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Abstract

Most changes in firms take place after a decision has been made. Despite that small firms are no exception to this, previous research into decision-making processes have left this subject uncharted. There are many studies with a focus on the decision-making process by managers in large firms, but only a few have paid attention to entrepreneurs in small businesses. The current study empirically investigated and identifies different types of entrepreneurial decision-makers. Drawing on a database of 646 entrepreneurs, five types of decision-makers are distinguished: Dare Devils, Lone Rangers, Doubtful Minds, Informers' Friends and Busy Bees. Implications for future research are discussed.

Keywords: strategic decision-making, SMEs, taxonomy, decision-makers

1. Introduction

Small and medium sized enterprises (SMEs) play a key role in the modern market economy. The success of small firms is to a large extent dependent upon strategic decision-making practices (Robinson & Pearce, 1983). Strategic decisions made by small and medium sized business owners form the heart of entrepreneurship and can therefore be considered essential for economic development. Yet, little is known about the decision-making process of those who are in charge of small firms. Past research focused mostly on the 'procedural rationality' of decisions in large multinational firms (Brouthers et al., 1998). These processes are often complex, involve multiple actors and are frequently an outcome of politics (e.g. Eisenhardt & Zbaracki, 1992). However, there is a feeling among many researchers (e.g. Papadakis et al., 1998, Brouthers et al., 1998; Gilmore and Carson, 2000) that the decision-making processes of entrepreneurs in small businesses are different, which implies that many current models of strategic decision-making are not suitable for explaining decision-making in small firms. Busenitz and Barney (1997) assert that entrepreneurs are more susceptible to the use of decision-making biases and heuristics than managers in large organizations, which would imply a distinct decision-making process.

This paper explores how entrepreneurs make strategic decisions by developing a typology of entrepreneurial decision-making. Despite their valuable contributions, previous studies like the ones mentioned above implicitly assume that all entrepreneurs are closely alike. Although it has been recognized that there are different types of entrepreneurs (Wennekers & Thurik, 1999), no systematic research has been conducted to categorize different types of entrepreneurs and subsequently relate these types to variations in decision-making practices. Our main goal is to develop a taxonomy of different types of entrepreneurial decision-makers. This is important not only for scientists, but also for practitioners. For suppliers trying to sell new applications and policy makers that are designing policy interventions, for instance, it is important to understand how entrepreneurs make strategic decisions so they can carefully tune their actions to the decision-making process. Drawing on a dataset derived from 646 entrepreneurs of small businesses, we derive and validate a taxonomy of five distinct types of entrepreneurs with significant differences in their decision-making practices.

In the next section we describe the theoretical background of our study. Subsequently, the methodology is explained and the results are presented. The paper ends with a discussion and limitations of the study and provides directions for future research.

2. Theoretical background

Strategic decisions are crucial to the viability of firms and are defined as “intentional choices or programmed responses about issues that materially affect the survival prospects, well-being and nature of the organization” (Schoemaker, 1993:107). They guide the organization into the future and shape its course. For more than 40 years, scholars in various academic disciplines have recognized the importance of strategic decisions, resulting in a broad variety of literature. We do not intend to provide the reader with an extensive overview of this work, but rather refer to the seminal articles of Eisenhardt and Zbaracki (1992), Schoemaker (1993),

Schwenk (1995) and Hendry (2000) that present excellent overviews of the literature. Yet, we do sketch out some of the main features of the existing body of knowledge here.

