GOVERNANCE OF THE VENTURE CAPITAL INVESTMENT: FACTORS INFLUENCING SELECTION OF AN IT FIRM

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Abstract

The selection of a firm for venture capital investment is not an easy task for any investor and so it is important to decide certain factors based on which a firm will be selected for the investment. This paper is based on the 104 responses generated through fund managers, venture capitalists, managers of financial institutions, bank managers etc. and examined two important aspects, first the factors used by venture capitalists to evaluate an IT in order to make investment decisions and second the importance of factors across different investors. This study was conducted in 2014 to find out the important aspects affecting decision making process while selecting an Information Technology firm. We have analyzed the qualitative and quantitative aspects suggested by the previous studies and studied the relationship between choice of factors among different investors and assigning weightage for them with respect to screening of an IT firm for investment.

Keywords: Venture Capital Investment, Information Technology, Qualitative and Quantitative Aspects

1. INTRODUCTION

Venture Capital is a fund based financial service which provides a financial base to various sectors of the economy and creates opportunities for economic growth also. The available literature shows that venture capitalists consider various factors while they select any firm for their investment. This has also been viewed that out of the total proposal available, they choose very few for their investment. We conduct a study to find out the important aspects of decision making process, and to determine the most important aspects of decision making process and relative relevance of these factors across the various institutions while selecting an IT firm for investment. Venture capital is also considered as an important key to innovation and financial growth (Gompers and Lerner, 1999; Kortum and Lerner, 2000) and so it has a role to play for growth in any industry. IT sector is a growing sector so this sector is also significantly funded by venture capital investment. It is important to select an appropriate firm for investment. A number of studies have concluded their research e.g. Hoffman (1972), Wells (1974), Poindexter (1976), Dorsey (1977), and Timmons & Gumpert (1982) Tyebjee and Bruno (1984), MacMillan, Siegel, and Subba Narasimha (1985), Ray, (1991); Ray & Turpin, (1993); Fried & Hisrich, (1994); Rah et al., (1994); Muzyka et al., (1996); Pandey & Jang, (1996); Franke et al., (2006) & (2008) and determined various criteria.

The present study reveals two important dimensions. First it determines the important aspects for financing an Information technology firm through venture capital investment and second it study the importance of factors adopted by various institutions and assignment of weightage given to those factors. We have identified 31 questions, divided in to 6 dimensions, based on available literature and floated the questionnaire to various fund managers, venture capitalists, bank managers and other related respondent.

1.1. VC Investment in IT Sector in India

Indian Venture Capital Industry is emerging as an important player of the economy and also providing significant role in the development of all the sectors of the economy by their investment. IT sector has also seen significant funding contributions by venture capital. A report of Cumulative Investment Details of SEBI Registered Venture Capital Funds (VCF) and Foreign Capital Investors (FVCI) shows that the size of total funds committed to this industry was Rs. 8210 crore in 2007. This figure rose up by Rs. 9465 crore in 2008. In the year 2009, this figure was Rs. 10780 crore and rose up to Rs. 13408 crore in the year 2010.

The study is divided into various stages which are as follows:
− Offering a questionnaire to 160 respondents.
− Generating results from 104 respondents (response rate 65%).
− Creation of coding sheet for the responses.
− Running factor analysis to find out the most important criteria for each factor (total of 6 factors).
− Generating ANOVA (analysis of variance) to figure out the similarity and the relevant relationship amongst the factors and to find out the pattern of selecting factors and providing weightage to them (through hypothesis formation).

The present study is classified into four sections which are as follows:
- First section represents the Introduction part.
- Second Section reveals the literature review.
- Third Section focuses on Research Methodology which consist collection of data, source of data collection, research tools, results.

Fourth Section concludes the study.

2. LITERATURE REVIEW

Many studies in the area of determining and evaluating the decision making criteria of venture capitalists while selecting a firm for investment have concluded their research. Wells' (1974) first concluded his research in the area of venture capital screening criteria using personal interview with eight Venture Capital companies and emphasized on the criteria of Business proposal, product market, marketing and engineering skills etc. This study was reviewed by Poindexter (1976) using sample size of 97. The study modified and ranked the criteria as quality of Management, expected rate of return, expected risk, management stake in the firm, financial provisions for investor rights, venture development stage, restrictive covenants, interest or dividend rate, present capitalization, investor control, and tax shelter considerations. However in the study the concern about technological risk about IT firm and any other sector was missing.

