Aleksandra GRZECH*

PRELIMINARY SELECTION IN THE DECISION-MAKING PROCESS OF VENTURE CAPITAL FUNDS

In the paper the criteria of preliminary selection used by venture capital funds were described. Two methods of carrying out selection were characterised. Next, a model of the process of preliminary selection, based on the parallel method, was presented. An example of such a selection procedure was considered, in order to illustrate its use in practice.

Keywords: *venture capital, decision-making process, selection process*

1. Introduction

The decision-making process of venture capital funds covers the following stages: establishing the investment strategy, searching for potential capital-takers and carrying out preliminary selection, establishing the criteria for selection, judging individual companies in terms of these criteria, taking the final decision based on the results of assessment. The decision-making process formed in this way reflects a formal structure for decision-making [2], which enables systemization of the decision making process based on the complete set of information. Hence, the decision made is rational at that given moment and with reference to the information possessed. It is also possible to compare the stages of the process with the levels in the methodology for decision-making suggested by Roy [3], who is the chief animator of the so-called European (also called French) school of decision-making. Roy's methodology uses a set of questions and cues, which are supposed to prompt the decision-maker during the collection and processing of information, which in

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* Institute of Industrial Engineering and Management, Wrocław University of Technology, ul. Smoluchowskiego 25, 50-372 Wrocław, e-mail: Aleksandra.Grzech@pwr.wroc.pl

consequence is conducive to establishing the way of proceeding at various levels of the decision-making process.

Preliminary selection is the second stage of the decision-making process and follows establishing the investment strategy. The levels of risk and the return rate are the basis of this investment strategy [1]. Venture capital funds have by definition a high level of investment risk, which means, that in exchange investors expect an above average return rate. Hence, the preferred levels of risk and the return rate determine the investment strategy and the next stages in the decision-making process. The adopted strategy directs the search for and choice of the companies in which the venture capital fund will invest. It also enables the choice of criteria for selection and assessment. Funds usually determine the requirements an investment project should satisfy, the so-called investment criteria.

2. Criteria for preliminary selection

Preliminary selection is aimed at choosing a few companies whose profile is in accordance with the investment strategy of the venture capital fund out of the many companies interested in raising capital. Searching for potential capital-takers can be carried out in two ways: passively or actively. The passive approach is characterized by a lack of action from the venture capital fund and with a passive expectation of the inflow of proposals. This is facilitated by the existence of organizations associated with the funds, which are sources of information about all the funds active on the market for interested companies. The Polish Private Equity Association (PPEA) acts in Poland, while the European Private Equity and Venture Capital Association (EVCA) acts at the European level. The National Venture Capital Association (NVCA) represents the venture capital sector in the USA. The active approach requires venture capital funds to monitor the appropriate sector of enterprises, disseminating information and organizing meetings, getting in touch e.g. using financial institutions, advisory companies or research institutes. However, independently of the means of searching for investment projects, the fund must examine them in the preliminary selection. In order to carry out this process of selection, criteria are necessary.

Independently of the investment strategy, funds seek companies which are characterized by e.g. great potential for development, innovative business activity, possibility of achieving a large market share. Such features give a chance of achieving an above average increase in the value of a company during its existence in the portfolio, hence achieving an above average profit at the moment the investment matures. However, this does not mean that all venture capital funds are interested in the same com-

panies – if it were so, it would not be possible to talk about various investment strategies. Each fund has its own specific set of preferences, based on which it makes the preliminary selection. These criteria are public and declared. A review of the information on the website of a venture capital fund is the simplest way of finding out its preferences. However, finding interesting data is sometimes difficult, especially since websites of funds are not standardized and the forms of transmitting information are very diverse. Some funds determine requirements as investment criteria, others include them in their strategy and others describe their philosophy of action. Some organizations, such as PSIK, EVCA and NVCA, are very helpful – they administer information about almost all active funds acting on the market.