In most studies, two perspectives of strategic decision-making dominate: the rationality/bounded rationality perspective and the political perspective. In the rational perspective it is argued that decision-making is a rational purposive process, in which actors know exactly what they want because they have carefully collected information, developed alternatives and selected the best alternative possible to fully maximize their utility (March & Simon, 1958; Allison, 1971). However, individuals have cognitive limitations and cannot oversee all consequences of their choices, meaning that “people intend to act rational, but do so only limitedly” (Simon, 1957: xxiv). In the rational model, strategic decisions are often taken by a single authoritarian individual (Schoemaker, 1993). In the political perspective it is argued that multiple actors with conflicting goals enter the decision arena. Individuals tend to form coalitions to have their interests taken care of (Eisenhardt & Zbaracki, 1992). Other, partly overlapping, perspectives that have been identified in the literature are the garbage can model (Eisenhardt & Zbaracki, 1992), the organizational and contextual view (Schoemaker, 1993). Hendry (2000) argues that these streams of research are ‘traditional’ perspectives in which actions (or changes) follow logically from decisions taken at some point earlier in time. He introduces two divergent perspectives that are posed as a critique to the traditional perspective: (1) the action perspective, in which decisions are used to motivate and mobilize resources for actions that have already been chosen (Hendry, 2000: 959) and (2) the interpretative perspective, where decisions are located, articulated and ratified, “bringing it forward to the present, and claiming it as the decision that has just been made” (Hendry, 2000: 961).

Without disregard to the valuable contribution each of these perspectives has made, it appears that many of the studies presented in these overviews concentrate on decision-making practices in large firms. This may be due to the fact that the most dominant perspectives, the

rational and political perspective, may be less valid in small firms. In these firms, there is less room for politics since the entrepreneur makes the decisions individually and there are few coalitions to be built. Small firms also tend to be less rational in their decision-making processes (Rice & Hamilton, 1979; Brouthers et al., 1998; Byers & Slack, 2001). We feel that the context for strategic decision-making in small firms clearly differs from the context in large firms for at least three reasons. Firstly, entrepreneurs face a more hostile or uncertain environment in their decision-making activities (Hambrick & Crozier, 1985; Covin & Slevin, 1989). Unlike managers in large firms, they do not have access to extensive information sources. Managers of large firms tend to be backed up by staff members to continuously scan the environment and gather information (Busenitz & Barney, 1997). Secondly, the entrepreneurial environment is dynamic and complex (Covin & Slevin, 1991). Although this may also apply to large firms, the effects of dynamism and complexity seem to be stronger for smaller firms (Busenitz & Barney, 1997). Large firms often develop decision-making routines that simplify the process of decision-making for managers. Entrepreneurs do not develop such routines and often act on the basis of opportunism (Gartner et al., 1992). They tend to make decisions on the basis of biases and heuristics (Busenitz & Barney, 1997). Furthermore, in a more dynamic and complex environment it is believed that the comprehensiveness (or rationality) of strategic decision processes tends to be lower (Fredrickson, 1984; Fredrickson & Mitchell, 1984) and cognitive issues become more important (Forbes, 1999). Thirdly, entrepreneurs are often believed to have specific characteristics that influence the decision-making process (Brouthers et al., 1998; Mador, 2000) and are distinct from other people (Low & MacMillan, 1988). Entrepreneurs are “decisive, impatient, action oriented individuals” (Smith et al., 1988: 224) that have been called ‘rugged individualists’ (McGrath et al., 1992). Empirical studies have demonstrated, for instance, that entrepreneurs are less comprehensive in their decision-making activities than managers of larger firms (Smith et al., 1988). A large empirical study by McGrath et al. (1992) also provided evidence for some of the unique

cultural features of entrepreneurs compared with career professionals. Their results showed that entrepreneurs did indeed favour individualism, did not mind taking risks, were not egalitarians, and were more motivated to make money. Similarly, Busenitz and Barney (1997) also claim that entrepreneurs and managers clearly differ from each other. One of the key differences relates to the way entrepreneurs perceive and think about risk. They tend to generalize easier from limited experience and are often overconfident that they will succeed.

