The Entrepreneur Scan Measuring Characteristics and Traits of Entrepreneurs

Martijn P. Driessen and Peter S. Zwart

Summary

All over the world there is a growing interest in entrepreneurship and the central role of the entrepreneur. This paper is about Entrepreneur Scan (E-Scan): an objective tool for self-reflection for entrepreneurs and those who wish to start a business of their own. E-Scan provides insight into necessary traits and capabilities for entrepreneurship. After describing the instrument and some alternative tests, results of the E-Scan for more than 21,000 (starting) entrepreneurs and 60 potential successors will be discussed. It can be concluded that entrepreneurs in the Netherlands do not lack endurance.

1 Introduction

The interest in entrepreneurship has increased considerably. A growing number of people take on a positive attitude towards entrepreneurship (Wennekers, 2006). Van Gelderen, Thurik and Bosma (2005) have estimated that in 2003 2.4% of the Dutch population between the ages of 18 and 53 are starting a business of their own. In addition, interest in starters and their effect on employment in the Netherlands is increasing (Audretsch and Thurik, 2000). As a result, studies about the relationship between entrepreneurs and business success have become increasingly important. Which traits and capabilities of the entrepreneur influence business success? This is an important question to be answered. Not only for the entrepreneur, but also for the organizations and institutions who focus on entrepreneurs, like banks, and those who wish to start a business of their own or want to learn about entrepreneurship.

Based on a literature study about granting of credit to starting entrepreneurs, Brinkman (2000) concludes that starters are discriminated compared to entrepreneurs of existing and large businesses concerning financing possibilities. Financiers perceive starting companies to have a higher perceived risk, relatively high contract- and observing costs, insufficient guarantee and no track record according to entrepreneurial experience. Banks judge applications for credit on a written business plan. The background and capabilities of the entrepreneur are hardly taken into account in this plan. The judgement of the bank is mostly based on the reported financial projections. This literature study also showed that starters find the business plan of little strategic importance and hardly work with it after the start of their business. Considering that 50% of the established businesses disappear within five years (Wennekers, 2006), the decision making for granting credits solely based on estimated financial projections could be questioned. Brinkman (2000) concludes that it would be better to take objectively measured characteristics of the entrepreneur into account.

The most important reason for using an objective entrepreneurship test is the importance of self-knowledge for successful entrepreneurship (Timmons, 1989; Van den Flier, 1990; Nandram and Samson, 2000). Especially Timmons (1989) expresses this in his definition of entrepreneurship: ‘It is the ability to build a ‘founding team’ to complement your own skills and talent’. The Entrepreneur Scan, developed in section 2, offers the entrepreneur insight into his own characteristics and capabilities for successful entrepreneurship. This information is useful when deciding whether to start a business or not, or to delay the start or to hire expertise. We define entrepreneurship as seeing and pursuing opportunities by having and running a privately owned company or within a (larger) company, as a result of which value is
created for the individual and the community. An entrepreneur is someone who owns and runs a business on his own account and risk. The aim of this paper is to describe the Entrepreneur Scan and assessing entrepreneurship for (starting) entrepreneurs using this Entrepreneur Scan. The theoretical background of the Entrepreneur Scan is discussed in section 2. The competence theory and the company life cycle are considered. In section 3 we discuss the Entrepreneur Scan as well as other existing entrepreneurship tests. Results of the use of the Entrepreneur Scan for (starting) entrepreneurs and those entrepreneurs who are aspiring to takeover a company are discussed in section 4. Finally, conclusions are drawn in section 5.

2 Competence theory

A competence can be described, as something a person is very good at. It is a talent, which enables them to do their job well. Lathi (1999) summarizes this as a collection of knowledge, capabilities, characteristics and attitudes in relation with, or necessary for a good performance. Stoof et al. (2000) also conclude that competences can be interpret as successful behaviour in (critical) practice where knowledge, capabilities and attitude work together to accomplish this behaviour. Figure 1 show the components that jointly form a person’s competence. Wanting, Being, Capable to, and Knowledge are all important for competence/competent behaviour.