It results from a review of the information on the websites of venture capital funds, as well as PSIK and EVCA, that four criteria are most often mentioned: region, sector, stage of development and investment limits. These criteria are fundamental to the preliminary selection and they enable choosing only the companies which meet the initial criteria of the fund from the set of companies interested in raising capital. The choice of the region is connected with the geographical situation of the investment. Small funds, which have little capital, few experienced managers and a small network of contacts, are not able to act on a world scale. They focus their attention on a chosen geographical region, e.g. Central-Eastern Europe or Latin America. The principle of selecting the sector is similar to selection of the region. Small funds are characterized by a greater degree of specialization, because investing in companies from related sectors enables a higher level of orientation in the market and penetrative analysis of potential investments, when the number of a fund's employees is small, than when the fund considers diverse sectors. On the other hand, sector diversification gives the opportunity of constraining the risk connected with the situation prevailing on the market and protecting oneself against a possible crisis in one of the sectors. Focusing one's attention on a few related sectors is an often applied solution by venture capital funds, e.g. telecommunications, media and computer science or medicine, pharmacy and health care. The preferred stage of development is related to the level of risk, which the fund is able to accept. Investments in the later stages of their development are characterized by a lower level of risk, than ones in the early stages. However, one should note that by nature venture capital funds are engaged specifically in projects during the early stages of their development. Hence, neither later stages nor different forms of financing should be taken into consideration. However, one problem lies in the fact that venture capital funds rarely appear in pure form[1]. The funds usually take the form of private equity funds, hence they are interested in companies at various stages of development: seed, start-up, development & expansion, buy-out, buy-in, as well as in different forms of financing: bridge financing, turnarounds, pri-

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[1] Out of 32 funds active on the Polish market, only one is a venture capital fund in its pure form, this is the Business Angel Seedfund Sp. z o.o (data from February 2008).

vatization, replacement, mezzanine. Investment limits i.e. lower and upper bounds on the amount of capital invested, are a way of constraining risk. They enable protecting oneself against investing large amounts of capital in one large investment, which could lead to a big loss. These investment limits result from the size of the fund – the bigger the fund, the larger the investments it can undertake, without the threat of the fund collapsing in the situation where an investment brings losses.

It is possible to look at the problem of preliminary selection from two viewpoints-from the points of view of both the fund and the company. It seems logical that the fund carries out the selection, since it decides which company it will invest capital in. However, selection can also be carried out by the company via searching for a fund, whose preferences are agreeable to its profile. This is possible due to the PSIK and EVCA websites, which enable firms to find funds interested in concrete types of investment. In the case of PSIK, the search criteria are: the value of investment and the sector. For the EVCA, the search criteria are: the country, the sector and the stage of development. However, the fund does not know in what way the company obtained information, nor how the company made its choice regarding the fund. Therefore, the fund should make its own preliminary selection of companies, which apply to it.

3. Method of making the preliminary selection

Carrying out the preliminary selection requires a method for proceeding. The process of selection should be uncomplicated and rapid, since the set of companies which are interested in raising capital is usually numerous. At this stage of the decision-making process a penetrative analysis of the proposals is unnecessary, and so the preliminary selection can take place automatically by stating whether the company meets the criteria of selection or not. It is possible to consider two methods – row and parallel.

The row method (fig. 1) consists of checking whether a company meets each criteria one after the other. If the first criterion is met, then the second criterion is tested, etc. The process ends at the moment when either a criterion is not met – then the company is rejected – or all criteria have been tested and the company meets each of them – then the company is included in the set of potential capital-takers and participates in the next stages of the decision-making process. Using this method, establishing the order in which criteria are tested is an important problem. Putting them in a determined order has a crucial meaning, since a criterion will only be checked when the previous criteria are met. This method can be applied only by such funds, in which a distinct hierarchy of the importance of criteria has been determined and additionally not meeting any given criterion results in rejecting a company. However, it is a very inflexible approach and requires individual adaptation to the process of selection used in each fund, because funds can have completely different hierarchies of importance for the criteria.
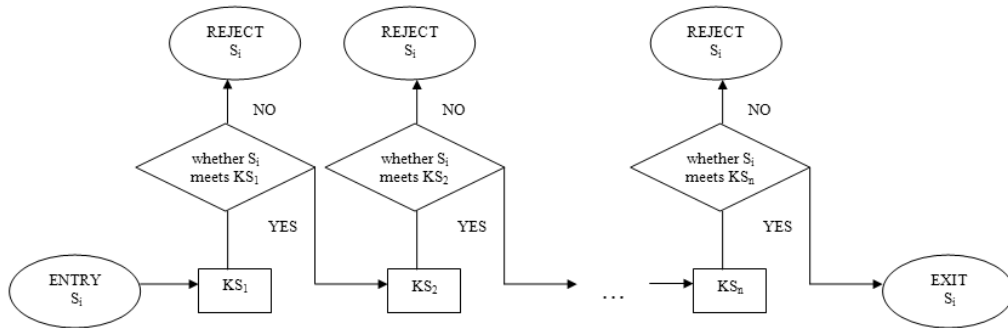
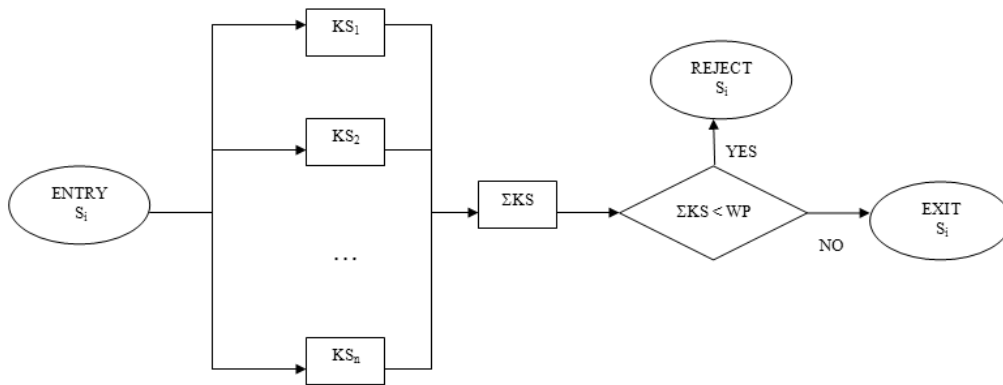**Fig. 1.** Outline of the process of preliminary selection – row method