Although the studies that have explicitly separated entrepreneurs from managers of large firms have been valuable to our understanding of some of the key characteristics of entrepreneurs, we feel that the idea that entrepreneurs “share a predictable set of values” which distinguishes them from other people (McGrath et al., 1992), is somewhat unsatisfying. It implies that all entrepreneurs are alike. While this may not be the intention of these studies, we feel that it is important to identify distinct types of entrepreneurial decision-makers. Given the variety in small firms we think that there may be multiple types of entrepreneurial decision-makers in these firms. In a case study of strategic behaviour among 20 small and medium-sized exporting businesses in Canada, Julien et al. (1997) identified three distinct types of small business and concluded that small business indeed do not behave like a homogenous group. In our study we include several variables on the basis of which we try to categorize small firms on the basis of their decision-making behaviour. These variables are described and operationalized in the next section.

3. Methodology

Sample

For the current study we used survey data that have been collected by the Dutch research institute EIM Business & Policy Research. Commissioned by the Dutch Ministry of Economic Affairs, this survey aimed to collect descriptive statistics and explore how

decisions in small firms are made. It focused on those entrepreneurs in small enterprises who had taken at least one important decision in the past three years. The decision could be related to any innovation or project that was discontinuous (out of daily routine) and that was perceived to be important. Various questions were asked on the characteristics of the entrepreneur and the selected decision.

The data were collected by means of computer-assisted telephone interviewing (CATI) among 1,200 entrepreneurs within the Netherlands. The sample was limited towards entrepreneurs in small firms, that is, firm with no more than 100 employees. Respondents were sampled across eight industries: manufacturing, construction, trade, hotels and catering, transport, financial services, business services and personal services (like beauty parlours, fitness centres and hairdressers). The firms were equally distributed across the eight industries. The size class of a firm was measured by full-time equivalents of employees. The distribution of the sample across size classes was as follows: 0 to 4 employees 25,6%, 5 to 9 employees 15,0%, 10 to 19 employees 28,9%, 20 to 49 employees 12,8% and 50 to 99 employees 17,8%. About 60% of the interviewed respondents had made an important decision in the past three years. The median of the investments related to the decision was 100,000 euros. Because outlying and incomplete cases were skipped from the analysis, we could eventually use 646 respondents as a basis for our classification. All respondents were responsible for the management of the day-to-day business and the strategic decisions of the firm. The median age of respondents was 44 years (range: 21-76). Almost 88% of respondents were men and 13% had a university degree.

We remark that our data are not completely representative of the small business population in the Netherlands. For example, EIM (2004) shows that 5,2% of the small firms belong to the hotel and catering industry whereas 12,5% of the small firms in the sample used for this paper represent this industry. This means that small firms in the hotels and catering industry are over-represented. One should notice when reading this paper that the descriptive

statistics presented later on provide no reliable estimation of population figures. This implies that in practice the frequencies of our clusters may be somewhat different. However, for the goal of our study this is not considered problematic.

Measures

The survey asked entrepreneurs various questions on their most important decision in the past three years. Questions were constructed based on two qualitative pilot studies and relevant literature (see below). The pilot studies were performed in 2002 and 2003 and consisted of twenty in-depth interviews with entrepreneurs. The first pilot was of an exploratory nature. Focusing on recent decisions of strategic importance, we tried to recover what the process in decision-making in small firms looked like. The interview script was inspired by Mintzberg et al. (1976); it contained open-ended questions only (How did the idea come along? How did you experience complexity? How many alternatives did you consider?). The second pilot was of a more confirmatory nature. We wanted to expand and hypothesize our findings from the first pilot study. Again, in-depth interviews offered us insight in the decision-making process and some of its key characteristics. Parallel to our pilot studies we conducted an extensive literature review to find out if the key issues mentioned by the entrepreneurs could also be found in the relevant literature.

Most theories concerning the decision-making process (Mintzberg et al., 1976; Papadakis et al., 1998; Mador, 2000) gravitate around models of decision-making that include the entrepreneur, the environment and characteristics of the strategic decision itself. The in-depth interviews confirmed these were key aspects. As a basis for the current research, all researchers of the current paper analysed the interviews scripts and compared these with the literature to arrive at a selection of nine key variables that served as a basis for our taxonomy. In table 1 we present the measures that were included as a basis for the classification of

decision-making entrepreneurs, supplemented with the variables we used for validation purposes.

