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How do Venture Capitalists Screen Business Plans: An Art or a Science? Evidence from the Netherlands and the USA

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Abstract

This study investigates and compares the screening process of business plans by venture capitalists in The Netherlands and the US. We review the criteria used for screening business plans and their relative importance for the decision making process during the screening process. Empirical data was collected in the USA and The Netherlands via interviews and questionnaires. All the VCs who were interviewed are involved with early-phase ventures for which a business plan is the main input for their investment decision. The findings suggest that overall agreement exists on the relative importance of the main criteria (Entrepreneur, Product, Market, and Financial) among Dutch and US VCs. However, the relative importance of the sub-criteria reveal differences between Dutch and US VCs. Dutch VCs rank the importance of innovative product/service high whereas US VCs rank proprietary, protected products with high relative importance. The study contributes to understanding of, and provides insight into the screening process of the US (NY) and European (The Netherlands) VCs. It can help venture capitalists to better structure the screening process and therefore their decision making and can help entrepreneurs seeking capital better address their request to those criteria venture capitalist find most important.

Keywords: Venture capitalists, business plans, decision making

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Introduction

There has been great interest both from academics and practitioners in understanding how venture capital firms evaluate new ventures, the parameters they use for screening business plans in their effort to try to predict ex-ante the better investments opportunities from the business plans they screen. Though many articles have been published on how business plans should be evaluated and the criteria for predicting successful new ventures (MacMillan, Zemann, Subbanarasimha, 1987; Gartner, Starr, Bhat, 1998, Shepard 1999), only a hand-full have been written about the screening process itself (Kaplan, Strömberg, 2000; Muzyka, Birley, Leleux, 1996). A better understanding of business plan screening practices can prove to be beneficial to VCs and entrepreneurs alike. Given the significant failure rate among new ventures and the rapidly changing markets in which today's new ventures are founded, a better understanding of the screening process can improve the quality of VC's decision making and the quality of proposed business plans.

The importance of availability of external financing for stimulating entrepreneurial activities and new venture creation has been shown both theoretically and empirically (Evans and Jovanovic 1989, Evans and Leighton, 1989, Vinig et al 1998). The added value of venture capital firms has been shown by Dorsey (1979) and Sahlman (1990) who found that the failure rate of VC-funded entrepreneurial ventures is substantially lower compared with non-VC funded ventures. Only 18 percent of VC-funded companies failed within seven years compared to 75 percent of non-VC funded firms. Kaplan and Stromberg (2000) have found that if VC's take an active role in improving the venture's management team the venture is more likely to be successful.

In this paper we report on a study of the screening process and relative importance of the criteria used in screening business plans. For the criteria used in the screening process we draw upon strategy research (Lieberman & Montgomrery 1988, Bruderl et al 1992) that suggests that strategic factors impact the survival chances of new ventures and the work of MacMillan, Siegel and Subbanarasimha (1985) and MacMillan (1987) in which they empirically identified the criteria used by venture capitalists to evaluate new venture proposals, and the work of (Wells 1974; Pointdexter 1976; Tyebjee and Bruno 1984, Robinson 1987, Timmons, Muzyka, Stevenson, and Bygrave 1987, Hall, Hofer 1993) on VC's assessment of investments opportunities.

In the next section we discuss the research methodology, then we review and discuss the findings. As far as we know, our research is the first of its kind to focus on the screening process of business plans in both Europe and the US.

Research Methodology

Research approach

The Dutch Venture Capital Association has about 50 members and about the same number of associated members. In 2000 there was 8.2 Billion Euro available for investment. The total investment portfolio in 2000 was Euro 6.2 Billion. About 51% was invested in The Netherlands and 49% in Europe and the rest of the world. The Dutch Venture Capital Guide 2000 (NVP 2000) and online resources on venture capital firms in New York were used to identify potential firms for our study. From these lists we have selected VC's that are active in the technology sector and participate in financing early stage startups for which a business plan is the main investment document available to the VC's. All the selected firms have an active portfolio of ten or more investments. Within the selected firms we have targeted the ones who are either directly involved in the screening process or are in charge of that process.

Two methods of data collection have been employed: 1) a questionnaires, and 2) structured interviews which have been recorded. In order to overcome the limitation of low response to post or an email questionnaire and of phone interview we have included in our sample only those firms that have agreed to meet with us to fill in the questionnaire and allowed us to record the interview. This has reduced the sample size but increased the quality of the data collected. We have met with a total of nineteen VC's, ten in The Netherlands and nine in NY. We have tested the questionnaire in a pilot study to determine whether the questions were clear and whether the criteria and sub-criteria used represented the main criteria used during the screening of business plans.