Tyebjee and Bruno (1981 and 1984) through telephonic interview with 46 venture capital firms emphasized on the factors like significance of market attractiveness, rate of return, managerial skills, stage of venture, size of investment etc. A replica study was conducted by MacMillan, Siegel, and Subba Narasimha (1985) through questionnaire method with 102 venture capital firms using factor and cluster analysis which further came out with few important factors grouped as Entrepreneur personality, Entrepreneur experience, Characteristic of product & services, Market acceptance of the product, Market characteristics & financial consideration with reference to few classification of risk such as management risk, product risk, financial risk etc. We have framed a question by considering these risks as a part of our study specifically for IT sector in India.

MacMillan, Zemann and Subba Narasimha (1987) conducted a study based on 150 respondents through questionnaire using factor & regression analysis which concluded with the relevance of successful attributes of venture capitalist as one of the important evaluation criteria to predict the venture. Khan (1987) in his study generated the results pertaining to nature of product & investee's desire as factor for screening a deal through 36 venture capital companies. Sandberg (1987) disclosed the relevance of track record relevant to strategy in his study by interviewing 3 respondents.

Hall and Hofer (1993) also studied the perspectives of growth & profitability in industry in his study through semi structured interview with Venture capital firms. Zacharakis and Meyer (1998) capitalized social judgement theory called problem solving and concluded the result related to systematic biases for decision making. Cumming & MacIntosh (2006), Brander et al. (2009) and Munari & Toschi (2010) also focused on

economic development aspect for achieving high profit margin as one of the important aim of investment.

2.1. Subject Significance and Gap

Towards Venture Capitalists' selection criteria many studies have already been conducted than what is the importance of conducting present study. Drawing form the work of previous study, this paper aims to fill following gap:
- It has been observed that no study exists which focuses on sector specific investment criteria of Venture Capitalists.
- Previous studies such as Tyebjee and Bruno (1984) , MacMillan, Siegel, and Subba Narasimha (1985), Khan (1987), Sandberg (1987), Hall and Hofer (1993) have concluded various factors that determine the Venture Capitalists selection criteria, but there is no follow up study exist which focuses on VC selection criteria for technology based start ups.
- There seems to be no study which shows the relationship between the selection factors taken by and corresponding weightage of the same among the various investors.

3. SCOPE OF THE STUDY

The main purpose of the study is to understand the selection criteria of venture capital investments and factors for decisions making in IT sector for their overall development. Venture capitalists evaluate a good no. of proposal every year for their investment decision but select very few. The present study gives importance to how do venture capital firms value entrepreneurial ventures and with special reference to IT sector. The overall paper deals with two main aspects:
- What are the most important factors of selection taken by venture capitalists while investment process for technology bases new start ups.
- Detail the relationship among the relevance of various factors taken by venture capitalist.
- Study the relationship among the weightage of various factors.

The findings would provide a base to IT entrepreneurs to become more aware about the quantitative and qualitative criteria of Venture Capitalists while choosing a IT firm for venture capital investment. The study would enable them to make effective business plan for their deal purpose. The study would also be useful to venture capitalists to screen their own process of investment. The findings would be useful for both, IT entrepreneurs as well as Venture Capitalists who are seeking new IT firms for their venture capital funding decision.

4. RESEARCH METHODOLOGY

4.1. Data Collection

We have designed a questionnaire from available literature and collected the responses about the aspects which are the main part of the study. The questionnaire was offered within India to 160 respondents which include fund managers, venture

capitalists, managers of financial institutions, bank managers. This is described in Table 1.

Out of 160 respondents, we were able to get responses from 104 respondents which disclose the response rate of 65 %. The collected information through questionnaire is based on the qualitative and quantitative aspect on various dimensions which is a mirror image of previous empirical literature. We used five point likert scale to study the relevance of each aspect. Total 31 questions were asked from the respondents which were grouped in to 6 parts as below:

a) Entrepreneur's Personality & b) Entrepreneur's Experience *(Wells, 1974), (MacMillan et al. ,1985), (Ray, 1991), (Ray & Turpin, 1993), (Ramón et al,. 2007)*, c) Characteristics of Product or Service *(MacMillan et al. ,1985) and (Muzyka et al. ,1996)* , d) Characteristics of the Market *(Fried & Hisrich, 1994) and (Tyebjee & Bruno, 1984) }*, e) Financial Considerations *(MacMillan, et. al. 1985) and (MacMillan, et. al,. 1987)*, f) Environmental Threats *(Tyebjee & Bruno, 1984)*.