Fig. 2. Outline of the process of preliminary selection – parallel method

The weaknesses of the row method are eliminated in the parallel method (fig. 2), which consists of checking the criteria simultaneously. This method only requires establishing the weight of each criterion and the score required to be included in the next rounds (the threshold). In the process of selection the degree to which a company meets each criterion is measured and then these values are summed. If this sum is lower than the threshold value – the company is rejected, otherwise – it is included in the set of potential capital-takers. The problem regarding the hierarchy of criteria is solved here by using weights, which does not require placing the criteria in a determined order, nor establishing the relations between them. This is a universal and very flexible approach, since it enables taking into consideration any number of criteria, without the need to modify the selection process for any of the funds. Secondly, it does not require adapting the process to a particular fund, since the criteria are mutually independent and putting them in a determined order does not have any meaning.

4. Model of the process of preliminary selection

Based on the suggested parallel method, it is possible to create a model for the process of making the preliminary selection (fig. 3) and on the basis of this define a selection procedure, which leads to a simple and fast process. This process consists of two stages – the first stage, which we can name preparatory, involves: determining the criteria for selection, establishing the weight of each criterion and the score required to pass through to the next round. The parameters determined at this stage serve to select from a large number of companies. However, they can be modified by the fund according to requirements. The second stage – the realization of the process – consists of testing whether each company meets the criteria. This stage is repeated for each company until the moment when the set of companies interested in raising capital runs out. One should note, however, that this set is never empty, because the inflow of companies is incessant. Funds do not set deadlines for sending proposals, they do not organize competitions – it is possible to apply to them at any time. Admittedly, presumption of the incessant inflow of proposals does not affect the process of preliminary selection or delaying assessment, it is sufficient to apply a first in, first out (FIFO) queuing system. However, this makes it difficult, or even impossible, to make a final decision because the set of variants and relations between them change incessantly. Therefore, the fund must determine the moment at which the decision-making process will begin. This will close the set of companies to be considered for funding at any one time. The decision of whether a company will be accepted and included in the set of potential capital-takers, or whether it will be rejected at the stage of preliminary selection, is taken automatically based on the parameters established by the decision-maker.