Each of the components in Figure 1 will be discussed shortly, mainly in relation to entrepreneurship.

*Figure 1: Components that jointly form a competence*

![Diagram showing the components of competence](image)

**Motivation**

Motivation has everything to do with wanting. How badly does a person want something? Motivation depends on ambition, (internally driven) motives and values of an individual. Someone with a great deal of knowledge about a certain task and the capabilities to perform it is not likely to use his knowledge and capabilities if he lacks the motivation for it.

There are different motives for starting a business. Literature distinguishes between push and pull factors. Push factors refer to the situation that a person is being pushed into
entrepreneurship. For example, unemployment can ‘force’ someone to start a business. A push factor is externally driven and leads a person to act. Other push factors are: discovering a niche in the market, being sure of customers and not being able to find a job (Boerboom, 1993).

Pull factors refer to the situation that a person is attracted to entrepreneurship. For example, someone who has always dreamed of his own business. A pull factor is internally driven. Therefore, motivation is divided into externally driven motives (push factors) and internally driven motives (pull factors).

There are three internally driven motives, or needs, for starting a business. These are: a need for Autonomy, a need for Achievement and a need for Power (Brockhaus, 1982; Begley and Boyd, 1987; Nandram and Samson, 2000).

**Characteristics**

Characteristics are the second component of entrepreneurial competence in Figure 1. These are traits which make people more or less capable for entrepreneurship. In addition, thinking styles are discussed, because they match well with typologies (clusters of characteristics) for entrepreneurs.

A lot of studies have examined characteristics of successful entrepreneurs (McClelland, 1961; Brockhaus, 1982; Begley and Boyd, 1987; Lumpkin and Dess, 1996; Nandram and Samson, 2000). A number of characteristics are considered in almost each of these studies. These are the need for Achievement, internal Locus of Control and Risk Taking Propensity. In some studies other characteristics are examined as well. These are the need for Autonomy, the need for Power, Tolerance of Ambiguity, need for Affiliation and Endurance. On average, successful entrepreneurs score higher on these characteristics than those who do not have a (successful) business of their own.

Note that the three internally driven motives mentioned in the previous paragraph are considered as traits, but can also be viewed as motivation for business ownership.³

In his ‘Whole Brain Model’ Herrmann (1996) identifies four thinking styles. These thinking styles greatly influence from which point of view a situation or problem is approached: the thinking style preference. Because of that, thinking styles also influence behaviour. There are no good or bad thinking styles and everyone possesses all thinking styles. Although a preference for one or more exists. Herrmann called this ‘brain dominance’, the dominant preference for (a) particular thinking style(s). The four thinking styles and their characteristics are shown in Figure 2.
Figure 2: the four thinking styles (Herrmann 1996, p. 21 adapted).

Independence and sense

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<th>Log. reasoning</th>
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<td>Analyser</td>
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<td>The rational “me”; expert</td>
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<td>Intuitive</td>
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<td>Curious</td>
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<td>Sees the “whole”</td>
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<td>The experimental “me”; pioneer</td>
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<td>The conservative “me”; manager</td>
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<th>People’s person</th>
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<td>Social</td>
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<td>Lively</td>
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<td>Emotional</td>
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<td>The sensitive “me”</td>
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<td>Salesman</td>
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Dependence and emotion

The four thinking styles (pioneer, salesman, manager and expert) go without saying.

Capabilities

The third component in Figure 1 is Capabilities. This component is about being able to do something. Capabilities differ from Characteristics. This difference is based on the ability to learn. Characteristics are more or less a fact and neither easy to change (in a short period of time) or to learn. Capabilities are easier to learn and to change (Nyström, 1979).

Literature identifies a number of capabilities contributing to the success of an entrepreneur (Lorrain and Dussault, 1988; Brinkman, 2000). Since capabilities are more or less related to the phases of a company, the company life cycle, they are divided into two groups: the early phase capabilities and the mature phase capabilities.

Early phase: Market orientation, Creativity and Flexibility.


These are seven important capabilities related to entrepreneurship and do not need any further clarification.