---Insert table 1 about here---

The first variable measures the frequency of decision-making. Respondents indicated how many strategic decisions they have taken in the last three years. In both pilot studies this was a significant characteristic; some entrepreneurs made strategic decisions very frequently, whereas others only took decisions when they really had to. The frequency of decision-making can actually be thought of as an indicator of expertise in decision-making and was therefore included in our analysis.

As a measure of dependence, respondents indicated if they felt influenced by other persons (e.g., employees, family, business contacts) when making the decision. In this way we checked to what extent entrepreneurs depend on others. According to McGrath et al. (1992) entrepreneurs are rugged individualists. Their research suggests that entrepreneurs favour independent action and separation from groups and clans. Yet, our pilot studies revealed that entrepreneurs can actually quite differ on their degree of dependence. Sexton and Bouwman (1985) state that entrepreneurs differ in their need for autonomy and therefore can be expected to vary in their support from others, or to conform to their norms.

The third variable to be included was confidence. Here we used a question that asked if the entrepreneur was convinced of the decision or still had doubts. We already discussed that small business entrepreneurs generalize easier from limited experiences and are often overconfident that they will succeed. Entrepreneurs have higher levels of self-confidence compared to non-entrepreneurs (Levander & Raccuia, 2001) and tend to perceive their decisions as infallible (Hambrick & Crozier, 1985). We expect, however, that entrepreneurs may vary in their confidence about a decision.

The fourth variable related to the innovativeness of the entrepreneur. The telephone survey focused on a single important decision that had been taken in the past. However, the survey also inquired for any new plans that would ask for a strategic decision in the near future. We regarded this question as a measure of innovativeness, which could be another distinguishing variable. Entrepreneurs are generally found to be more innovative than career professionals (McGrath et al., 1992) but among entrepreneurs one can easily find persons with different levels of innovativeness (Shane, 2003).

The fifth variable relates to information search. Respondents indicated if they had actively searched for information to support their decision-making process. Information search is considered to be among the first critical steps in the entrepreneurial decision-making process (Christensen et. al., 1994, Shane & Venkatamaran, 2000). Entrepreneurs with limited experience may use simplified decision models to guide their search, while the opposite may be the case with experienced entrepreneurs (Gaglio, 1997). Cooper et al. (1995) found that novice entrepreneurs sought more information than entrepreneurs with more entrepreneurial experience, but they searched less in unfamiliar surroundings. Over all entrepreneurs can differ in their behaviour of acquiring information and tapping from contacts that provide them with a flow of information relating to opportunities.

Sixth, some of the interviewees had indicated they had considered various alternatives before deciding what to do. Strategic decision-makers in small firms do not have access to extensive information such as managers of large firms, so they may very well differ in their consideration of alternatives. Moreover, Busenitz and Barney (1997) state that entrepreneurs do not have all the time in the world to consider all possibilities. Decision-makers generally are not looking for the best or optimal, but for a satisfying solution of a decision task (Simon, 1986).

The next variable we included inquired if the entrepreneur perceived the decision-making process as risky. We regard this question as an indicator of an individual's risk-taking

propensity. Some entrepreneurs are risk-averse while others do not mind taking risks (Jackson et al., 1972). Since decisions must be made within a constrained environment and as it is almost impossible to assess all information, a major goal of decision analysis could be to reduce uncertainty (Harris, 1998).

Another variable we used to build the taxonomy is the presence of problems or bottlenecks that the entrepreneur encountered during the decision-making process. Our pilot studies revealed that on their way to a final decision, entrepreneurs face different problems. But more important, there were strong differences in the problems or bottlenecks that they face (or perceive), like financing, licenses or contracts. We believe that different types of entrepreneurs will be confronted with different types of problems.