In order to discuss the model proposed, let us consider a theoretical example. The decision-maker of Fund X has determined four criteria for selection: sector, region, stage of development and size of investment. Next, the decision-maker establishes the weight of each criterion: sector – 0.45, region – 0.1, stage of development – 0.35, size of investment – 0.1. If the sum of the weights is different from 1, this should be pointed out to the decision-maker. The next step is to establish the minimum score required to qualify, which is a function of the weights. Let us assume that sector has crucial meaning for Fund X – this is reflected in the assigned weight and consequently this threshold must be at least equal to the value of the weight for sector, i.e. 0.45. Let us also assume that the criterion for the stage of the development must be met. Hence, the threshold value must be at least 0.8 – this is the sum of weights for the two criteria: sector and stage of development.
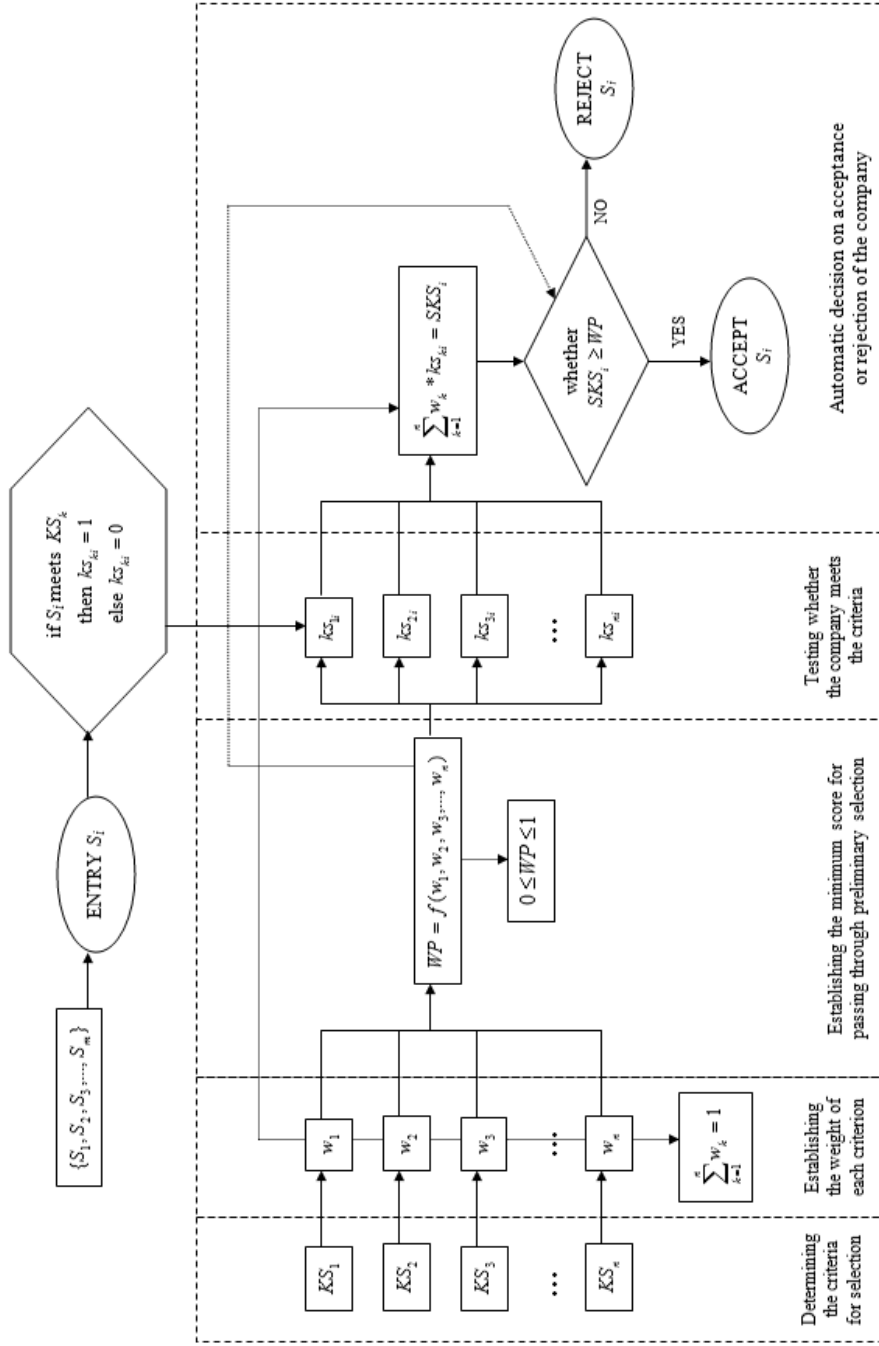
$\{S_1, S_2, S_3, \ldots, S_m\}$