In this study we have evaluated the screening process in terms of the relative importance of four main criteria : 1) the entrepreneur 2) the product/service 3) the market, and 4) financials. In order to get an understanding of the rational behind the relative importance given to each of the main criteria we have defined a set of sub-criteria for each main criteria for which a relative importance was asked. By doing so we were able to identify the reasons for the relative importance of the main attributes. Table 1 lists of main and sub-attributes.

The Entrepreneur	
	Market/industry knowledge
	Track record
	Leadership
	Referred by reliable source
	Reputation
The Idea/Product	
	Proprietary, protected
	Market acceptance
	Development stage
	Innovative
	Global potential
The Market	
	Fast growing
	Existing market
	New market
	Not much competition in first year(s)
	The VC is familiar with the market
	There are established distribution channels
Financials	
	Require return within 5-10 years
	Easily made liquid (e.g., IPO, M&A)
	Require a return within 5 years
	Will not be expected to make subsequent investments
	Will not participate in latter round
	Investment more than 1 million

Table 1: Screening criteria for business plans

The relative importance of main and sub-parameter was given in percent out of 100 points for the total number of parameters. The cumulative points sum up to 100 so that if the relative importance of a parameter was estimated at 35% the sum of the relative importance for the rest of the parameters will be 65%. Using this technique in the questionnaire requires the respondent to make a judgment about the relative importance of a parameter from which their underlined cognitive thinking can be investigated during the interviews.   The interviews were recorded and than reconstructed and coded using Miles and Huberman (1994) approach of analytical abstraction to provide an explanatory framework for our research findings. Restructuring the interviews using labeling and coding was used to single out the essential aspects of a text and to indicate the mutual relationships between the

aspects. By means of several coding techniques a long text is reproduced in a better-organized way, and the main themes related to the selection criteria are made explicit.

Based on the global nature of the technology sector and global reach of VC firms investing in technology ventures – many of the Dutch VC's are investing in US ventures, and the fact US VC's have European operations we hypothesize that there will not be difference in the way Dutch and US VC's assign relative importance to the main screening criteria. This leads us to the first hypothesis.

H1: There is no significant difference in the weight of the relative importance assigned to the main screening criteria between Dutch and US VC's.

Previous study has identified the entrepreneur – the 'human factor' as the most important criterion used by VC's in their screening process (Tybee & Bronu 1984, Zopounidis 1994, Muzyka et al 1996). We therefore hypothesize that both Dutch and US VC's will rank the relative importance of the entrepreneur significantly higher than the other three main criteria.

H2: Dutch and US VC's assign significantly high relative importance to the entrepreneur.

The results from the questionnaires – a data set of a total of 4 main attributes and 22 sub-attributes from a total of 19 venture capital firms were analyzed and the hypothesis were statistically tested.

Findings

The Screening Process

Our interviews suggests that the screening process and the organizational flow depends on the deal-flow model – the way a business plan reaches the VC and the entry point of the business plan in the firm. Basically there are two models for deal-flow. A passive deal-flow approach in which the VC relies on industry events, advertising, network events and the Internet to generate a flow of business plans and thus accepting unsolicited business plans. This approach is common among technology Incubators. The other approach is an active deal-flow generation – actively looking for new ventures and investment opportunities using their network. Such a VC will usually not address unsolicited business plans.

Our research suggests that most VC's with a strategy of passive deal-flow generation use a hierarchical screening process – the initial screening is mostly done at a junior level and the investment decision and negotiations are done at a senior level. (Figure 1).

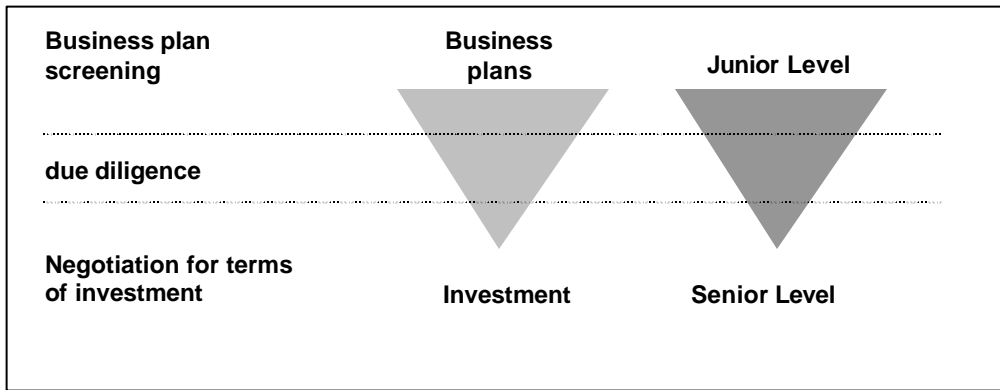| Business plan screening | Business plans | Junior Level |
| due diligence | | |
| Negotiation for terms of investment | Investment | Senior Level |