Finally, it is possible that the decision-making process is influenced by and varies with the economic situation. A simple self-rated measure about this phenomenon was present in our database. Entrepreneurs are faced with a rapidly changing and fast-paced competitive environment, which places demands on organisations to actively interpret opportunities and threats when making strategic decisions (Dess et al., 1997). At the same time today's rapidly changing markets offer little assurance that a decision will not soon prove inappropriate or obsolete (Dickson, 1992). The economic situation is possibly an antecedent of why the entrepreneur has to make a decision.

To validate any taxonomy, one should analyse variables which were not used to construct the classification but likely to differ across its classes (Hair et al., 1995). Our dataset contained four variables that were feasible for external validation. The survey recorded the investments to realize the decision in six answer categories (ranging from < 10,000 euro up till and including \geq 2,500,000 euro). Drawing on an open-ended question it also distinguished between four types of decisions, namely related to cooperation or take-over, organisational change (e.g., recruit new employees, reorganization, change of management), development of new products or concepts, or other types of investments (e.g., a new office

building, computer machinery). The survey also contained some dichotomous questions on the innovation features of the entrepreneur's firm. New-to-the-industry innovation was a dichotomous question on the introduction of products or processes that were new to the industry. This can be regarded as an indicator of radical innovation (OECD, 2005). Co-operation status asked respondents if their firm co-operated with other parties to develop innovations at the time of the survey. We expected these variables to differ significantly across the groups in our taxonomy, e.g., expenses to realise the decision are expected to be higher in groups of entrepreneurs characterised by more frequent decision-making, consultation of other persons, high confidence, innovativeness, information search, consideration of alternatives, perceived risk, presence of problems and bottlenecks, and a demanding economic situation.

4. Results

To derive a taxonomy of entrepreneurial decision-makers from our data we performed cluster analysis. Cluster analysis is the generic name for a wide variety of procedures that can be used to create a classification. Its primary goal is to partition respondents based on a set of specified characteristics. As cluster analysis is sensitive to outliers, we first examined our data for outlying observations by calculating standardized scores for our measures. Values exceeding +3.0 and -3.0 were considered as potential outliers (Hair et al., 1995). After removing them, and taking missing values into consideration, we had 646 remaining observations to build the taxonomy.

Descriptive statistics

Before we discuss the results of our cluster analyses we present the mean and/or frequencies of our variables (table 2).

---Insert table 2 about here---

Although some pairs of variables were significantly related, correlations between variables revealed no major overlap. Pearson correlations never exceed an absolute value of 0.25, indicating that the measures used to develop the typology represent truly different aspects of decision-making. On average the entrepreneurs in the sample took 2.8 strategic decisions every three years. This implies that on average they take a strategic decision almost once a year. About three quarters of the entrepreneurs indicated they made their decision after consulting other persons. Nearly 50% of our entrepreneurs can be regarded as innovative, i.e. at the time of the survey they already had new ideas that could induce a strategic decision, indicating the respondent was a 'serial innovator'. Searching for information appeared rather important to most entrepreneurs, as 66 percent pro-actively searched for information. As for our measure of confidence, it appeared that only a modest variance was found across the sample. As 93% of the respondents indicated a high degree of confidence, we expected that this variable could not play a significant role in our classification exercise. Indeed, an exploratory cluster analyses with the inclusion of confidence revealed that the group of respondents who confessed to have doubts would dominate any solution, therefore, we decided to skip this variable from our further analyses.