Knowledge

Knowledge is the fourth and last component of the entrepreneurial competence. Obviously, knowledge is related to knowing and refers to the more rational part of entrepreneurship. Like knowing the rules for administration, knowing the principles of marketing, knowing the difference between debit and credit, and knowing the Dutch laws and rules. But experience also belongs to knowledge.

We conclude this paragraph with Figure 3, where the four components of entrepreneurial competence are presented.

Two of the four components in Figure 3 (Capabilities and Characteristics) are taken into account in the Entrepreneur Scan. The component knowledge is not taken into account, because it can be adapted from the (written) business plan. The component motivation (or at least the externally driven part) can be assessed in a personal interview.
3 Existing personality and entrepreneurship tests

In the previous section we discussed the competence theory, which has lead to the development of the Entrepreneur Scan. In this section we briefly discuss two existing personality tests: The Big Five Factor Model (Hoekstra, Ormel en De Fruyt, 1993) and the Myers-Briggs Type Indicator (Myers, 1962). In addition, two existing tests for measuring entrepreneurship are discussed, the BSOK and the MBS. These tests take both personality characteristics as well as capabilities into account. The section concludes with a description of the Entrepreneur Scan.

**Big Five Factor Model**

The Big Five Factor Model represents five broad dimensions of personality, emerged from forty years of research. Since the eighties the Big Five Factor Model is considered a reliable indicator for a personality (Ciavarella et al., 2004). Every dimension can be viewed as a continuum and represents a collection of characteristics. The five dimensions that are identified are:

*Extraversion:* the direction of one’s energy, attention and orientation. Orientation directed inward is a characteristic of introversion and an orientation directed outward is a characteristic of extraversion.

*Emotional stability:* indicative for the ability to offer resistance to tension and stress. The range of this variable is from instability to stability.

*Agreeableness:* an individual’s orientation toward experiences, interests and goals of others. The range of this variable is from self-centred to altruistic.

*Openness (for experience):* indicative for the willingness to be open for (new) occurrences and experiences. The range of this variable is from reserved to open.

*Conscientiousness:* the quality of acting according to the dictates of one’s conscience. The range of this variable is from undisciplined to disciplined.

Some researchers have used the Big Five when studying entrepreneurship and success (Giavarella, 2004, Nandram et al., 2000). The findings were unsatisfactory (mostly because relationships were found to be insignificant).
Myers-Briggs Type Indicator (MBTI)

The MBTI (Myers, 1962) identifies preferences for perception and judgement based on bipolar or dichotomous dimensions: Extraversion (E) – Introversion (I); Sensing (S) – Intuition (N); Thinking (T) – Feeling (F) and Judging (J) – Perceiving (P). These dimensions are based on a study by Jung (1923). The MBTI answers four fundamental questions:

1. Where does someone find the energy?
   Is the energy found in human interaction and taking part in activities, or is it found in ideas and thoughts? Extraversion (E) – Introversion (I).

2. How does someone absorb information?
   Does someone prefer concentrating on something that is true and real, or on something that is possible or could be possible. Sensing (S) – Intuition (N).

3. How does someone decide?
   Are decisions based on facts and objective analyses, or are they based on feelings and the effect decisions might have on others? Thinking (T) – Feeling (F).

4. How does someone approach live?
   Does the person tend to like a planned and organized approach to life, or is a spontaneous and open approach preferred? Judging (J) – Perceiving (P).

By combining the four preferences, 16 unique personality types emerge, each representing a specific set of characteristics. Little research has used the MBTI among entrepreneurs (see Reynierse et al. 2001).