Figure 1: Hierarchical screening

VC's with a strategy of active deal-flow generation have a less hierarchical screening process because the deal-flow comes from using the network of the more senior members of the firm who will pass it through after an initial review of the business plan. They will use domain experts for screening rather than using their organization hierarchy. Most VCs we have interviewed have a more passive strategy for deal generation. Many of the interviewed VCs expressed the view that not all business plans can be analyzed equally intensive. 'It is too labor intensive' was the most expressed reason given by them and therefore hierarchical screening is used.

The business plans entry point into the firm can be divided into a network originated and the non-network originated ones. If a business plan does not originate from the personal or business network of the VC, it will not be considered as seriously as a network originated business plan. This pre-selection is a very much used practice by VCs. The rational given by the VCs for the pre-selection process is that non-network business plans are of lower quality and thus deserve less attention.

**The relative importance of the screening criteria**

The following table summarizes the basic descriptive statistics regarding the relative importance of main and sub-criteria (from table 1) for both Netherlands and US VC's.

	NL (n=10)			US (n=9)		
	Median	Mean	SD	Median	Mean	SD
The Entrepreneur	35	35.5	10.12	30	31.1	9.2
Market/industry knowledge		29			18	
Track record		25			24	
Leadership		31			26	
Referred by reliable source		8			17	
Reputation		7			16	
The Idea/Product	25	25	7.81	25	24.4	3.9
Proprietary, protected		21			32	
Market acceptance		20			17	
Development stage		10			14	
Innovative		28			6	
Global potential		14			16	
The Market	25	26	4.59	25	21.6	6.1
Fast growing		48			32	
Stimulates existing market		12			12	
Creates new market		13			14	
Not much competition in first year		7			22	
The VC is familiar with the market		14			7	
There are established distribution channels		8			13	
Financials	18	15.5	9.5	20	21.6	5
require a return within 5-10 years		11			17	
easily made liquid (e.g., IPO, M&A)		35			33	
require a return within 5 years		34			28	
I will not be expected to make subsequent investments		3			5	
I will not participate in latter round		1			4	
investment more than 1 million guilders		16			14	

Table 2: Descriptive statistics of main criteria

The relative importance of the main criteria is in agreement with results of earlier studies (MacMillan 1985, Zopounidis 1994). The contribution of this research is in the identification of the sub-criteria that are used to evaluate the relative importance of the main criteria. The entrepreneur ('Human factor') was identified in previous studies as the most important criterion for the VC decision process. In this research we have identified that both US and Dutch VC's consider track record and leadership as the most important attributes of entrepreneur and that Dutch VC's consider entrepreneur's knowledge of the market and the industry an important attribute of the entrepreneur.

The idea (product/service) and the market have similar relative importance with both Dutch and US VC's. The difference is however in the relative importance of the sub-criteria. US VC's consider proprietary, protected product as the important attribute of a product while Dutch VC's consider innovation important. Both US and Dutch VC agree on the importance of the market growth rate as the most important market attribute. US VC's consider no direct competition in the first year an important attribute of the market parameter. Both US and Dutch VC's agree on the importance of the financial considerations of easy liquidation (IPO or M&A) and return on investment within 5 years.

The relative importance of the main criteria are presented in figure 1 using a box-plot which is based on the median, quartiles, and extreme values. The box represents the inter-quartile range which contains the 50% of values. The whiskers are lines that extend from the box to the highest and lowest values, excluding outliers. A line across the box indicates the median.