Cluster analysis

We first transformed all variables into standardized scores. As most of our variables are dichotomous, the similarity between cases may be sensitive to differences in measurement scales. Next, we performed an initial hierarchical cluster analysis based on Ward's method with squared Euclidian distances. Milligan and Cooper (1987) conclude that Ward's method generally provides excellent cluster recovery. As this method does not directly provide an acceptable or unacceptable solution, we used the dendogram and the scree criterion to select a

range of cluster solutions that might be feasible (cf. Hair et al., 1995). This suggested between three and six clusters. We subsequently used the initial centroid estimates from Ward's method to perform various K-means cluster analyses (a non-hierarchical clustering method). As we apply it here k-means clustering improves the stability of a pre-specified number of clusters by assigning cases to clusters in an iterative process. This generally provides more stable and better cluster solutions (Milligan & Sokol, 1980) and allows for a test of stability of various competing cluster solutions by exploring coefficient Kappa, the chance-corrected coefficient of agreement (Hair et al., 1995). Values of Kappa equalled 0.783, 0.784, 0.878 and 0.806 for our three-, four-, five- and six-cluster solutions, respectively. Thus, our analyses suggested a taxonomy with five types of decision-makers as being most stable.

A table of summary scores across the five types assisted us in interpreting the taxonomy. We labelled the five types of entrepreneurial decision-makers as Dare Devils, Lone Rangers, Doubtful Minds, Informers' friends and Busy Bees (table 3).

---Insert table 3 about here---

The first group of entrepreneurs distinguishes itself by a high amount of perceived risk in the decision. They seem to be experienced decision-makers, as the number of strategic decisions they have made in the past three years exceeds the average, just like their innovativeness, information search and consideration of alternatives. These decision-makers also have a high score on the presence of problems or bottlenecks. Because the most striking finding is the large amount of risk that the entrepreneur perceives, we labelled this cluster as Dare Devils.

The second group makes strategic decisions independent of others. These entrepreneurs seem to dislike consulting other persons to give feedback or influence the decision-making process. They also report few problems and bottlenecks. Furthermore, these entrepreneurs score relatively on variables like information search and consideration of

alternatives. As this group apparently makes decisions on their own, we marked them as Lone Rangers.

When we take a close look at the third group we see that the economic situation is an important factor. Besides, the entrepreneurs in this group perceive many problems and tend to consider alternatives while the average number of strategic decisions in the past three years is below average. It looks like these entrepreneurs have low affinity with making strategic decisions; they prefer to seek for alternatives rather than making a decision. For this reason we called the entrepreneurs in this group Doubtful Minds.

Entrepreneurs in the fourth group are also modest in their frequency of decision-making. While they are all influenced by other persons, the consideration of alternatives is below the average and only few of them perceive risk. Apparently the help of other persons is enough to make a definitive decision and to reduce perceived risks. Hence, these entrepreneurs are called Informers' Friends.

The fifth group entails some very experienced decision-makers. On average they make several strategic decisions in a single year. At the time of the survey, many of these respondents could mention one or several ideas that would probably ask for another strategic decision in the near future. Compared to the other groups, they seem to be very busy with decision-making and do not hesitate to consult others that eventually influence their decisions. We labelled them as Busy Bees.

Internal validity

We acknowledge there are dozens of clustering methods available in the literature, making it well possible that clustering methods provide different results when applied to the same data. Therefore we have thoroughly investigated the validity of the five types. We first followed Hair et al.'s (1995) recommendations to assess internal validity. As a minimum requirement, the groups of any cluster solution should differ significantly on the variables used to derive

the taxonomy. Oneway analyses of variance revealed that all variables met this criterion. As table 3 shows, F-values always exceed the value of 13.7 ($p < 0.001$).