ENTRY S_i

if S_i meets KS_k
then $kc_{ki} = 1$
else $kc_{ki} = 0$

KS_1

KS_2

KS_3

$\ldots$

KS_n

w_1

w_2

w_3

$\ldots$

w_n

$\sum_{k=1}^{n} w_k = 1$

$WP = f(w_1, w_2, w_3, \ldots, w_n)$

$0 \leq WP \leq 1$

kc_{1i}

kc_{2i}

kc_{3i}

$\ldots$

kc_{ni}

$\sum_{k=1}^{n} w_k * kc_{ki} = SKS_i$

whether $SKS_i \geq WP$

YES

NO

ACCEPT S_i

REJECT S_i

Determining the criteria for selection

Establishing the weight of each criterion

Establishing the minimum score for passing through preliminary selection

Testing whether the company meets the criteria

Automatic decision on acceptance or rejection of the company

Fig. 3. Model for the process of preliminary selection

Because the threshold value is a sum of weights, and so should be located in the interval [0, 1] – if it were outside this range, this should be pointed out to the decision-maker. The last step is testing by the decision-maker as to whether the company meets the criteria. Let us assume, that the set of companies interested in raising capital has 10 elements. The system for assessing whether criteria are met is a zero-one system. If a criterion is met – the assessment 1 is given, if not – the assessment 0. The decision-maker assessed each of the companies, obtaining as a result the matrix of assessments. Based on these assessments and the earlier assigned weights, the degree to which each company meet the criteria is enumerated. Then it is checked whether this value attains the minimum score required. The decision is generated automatically – 5 out of 10 companies went to the next stage of the decision-making process. This process of preliminary selection, carried out using Excel, is presented in figure 4.

Determine the criteria of selection		Establish the weight of each criterion		Establish the minimum score required	
KS1	sector	w1	0,45	WP	0,80
KS2	region	w2	0,10		
KS3	stage of development	w3	0,35		
KS4	size of investment	w4	0,10		
		sum	1,00		

Test whether the company meets the criteria YES - 1 NO – 0						Decision
	ks1	ks2	ks3	ks4	SKS	
S1	1	0	0	1	0,55	reject
S2	0	0	0	1	0,10	reject
S3	1	1	1	0	0,90	accep
S4	0	0	1	1	0,45	reject
S5	0	0	1	0	0,35	reject
S6	1	1	1	1	1,00	accep
S7	1	1	1	0	0,90	accep
S8	1	0	0	1	0,55	reject
S9	1	1	1	1	1,00	accep
S10	1	1	1	0	0,90	accep

Fig. 4. The results of the process of preliminary selection

5. Summary

The proposed method of preliminary selection enables venture capital funds to select only those companies, which meet their requirements out of a large set of companies interested in raising capital. At this stage the fund deals with a large number of proposals and therefore a method, which enables simple and fast selection, is needed.

A framework for finding such a method has been described. The process of selection is simple and any generally available spreadsheet will be sufficient to implement it. The set of companies obtained via this process of selection is the set of those companies who pass through to the next round of selection. In the next stages of the decision-making process, these companies will undergo detailed and penetrating examination and analysis. These results will be used for making the final decision.

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Selekcja wstępna w procesie decyzyjnym funduszy typu venture capital

Selekcja wstępna ma na celu wybranie spośród wielu chętnych do pozyskania kapitału spółek tylko tych, których profil jest zgodny ze strategią inwestycyjną funduszu. Opiera się kryteriach selekcji. Na tym etapie procesu decyzyjnego nie jest konieczna dokładna analiza zgłaszanego projektu, zatem selekcja może odbywać się automatycznie poprzez stwierdzenie, czy dana spółka spełnia kryteria, czy też nie. Można rozważać dwie metody: szeregową (rys. 1) i równoległą (rys. 2), z których metoda równoległa jest bardziej uniwersalna i pozwala na większą elastyczność. W oparciu o zaproponowaną metodę zbudować można model procesu (rys. 3), a następnie na jego podstawie narzędzie, dzięki któremu przeprowadzenie procesu selekcji stanie się łatwe i szybkie. Omawiany proces składa się z dwóch etapów: etap pierwszy, który można nazwać przygotowawczym, obejmuje określenie kryteriów selekcji, nadanie im wag oraz ustalenie wartości progowej stopnia spełnienia kryteriów. Etap drugi – właściwej realizacji procesu – polega na ustaleniu, czy spółka spełnia każde z kryteriów. Decyzja o tym, czy spółka zostanie zaakceptowana czy odrzucona, podejmowana jest samoczynnie w oparciu o ustalone przez decydenta parametry.

Słowa kluczowe: *venture capital, proces decyzyjny, proces selekcji*