Relative importance of main criteria
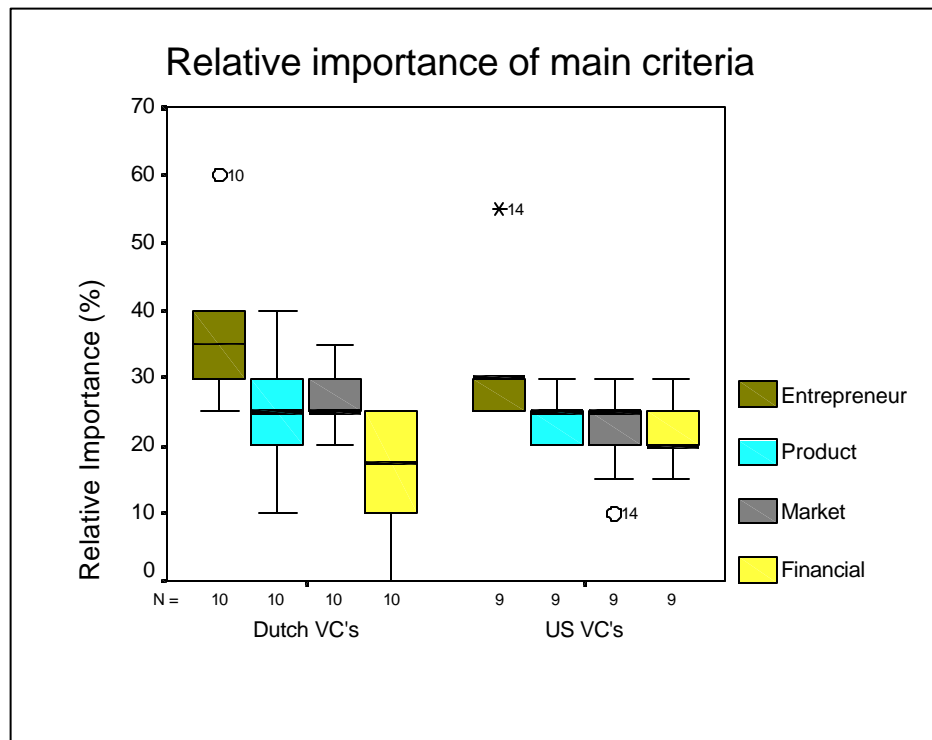
Both Dutch and US VC's assign high relative importance to the entrepreneur (The median and 50% range of the values are higher than the other three parameters). The product and market have the same relative importance and indeed some researchers (Muzyka et al 1996) consider the product/market combination as one parameter. The sub-parameters we use however demonstrate that though market growth is the important attribute for both Dutch and US VC's they differ on the product. For US VC's protected product has high relative importance while innovation scores high

with Dutch VC's. Dutch VC's assign relative importance in the following order: entrepreneur product, market and finally least relative importance is assigned to financial considerations.

We have tested our first hypothesis – *H1: There is no significant difference in the relative importance assigned to the main attributes between Dutch and US* VC's using the t-Test (table 3). Based on the computed values we can accept H1 with an alpha of 0.05.

Criteria	t-test for t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
ENTREPRENEUR	.981	17	.340	4.39	4.473
PRODUCT	.192	17	.850	.56	2.889
MARKET	1.757	17	.097	4.33	2.467
FINANCIALS	-1.731	17	.102	-6.17	3.563

Table 3: t-Test

An indication for the higher relative importance the Dutch and US VC's assign to the entrepreneur in given in figure 1. The box-plot which represents the inter-quartile range that contain 50% of the values, and the median of entrepreneur for both the Dutch and the US VC's samples are above the other three criteria. This however does not tests significance so we have tested the second hypothesis *H2: Dutch and US VC's assign significantly high relative importance to the entrepreneur* using Levene's test for homogeneity of variance (Table 4). The Levene's test is defined as:

H_0: $\sigma_1 = \sigma_2 = \ldots = \sigma_k$; which in our case are the four main screening criteria.

H_a: $\sigma_i \neq \sigma_j$ for at least one pair (i,j); which in our case is the Entrepreneur main criteria.

The computed F values for entrepreneur 0.172 with significance of 0.681 we can accept hypothesis H2.

Criteria	Levene's Test F	Sig.
ENTREPRENEUR	.172	.684
PRODUCT	.974	.338
MARKET	.972	.338
FINANCIALS	3.043	.099

Table 4: Levene's test

Discussion

In this research the screening process of business plans by VCs both from the United States and the Netherlands has been explored. The venture capital community is a relatively small and actively networked one. Conducting the study by meeting sessions using the instruments of questionnaires and structured interviews are suitable for learning and understanding their cognitive thinking. Such a research approach overcomes the subjects' frustration that is associated with post or email questionnaires which often lack practitioners' concepts and terminology and are often perceived as not comprehensive. From this perspective the pilot study we have conducted proved to be useful in improving the questionnaires and the interviews.