BSOK
For assessing starting entrepreneurs, the Institute for Small and Medium-sized Enterprises (IMK) developed an instrument for entrepreneurial capabilities (BSOK) mid-nineties. Based on a literature study (Altink et al., 1989) about personality traits and entrepreneurial capabilities the IMK ended up with twenty criteria the (starting) entrepreneur should have possessed more or less. These criteria are tested by consultants of the IMK and a Dutch bank. These consultants were asked to order the criteria by importance and to provide a value on a five-point scale. The lowest score equalled 0 and the highest score 4.6

The assessment of the (starting) entrepreneur is based on a face-to-face conversation with a consultant of the IMK. In a semi-structured interview all criteria of the BSOK are scored by the consultant on a five-point scale (0-4). If necessary, the respondent is asked for practical examples to enhance score assignment. The list of scores results in a total score, leading to a positive or negative assessment.7

MBS
In 1993 the ‘ManagementBeoordelingssystematiek’ (MBS) is developed by ‘Nationale Investeringsbank’, nowadays called NIB Capital NV, in cooperation with a psychological consultancy. The MBs makes use of the company life cycle. We limit ourselves to a brief description of the MBS and an overview of the identified characteristics and their relative importance for the phases of a company. Table 1 and 2 show the criteria for the pioneering phase and the mature phase.
Table 1: criteria in the pioneering phase

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<th>3</th>
<th>4</th>
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<tr>
<td>Motivation – drive</td>
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<td>Perseverence</td>
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<td>Need for achievement</td>
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<td>Knowledge</td>
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<td>Creativity</td>
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<td>Adaptability</td>
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*Less important (1) to Most important (5).*

Table 2: criteria in the mature phase

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<td>Leadership</td>
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<td>Organizing</td>
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<td>Motivating - stimulating</td>
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<td>Facts and money</td>
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<td>Perseverence</td>
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<td>Conceptual thinking</td>
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*Less important (1) to Most important (5).*

Entrepreneur Scan

Figure 2 already showed the characteristics and capabilities measured by the Entrepreneur Scan (E-Scan). Using seven-point Likert-scales, constructs are developed for each characteristic and capability. Constructs for need for Achievement, need for Autonomy, need for Power, Social orientation and Endurance are based on the Edwards Personal Preference Schedule (EPPS).8 The characteristic ‘Locus of control’ is based on Paulhus (1983).

For the development of capabilities scales, the standard items of Quinn (1988) and Lorrain and Dussault (1988) are consulted. However, to assess entrepreneurial capabilities more adequately, more standard items are necessary. Based on the characteristics mentioned in descriptions of entrepreneurial capabilities (Quinn, 1988; Altink et al. 1989; Van den Flier, 1990; Nyström, 1979; see also section 2) items are developed according to these capabilities. Since the items measuring Motivating and Leadership are highly correlated, they are combined in one capability: Leadership.9 The E-Scan is a validated and automated instrument, offering insight in characteristics and capabilities for entrepreneurship as objective as possible.10

Both the BSOK and the MBS are completed in a personal interview by consultants and/or employees of a bank. The E-Scan is an accessible and anonymous test on the Internet, offering entrepreneurs, or those who wish to start a business on their own, the possibility to gain insight in their entrepreneurial strengths and weaknesses.

4 Results of the E-Scan

Before analyzing the results of the E-Scan for (starting) entrepreneurs and successors, we discuss the norm profiles which are used for comparison.

Norm profiles

A standard measure (norm profile) for successful entrepreneurship could be the average score on entrepreneurial characteristics and capabilities of successful entrepreneurs in the Netherlands. However, when are entrepreneurs considered successful? Could success be defined as a certain increase of sales and employees? And can someone without the ambition
to grow be compared to this measure? No, that would lead to a wrong comparison. Some consider themselves successful when a balance between business and personal life is found, while others consider financial independence as successful. The norm profile of the E-Scan is based on assessments of business consultants. These consultants from different sectors assess (starting) entrepreneurs on a daily basis. We assume these consultants, having years of experience, are aware of the necessary entrepreneurial competences within their own sector. The sectors distinguished within the E-Scan are: retail, wholesale, industry, hotel and catering industry and services. In addition, we defined the ‘General’ sector. In this way even respondents without an idea in which sector they want to start a business can be compared to a norm profile. For each sector, between four and six consultants are asked to independently assess every characteristic and capability. The total number of consultants that participated equalled 48. The sector General was assessed by each of these consultants.\footnote{11}