Table 1. Categories of Respondents

	Category of Respondents	Category volume	Percentage on total response
1	Financers	11	10.58%
2	Financial Consultants	10	9.62%
3	Financial Institutions	10	9.62%
4	Fund Managers	16	15.38
5	Private Banks	11	10.58%
6	Public Banks	13	12.50
7	VCs	22	21.15
8	OTHERS	11	10.58%

Source: Compiled from questionnaire

4.2. Research Tool

In order to determine the most important aspects for choosing an IT firm, we used the factor analysis and to find out the study of significance across the selection of factors and the correspondent weightage of the factors, we used the two way ANOVA (analysis of variance).

4.2.1. Factor Analysis

Factor Analysis is used to identify the most important variables by reducing the number of variables without losing the originality of the same. In the present study, total 31 questions were taken in to consideration, based on 6 different dimensions to extract the valuable information. To reduce the number of variables, we used dimension reduction of factor analysis under which factors were extracted through principal component analysis and rotated by Varimax, with Kaiser Normalization till no cross loading. Table 2 represents the outcome of this process.

This process was done by rotating the iteration through statistical analysis and values below .5 were deleted to find out the cross loading situation for identifying the most important aspects of decision making process while selecting an IT firm for investment. Total 31 questions, based on 6 different dimensions were rotated to check the correlation between the variables. As an outcome of this rotation, we identified total 16 variables which we grouped in to 4 factors as per Table 3.

Table 2. Factor Analysis (Rotated Component Matrix)

	Component			
	1	*2*	*3*	*4*
Capable of sustained intense effort		.755		
Able to evaluate and react to risk well		.986		
Personal compatibility to me			-.869	
Demonstrated leadership ability	.934			
Track record relevant to venture				.921
Entrepreneur referred by trustworthy source			.939	
Demonstrated managerial capabilities in general business	.962			
Product has been developed to prototype			-.913	
Product has raw material availability			.939	
Market has significant growth rate	.935			
Venture will stimulate existing market			.913	
Familiarity with industry	.962			
Venture provides exit strategies		.986		
Required return of 10 times investment		.780		
Required liquidity and taken public		.986		
Resistance to economic cycles	.934			

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 5 iterations. a. Rotation converged in 5 iterations

Table 3. Factor Analysis (Symmetric Creation of Factors)

	Component			
	1	*2*	*3*	*4*
Demonstrated leadership ability	.934			
Demonstrated managerial capabilities in general business	.962			
Market has significant growth rate	.935			
Familiarity with industry	.962			
Resistance to economic cycles	.934			
Capable of sustained intense effort		.755		
Able to evaluate and react to risk well		.986		
Venture provides exit strategies		.986		
Required return of 10 times investment		.780		
Required liquidity and taken public		.986		
Personal compatibility to me			-.869	
Entrepreneur referred by trustworthy source			.939	
Product has been developed to prototype			-.913	
Product has raw material availability			.939	
Venture will stimulate existing market			.913	
Track record relevant to venture				.921

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization

Table 4 indicates the decoding of four most important factors determined from the process of factor analysis which include total of 16 variables where first factor describes the importance of skill set which an entrepreneur possess for his business expertise and so he uses the same for surviving into the market, second factor focuses on the relevancy

of financial implication and describes the risk-return relationship related with investment, third factor describes the reference part of entrepreneur, source of the same and acceptability of the product into the market, once investment is done and last factor focuses on another important aspect i.e. the track record related to venture and expertise of the same (Sandberg 1987).

5. RESULTS

After applying the factor analysis, we determined 16 variables and grouped under 4 categories. We also studied the correlation among the factors (a correlation matrix is provided as an appendix at the end of the paper). The aim for this approach is to identify the two results which are as follows:
– To determine the most important factors while selecting an IT firm for investment.
– To find out the similarity among the factors given importance while selecting an IT firm for investment and pattern of assigning weightage to the factors.

Factor analysis resulted with the positive results for first aim and for attaining the results for second aim we applied the ANOVA (analysis of variance). Before applying the ANOVA, we formed following hypothesis for the generation of results:

H1: All types of financial institutions give the same importance to all the factors while selecting an IT firm for funding.