Another test of internal validity makes use of discriminant analysis, demanding a high percentage of correctly classified cases. Indeed, the results of this analysis showed that 95% of original grouped cases were correctly classified. To further assess robustness we applied the TwoStep clustering method, which is part of SPSS 11.5 and later. SPSS TwoStep is quite different from the traditional and widely recognised hierarchical and k-means clustering methods. Its advantages include the use of log-likelihood distance measures (enabling to model both dichotomous and continuous variables) and an automatic determination of the number of clusters based on changes in a distance measure (Chiu et al., 2001; SPSS, 2004). Using these new features SPSS TwoStep clustering confirmed that a taxonomy with five groups would be most feasible, while the classification of cases was actually very similar to the groups in table 3. Although SPSS TwoStep can be criticised and is still in its development phase – e.g., Bachter et al. (2004) recently showed that it provides poor cluster recovery in case of variables with different measurement levels - we regard this finding as additional evidence of internal validity. Results of these analyses are not reported here, but can be obtained from the authors upon request.

External validity

To assess external validity one should check if the types of decision-makers differ on variables that have not been used in the cluster analysis (Hair et al., 1995). As discussed above, four variables were selected for this purpose, including expenses to realise the decision, the type of decision, and two innovation indicators at the firm level (new-to-the-industry innovations and co-operation status). A comparison across the five types of decision-makers is presented in table 4.

---Insert table 4 about here---

All variables had significant differences across the five groups: χ^2 -tests were significant on at least the 1% level (table 4). The types of entrepreneurial decision-makers significantly differ in the expenses that came along with the decision. Dare Devils and Busy Bees are the biggest spenders: more than 60% of these entrepreneurs have invested at least 100,000 euro. This may contribute to the fact that both types of entrepreneurs perceive risks relatively often. Doubtful Minds are most reserved with spending money. This fits well with our earlier conclusion that these entrepreneurs have a low affinity with strategic decisions.

The types of entrepreneurial decision-makers also differ when it comes to the type of decision. In the total sample decision-making is most often related to organisational change, followed by 'other investments'. For organisational change we might expect a high degree of dependence, since effective organisational change demands consulting and participation of other persons (e.g., employees, middle managers). In this context we are not surprised to find Lone Rangers finish last on decisions related to organisational change. Another example in support of external validity is the relatively high frequency of Dare Devils on decisions related to co-operations or take-overs. In the process of organisation development these are discontinuous and risky events (Jones, 2004) and therefore fit the profile of Dare Devils.

Dare Devils and Busy Bees both represent entrepreneurs in firms that relatively often introduce radical innovations. The share of respondents in these two categories that recently introduced products and/or processes new to the industry is well above average (38% versus an average of 27%). On the other hand, Informers' Friends tend not to have such innovations at their disposal. This is well in line with their perceptions of risk, problems and bottlenecks we found in table 3. For the other innovation indicator of co-operation status, Busy Bees and Dare Devils appear to represent the most cooperative group of firms, while

Lone Rangers seem most reserved when it comes to cooperation. In conclusion, the significant differences between the five types support the validity of our taxonomy.

5. Discussion

As far as we know this study is the first to present an empirically derived taxonomy of entrepreneurial decision-makers in small firms. Drawing on survey data of 646 entrepreneurs we developed and validated a taxonomy of five types of decision-makers: Dare Devils, Lone Rangers, Doubtful Minds, Informers' Friends and Busy Bees.

In the past much effort has been done to compare decision-making practices of managers in large firms with entrepreneurs in small firms. As many of these studies implicitly assume that entrepreneurial decision-makers share similar characteristics, our taxonomy suggests this previous work needs to be interpreted with great care: the assumption that entrepreneurial decision-making in small firms is a one-way phenomenon seems to provide a too narrow view of how decisions are made in practice. Our survey revealed that some of the most basic features of decision-makers in small firms substantially differ, including the frequency of decision-making, innovativeness, perceptions of bottlenecks, dependence of other persons, and influence of the economic situation. On the basis of our data we were able to clearly distinguish between five distinct types of entrepreneurial decision-makers. These results are in line with Julien et al. (1997) and Wennekers and Thurik (1999) who proposed there are distinct types of small businesses and entrepreneurs.