\textit{Self-reflection by (starting) entrepreneurs}

The E-Scan is a tool for self-reflection for entrepreneurs and those who want to start a business of their own. The purpose of the test is to objectively provide insight in the entrepreneurial competences of the respondent. Based on the answers on an online survey a personalized report is automatically generated. This report specifically discusses the entrepreneurial competences of the respondent. Advices and practical tips in the personal report are based on the respondent’s scores. The individual scores are presented in a spider diagram and compared to the norm profile of the sector the respondent selected at the beginning of the questionnaire. If the respondent does not know in which sector he wants to start a business, the ‘General’ sector can be selected.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure4}
\caption{self-reflection by (starting) entrepreneurs.}
\end{figure}

The spider diagram in figure 4 displays how (starting) entrepreneurs have assessed their own competences.\footnote{12} In this diagram, the average profile of all people who filled in the
questionnaire voluntarily since 2002, when the E-Scan was first available on the internet, is shown. This average profile is compared to the norm profile assessed by the consultants. We found the largest difference between the average profile and the norm profile was for the need for Autonomy and Market awareness. For Endurance both profiles are very close together. With caution we conclude that Endurance is a well-developed entrepreneurial competence in the Netherlands, but the need for Autonomy is underdeveloped. In addition, entrepreneurs in the Netherlands could improve on Market awareness, effectiveness and need for achievement.

Based on the difference with the norm profile, an extensive commentary and practical tips about the entrepreneurial profile, the respondent will be able to assess his own entrepreneurial competences. The value of the assessment is mostly determined by the acceptance of the personal profile. If the respondent does not recognise himself in the (automatically) generated profile, tips about improvement of their entrepreneurial competences are not accepted. However, in reality most people who have used the E-Scan recognised themselves (to a large extent) in their personal report. In addition, most of them try to implement the advice and practical tips given in the report, though these are hard to put into practice. It is recommended to show the personal report to friends or family who know the respondent well. Discussing the report with others helps in nuancing and accepting the personal profile and the tips about improvement.

Next to verifying the entrepreneurial profile with family and friends, there is a new functionality added to the E-Scan that simplifies this feedback. The (potential) entrepreneur is able to invite two people to fill in the E-Scan for him, after he has finished the test himself. This is called the 360-degree feedback. So the entrepreneurial profile of the respondent is compared to the profiles based on the answers of the invited persons. This adds another objective dimension to the (potential) entrepreneur about his entrepreneurial competences.

Company takeovers and succession
Assessing entrepreneurship at company takeovers and succession another dimension plays a role. That is, the existing company has to be taken into account. More specifically, it depends on the company’s life cycle phase. It will be important for answering the question what type of entrepreneur is needed (for example a manager instead of a pioneer) and which characteristics are necessary for the entrepreneur to possess. In 80 percent of the successions that took place in the Netherlands between 6 and 15 years ago, the successor was a child of the departing entrepreneur. However, lately this trend is declining. The next five years sees some 100, 000 entrepreneurs in the Netherlands will reach retirement. This means that the country faces a large number of company takeovers. Since the successor is less likely to be a relative, he or she has to be found outside the company. Some companies have recognised this situation and make money out of bringing together supply and demand. One of these companies specifically aims at managers who want to become entrepreneurs. They have developed a program called Dutch Dream. For most of these managers starting a company on their own is not attractive, but succeeding a departing entrepreneur is an interesting option. The Dutch Dream program is appropriate for those managers who want intensive guidance. These managers get intensive guidance from a personal coach, who is specifically paying attention to the emotional aspect of a company takeover. The Dutch Dream makes use of the E-Scan, administered in the beginning of the program. The personal coach uses the entrepreneurial profile of the E-Scan to guide the successor. In 2004 sixty applicants participating in the Dutch Dream program completed the E-Scan. The average profile is shown in Figure 5.
The intensive guidance toward the company takeover stimulated them to become an entrepreneur. The greater part of the managers taking part in the program did not know precisely in which sector they wanted to become an entrepreneur. They joined the program, because they seriously wanted to take the step towards entrepreneurship. The average profile of the potential successors does not differentiate much from the norm profile. The largest deviation from the norm profile is found for Market awareness. An explanation is that most participants wished to be an entrepreneur, but did not know in which sector. This is something they needed to find out with help of their personal coach. In addition, the score on Autonomy is also lower than the norm profile. This can be explained by the need for coaching toward independent entrepreneurship.