H2: All the factors do not differ in terms of their weightage across the different financial institutions.

After forming the hypothesis, we applied two way ANOVA and generated a coding sheet from the given responses. We grouped the types of institutions into eight categories and taken 10 respondents for each category. After grouping, the responses given by concerned respondent were recorded in to coding sheet based on the four factors generated from factor analysis (refer table 3 for the same). An average was taken for the factors individually and total of the average was done at the end. The total of the average was divided by 10 (as described earlier that total of 10 respondents were taken for each category). This activity was done for all eight categories for all four factors. After this, we have generated a new coding sheet based on the value of total average, factor wise and category wise as per Table 5. On this generated coding sheet, two way ANOVA was run to find out the outcome which resulted as follows:

H1: All types of financial institutions give the same importance to all the factors while selecting a firm for funding.

Result: This hypothesis is accepted because f calculated value is < f critical value & p value is > .05.

H2: All the factors do not differ in terms of their weight age across the different financial institutions.

Result: This hypothesis is rejected because f calculated value is > f critical value & p value is < .05. (Refer table 5 for the calculation part of ANOVA).

Table 4. Decoding and Grouping of Factors

Factors	Factor grouping	Variables				
Factor 1	Entrepreneur capabilities and market sustainability	Demonstrated leadership ability, *Wells (1974), MacMillan et al. (1985), Ray (1991), Ray & Turpin (1993), Ramón et al. (2007)*	Demonstrated managerial capabilities in general business, *Wells (1974), MacMillan et al. (1985), Ray (1991), Ray & Turpin (1993), Ramón et al. (2007)*	Market has significant growth rate, *MacMillan et al. (1985) and Muzyka et al. (1996)*	Familiarity with industry, *MacMillan et al. (1985) and Muzyka et al. (1996)*	Resistance to economic cycles, *Tyebjee & Bruno (1984)*
Factor 2	Risk Return Expectation	Capable of sustained intense effort, *Wells (1974), MacMillan et al. (1985), Ray (1991), Ray & Turpin (1993), Ramón et al. (2007)*	Able to evaluate and react to risk well, *Wells (1974), MacMillan et al. (1985), Ray (1991), Ray & Turpin (1993), Ramón et al. (2007)*	Venture provides exit strategies, *Fried & Hisrich (1994) and Tyebjee & Bruno (1984)*	Required return of 10 times investment, *MacMillan, et. al. (1985) and MacMillan, et. al. (1987)*	Required liquidity and taken public, *MacMillan, et. al. (1985) and MacMillan, et. al. (1987)*
Factor 3	Entrepreneur reference and Product marketability	Personal compatibility to me, *Wells (1974), MacMillan et al. (1985), Ray (1991), Ray & Turpin (1993), Ramón et al. (2007)*	Entrepreneur referred by trustworthy source, *Wells (1974), MacMillan et al. (1985), Ray (1991), Ray & Turpin (1993), Ramón et al. (2007)*	Product has been developed to prototype, *MacMillan et al. (1985) and Muzyka et al. (1996)*	Product has raw material availability, *MacMillan et al. (1985) and Muzyka et al. (1996)*	Venture will stimulate existing market, *Fried & Hisrich (1994) and Tyebjee & Bruno (1984)*
Factor 4	Track record (Sandberg 1987)	Track record relevant to venture, *Wells (1974), MacMillan et al. (1985), Ray (1991), Ray & Turpin (1993), Ramón et al. (2007)*				

Source: Decoded from questionnaire

Table 5. Coding for ANOVA (generation of total average based on type of firm)

Factors	Financers	Financial Consultants	Financial Institutions	Fund Managers	Private Banks	Public Banks	VCs	Others
F1	4.36	4.46	4.46	4.54	4.2	4.38	4.32	4.4
F2	4.14	3.94	4.14	4.02	4.04	3.92	4.12	4.02
F3	4.26	4.18	4.28	4.22	4.28	4.24	4.26	4.26
F4	4.5	4.7	4.5	4.5	4.6	4.6	4.4	4.5

Source: Compiled from questionnaire

Table 6. ANOVA Results (two-factor without replication)