Previous research has identified the main criteria used in screening business plans. Most of the research however was done in the US (MacMillan 1987, Siegl and Subbanarasimha 1985) or in Europe (Muzyka et al 1986) while our research has addressed both US and Dutch VC's. Our research included VC's that are active in the high-tech industry. The technology industry, ICT and Internet in particular, is a truly global industry. It is common to have US VC's having non-US business plans submitted to them and vice versa . Being a global industry it is not surprising that our findings suggest that US and Dutch VC's agree on the relative importance and unimportance of the main criteria and their attributes. Differences exist in the relative importance of the sub-criteria – for the Product main criteria the relative high importance of product innovation with the Dutch VC compared to relative high importance of protected product with the US VC's in our sample. The rational behind assigning high relative importance to proprietary, protected product by US VC's is that a new venture with such a product increases the window of opportunity and reduces competition during the initial phase of bringing the product to the market. Such a practical approach indicates a more mature VC market. The Dutch VC's emphasize product innovation. According to Schumpeter innovation by itself has no economic value, it has a value when creating new combinations of products and services.

We have identified three different aspects of organizational processes driving the screening of business plans. Deal flow generation, entry point of a business plan and hierarchical or domain based screening. Active or passive deal flow generation has an impact on the organizational flow of the business plan. VC's with a passive deal flow generation tend to use an hierarchical screening process in which junior level staff does the first screening. An interesting question in this context is whether this process identifies the better investments opportunities. VC's with a more active deal flow generation have a build in pre-selection as they do not accept un-solicited business plans and use domain experts to screen the plans.

Entry point into the VC organization has an impact on the initial acceptance or rejection of the business plan.

Summary and conclusions

In this study we explored and compared the screening criteria of business plans by venture capitalists in The Netherlands and the US. The findings suggest that both Dutch and US VC's assign similar relative importance to the main criteria and some of the sub-criteria except one – the relative importance of product innovation (Netherlands) vs. protected product (US). Dutch and US VC's assign higher relative importance to the entrepreneur that the other three main screening criteria. Venture capital is a global industry, in particular in the technology sector. This is supported by our findings that both Dutch and US VC's agree on the relative importance of the main screening criteria and most of the sub-criteria they use to screen business plans.

This study has some limitations. Even though the focus of this research has been on technology related early phase business plans, some VCs suggested that other distinctions might also be made, like small vs. big VCs, differences of market positioning within the technology sector, cultural aspects of both the VC and the entrepreneur. These are all pointers to several interesting questions that future research should address. Additional future research opportunities in this relatively young research field are: Do the criteria that get most attention like the entrepreneur, market growth potential or whether a product is proprietary or innovative really determine the success of a venture? Both US and Dutch VCs rate the entrepreneur or team behind the venture as the most important main criteria. But can a quality such as drive and ambition of the entrepreneur really be sufficiently extracted from a business plan? Is there a relationship between the screening process and the VC fund management and eventually its performance?

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ABSTRACT: This study investigates and compares the screening process of business plans by venture capitalists in The Netherlands and the US. We review the criteria used for screening business plans and their relative importance for the decision making process during the screening process. Empirical data collection in the USA and The Netherlands was done by interviews and through questionnaires.

All the VCs who were interviewed are involved with early-phase ventures for which a business plan is the main input for their investment decision. The criteria for evaluating business plans have been identified from literature and from experts in the field. Subsequently these criteria have been divided into four main criteria each having between five and six sub-criteria. The main criteria identified are: The Entrepreneur, The Product or Service, The Market and Financial Considerations including investment and exit considerations. These criteria are consistent with business strategy research and venture capital research findings as factors that impact the survival of new ventures.

The findings suggest that overall agreement exists on the relative importance of the main criteria (Entrepreneur, Product, Market, Financial) among Dutch and US VC's. Both Dutch and US VC's consider the Entrepreneur as the most important attribute. US VC's rank the criteria of Product, Market and Financials at the same level of relative importance. Dutch

VC's rank Product and Market at the same level of relative importance and the Financials as least important criteria.

The relative importance of the sub-criteria reveal differences between Dutch and US VC's. Dutch VC's rank the relative importance of innovative product/service high whereas US VC's rank proprietary, protected products with high relative importance.

The organizational processes behind the business plan screening process have also been examined in this study. VC's with passive deal flow generation tend to relay on a hierarchical screening approach whereas VC's with active deal flow generation have a less hierarchical screening process and tend to use more domain experts and senior staff when screening business plans.

This study contributes to understanding of, and provides insight into the screening process of the US (NY) and European (The Netherlands) VC's. It can help venture capitalists to better structure the screening process and therefore their decision making and can help entrepreneurs seeking capital better address their request to those criteria venture capitalist find most important.

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