5 Conclusions

The aim of the paper is to describe the Entrepreneur-Scan and assess entrepreneurship of (starting) entrepreneurs using the E-Scan. Based on the competence theory four components determining entrepreneurial competence are identified: motivation, characteristics, capabilities and knowledge. These components are constructed by relevant entrepreneurial aspects per component. In addition, the company life cycle is also taken into account (early phase, mature phase). From the four competence factors two are included in the E-Scan (characteristics and capabilities). Before results of the E-Scan are discussed, the E-Scan is compared to two other instruments that are developed to assess entrepreneurship as well (BSOK and MBS) and to two general personality tests (Big Five Factor Model and Myers-Briggs Type Indicator).

The standard measure of the E-Scan is a norm profile composed of assessments of 48 business consultants from different branches. A norm profile per branch is identified as well as a general norm profile. The self-assessment of 21, 945 (starting) entrepreneurs (everyone who completed the E-scan voluntarily since 2002) is compared to the general norm profile. From this comparison it is concluded that entrepreneurs in the Netherlands do not lack endurance.
However, Autonomy, Market awareness, Achievement and Self Belief (internal Locus of Control) need more attention. This also holds more or less for potential successors.
An interesting opportunity for further research is to relate characteristics and capabilities to entrepreneurial success (for example sales development in the last three years). Suppose we would find endurance to be a significant predictor for growth, advisors, education and government authorities could focus on this when stimulating entrepreneurship.

References


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Flier, van den J. (1990), *Verslag van een praktijktest van de BSOK*, Instituut Midden en Kleinbedrijf, Hoofddorp.


Footnotes:
1. However, there is no agreement in the literature about the possibility to identify a collection of personality traits/characteristics for successful entrepreneurs.
2. We refer to Winter et al. (1998) who relate motives and characteristics (traits) based on personality theory.
3. For clarification, a competence is something a person is very good at. Next to capabilities, motivation, characteristics and knowledge are needed to be competent.
4. Roberts et al. (2006) show that in the long term characteristics can change a little bit.
5. Obviously more capabilities related to good entrepreneurship can be mentioned (for example, hiring competent personnel, international orientation, and the ability to cooperate). Further research and experience with the Entrepreneur Scan will show if more capabilities need to be added.
6. These twenty criteria in order of importance are: Motivation and Endurance, Market awareness, need for Autonomy and Decisiveness, Realistic state of mind, Reliability, Flexibility, Initiative, Immunity to stress, Planning/Organising, Financial controlling, Problem analysis, Social orientation, Leadership (focused on persons and tasks), Communication (written and oral), Negotiation, Environment-oriented, Creativeness, Learning capacity.
7. Nowadays, the IMK uses structured interviews for the assessment of starters instead of the BSOK.
8. The founder for this is Murray, 1938. See Hmieleski and Corbett (2006) for the measurement of the concepts improvisation, personality, motivation, cognitive style and entrepreneurial intentions.
9. The resulting questionnaire of the Entrepreneur Scan can be found on www.ondernemerstest.nl.
10. For an extended validation of the E-Scan we refer to chapter 5 of Driessen, 2005. The following Cronbach Alpha’s are found: need for Achievement (0,70), need for Autonomy (0,74), need for Power (0,78), Affiliation (0,80), Effectiveness (0,78), Endurance (0,74), Market awareness (0,68), Creativeness (0,76) and Flexibility (0,74).
11. A correlation analysis of these assessments is performed. For the branch ‘General’ the correlation equals 0,91. For the other branches reliabilities are lower. This is caused by the lower number of consultants. These correlations varied from 0,59 to 0,85 with an average of 0,74.
12. Considering the capabilities only the capabilities relevant for the early phase are shown.
13. For an example of a personalized report we refer to appendix 2 in Driessen, 2005.
14. Since we do not have access to assessments of specialists concerning relevant characteristics and capabilities for successions, we have taken the average norm profile from Figure 4.