Summary	Count	Sum	Average	Variance		
F1	8	35.12	4.39	0.010628571		
F2	8	32.34	4.0425	0.007364286		
F3	8	33.98	4.2475	0.001135714		
F4	8	36.3	4.5375	0.008392857		
Financers	4	17.26	4.315	0.0233		
Financial Consultants	4	17.28	4.32	0.109333333		
Financial Institutions	4	17.38	4.345	0.027833333		
Fund Managers	4	17.28	4.32	0.060266667		
Private Banks	4	17.12	4.28	0.055466667		
Public Banks	4	17.14	4.285	0.081166667		
VCs	4	17.1	4.275	0.013966667		
Others	4	17.18	4.295	0.0433		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Rows	1.0679375	3	0.355979167	42.48383889	4.26E-09	3.072467
Columns	0.0166875	7	0.002383929	0.284506642	0.952887	2.487578
Error	0.1759625	21	0.008379167			
Total	1.2605875	31				

6. CONCLUSION

The result of ANOVA (as described in table 6) proofs that when it comes to deciding the factors for selecting an IT firm for investment, the factors should be same among the various financial institutions and the same importance should be given to all those factors but there might be some differences in assigning the weightage for these factors because few institutions give more weightage to few factors and other may vary in their weightage, but all institutions consider same factors for decisions making process.

The present study was based on the ideology of deciding factors and their relative importance while selecting an IT firm for investment. In order to find out the results, we have analyzed the responses of 104 respondents which include fund manager, venture capitalists, managers of financial institutions, bank managers and other related respondent. The main purpose of the present study was to identify the most important aspects of investors and to study the pattern of selecting the factors across different institutions. Our work reveals that the four factors including the skill set of entrepreneur, his capabilities, experience, market potential and sustainability, risk and return associated with the investment, known factor of entrepreneur, product acceptance and track records are those factors which are given most importance while selecting an IT firm for investment decision. We also concluded with the help of analysis of variance technique that different institutions give same importance and choose almost same factors for their screening process but they differ when they assign weightage to them. With reference to present economic conditions, out sample is sufficient enough to conclude the research and communicates necessary information to investors for screening a business and to fund seekers for making their business proposal.

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Table A.1. Correlation of the factors

	2b EE_DLA	2b EE_MC	2d CM_GR	2d CM_FI	2f ET_EC	2a EP_CSIE	2a EP_RRE	2d CM_ES	2e FC_RR	2e FC_LI&P	2a EP_PC	2b EE_RTS	2c CPS_DP	2c CPS_RMA	2d CM_SEM	2b EE_TRL
2b EE_DLA	1															
2b EE_MC	0.895806	1														
2d CM_GR	0.84221	0.8079	1													
2d CM_FI	0.895806	1	0.8079	1												
2f ET_EC	1	0.895806	0.84221	0.895806	1											
2a EP_CSIE	0.574122	0.212326	0.641953	0.212326	0.574122	1										
2a EP_RRE	-0.10672	-0.33094	0.288751	-0.33094	-0.10672	0.682989	1									
2d CM_ES	-0.10672	-0.33094	0.288751	-0.33094	-0.10672	0.682989	1	1								
2e FC_RR	-0.31081	-0.48267	-0.03364	-0.48267	-0.31081	0.380137	0.730275	0.730275	1							
2e FC_LI&P	-0.10672	-0.33094	0.288751	-0.33094	-0.10672	0.682989	1	1	0.730275	1						
2a EP_PC	0.572429	0.241404	0.222282	0.241404	0.572429	0.58148	-0.03625	-0.03625	-0.35263	-0.03625	1					
2b EE_RTS	-0.2501	-0.11935	0.010936	-0.11935	-0.2501	-0.13564	0.21141	0.21141	0.715302	0.21141	-0.77755	1				
2c CPS_DP	0.054532	-0.29986	-0.04842	-0.29986	0.054532	0.564402	0.409624	0.409624	-0.04772	0.409624	0.767695	-0.73215	1			
2c CPS_RM	-0.2501	-0.11935	0.010936	-0.11935	-0.2501	-0.13564	0.21141	0.21141	0.715302	0.21141	-0.77755	1	-0.73215	1		
2d CM_SEM	-0.05453	0.299862	0.048418	0.299862	-0.05453	-0.5644	-0.40962	-0.40962	0.047718	-0.40962	-0.76769	0.732152	-1	0.732152	1	
2b EE_TRL	0.550653	0.389014	0.162693	0.389014	0.550653	0.238336	-0.37147	-0.37147	0.043274	-0.37147	0.388327	0.143332	-0.16269	0.143332	0.162693	1