.
- [54] Sandberg, W. R.(1986). *New venture performance: The role of strategy and industry structure*. Lexington, MA: Lexington Books. SAS Institute, Inc. (1989).
- [55] Sexton, D. L., & Bowman-Upton, N. (1986). Female and male entrepreneurs: Psychological characteristics and their role in gender-related, *Journal of Business Venturing*, 5(1), pp.29-36.
- [56] Shin, C.H.(1999). Management development plans for Seoul business incubator, *Venture management study*, 2 (1), 103-133.
- [57] Slevin, D. & Covin, J. (1989). Strategic management of small firms in hostile and benign environments, *Strategic Management*, 10 (1), 75-87.
- [58] Small and Medium Business Administration (2005, July 18). *Plan to increase of BI's efficiency*.
- [59] Smilor, R. W. (1987). Management the incubator system: Critical success factors to accelerate new company development, *IEEE Transactions Engineering Management*, 34(3), pp.146-155.
- [60] Smith, N. R., & Miner, J. B. (1984). Motivational considerations in the success of technologically innovative entrepreneurs. In Vesper, K. H. Ed., *Frontiers of Entrepreneurship Research Babson College*, MA:Wellesley, pp.488 - 495.
- [61] Spencer, Jr., L. M., & Spencer, S. M. (1993). *Competence at work: Models for superior performance*, New York: John Wiley & Sons.
- [62] Won, J. H.(2000), "Development plans and networking activities strategies of venture enterprises ", *Dong Nam Communication*, pp.51-55.
- [63] Yang, H. B., Song, H. Y., & Kim, H. S (2002).A study on the assessment of Korean business incubator. *The Korean Small Business*, 24 (1),25-52.
- [64] Yulk, G., & Falbe, C. M. (1990). Influence tactics in upward, downward, and lateral influence attempts, *Journal of Applied*, 75, pp.132-140.

Yun-Jae Lee

[Regular member]



- Feb. 2000 : Department of International Trade, Soonchunhyang Univ. (B.E.)
- Feb. 2004 : Department of Venture Technology Management, Hoseo Univ. (M.S.)

- Feb. 2007 : Department of Venture Technology Management, Hoseo Univ. (Ph. D.)
- March 2007 ~ Present : Faculty of Technology Licensing Office, Hoseo Univ.

<Area of Interest>

Entrepreneurship, Start-up ventures, Academic-industrial cooperation,