As mentioned in the introduction section, a taxonomy of entrepreneurial decision-makers is important for anyone who wants to elicit change within a firm or group of firms. Various groups of stakeholders can be identified here. First, suppliers of any product, service or technology could take notice and try to identify how entrepreneurs make decisions. On an attempt to sell a product to a Lone Ranger for example, one would probably need a different approach in comparison with a Dare Devil. Second, one could think of policy makers who

strive to stimulate small firms towards any kind of behavior (e.g., innovation, making investments, recruiting underprivileged employees). Third, even employees who want to ‘sell’ their ideas to their boss might benefit from knowing what type of decision-maker is in charge their daily work. Each type of decision-maker has particular characteristics one could account for when trying to exert influence. For example, Dare Devils are most willing to take risks and try new things. Here, new product offerings or policy interventions, which deviate from what is common, would be more fruitful than in any other cluster of decision-makers. Lone Rangers seem less willing to having others (family, friends, etc.) influence a decision. In comparison they avoid taking risks but are not very happy to consider alternative options either. Here, any offer would probably have to be very much in line with entrepreneurs’ preferences, feelings and opinions. Doubtful Minds are most eccentric in their consideration of alternative options when making decisions. Combined with their low propensity to take risks, this type of entrepreneur might be sensitive to rational arguments and new alternatives in case of doubt. For Informers’ Friends and Busy Bees, one could easily think of similar characteristics that are important in trying to influence their decision-making.

Of course this study had some limitations that should be the subject of future research. We first stress that most variables we disposed of to develop the taxonomy were dichotomous questions. This implies a major drawback of our analyses, because the widely recognized methods of hierarchical and k-means clustering give the best results if applied to continuous variables (Milligan et al., 1987). Recently proposed alternatives like SPSS TwoStep clustering are still in their development stage. Their potential to recover cluster structures is still unexplored, so these methods do not find much use in practice yet (Bachter et al., 2004). Although dichotomous questions are not undecidedly disadvantageous (they generally result in better response rates and decrease common-method variance (Churchill, 1999)) and we extensively investigated validity, we propose that future taxonomic exercises should try to use

more sophisticated measures to see if a similar typology of entrepreneurial decision-makers can be reproduced.

Another question that rises is how one can identify the types of decision-makers in practice. Although we did find some variables, which are feasible for an assessment (e.g., frequency of decisions, expenses, innovation indicators at the level of firms), future research should attempt to further identify the characteristics of various types of decision-makers and provide rules of thumbs for their identification.

Finally, we propose that our findings provide an opportunity for a detailed exploration of differences, antecedents and consequences of various styles of entrepreneurial decision-making. One can easily think of other dimensions that would be interesting to explore. For the impact of personality characteristics on decision-making (e.g., locus of control, optimism and self-efficacy) one could easily develop and test a plethora of theory-relevant hypotheses. The taxonomy also provides a basis for more detailed research into the circumstances and characteristics that precede decision-making. For example, we should try to find more details on the types of environments that influence the decision of the entrepreneur. Perceived influence of the 'economic situation' could be related to a wide range of factors, including market turbulence, technological development, scientific progress, institutional change or new legislation. Future research should also reveal the consequences for various types of decision-makers in the long run, as decision-making entrepreneurs may benefit differently in terms of growth, profit and satisfaction.

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Table 1 Variables used to construct and validate the typology of entrepreneurial decision-making

<i>Construction variables:</i>		
(1)	Frequency of decision-making	The number of decisions that the entrepreneur had taken in the last three years
(2)	Dependence	The entrepreneur was influenced by other persons (like employees, family or business contacts) in his/her decision-making process; coded 1, otherwise, coded 0 (independence has the value 0)
(3)	Confidence	The entrepreneur was (very) convinced about his/her decision; coded 1, otherwise, coded 0
(4)	Innovativeness	At the time of the survey, the entrepreneur had new ideas or plans that would possibly lead to a new strategic decision; coded 1, otherwise, coded 0
(5)	Information search	The entrepreneur pro-actively searched for information to support the decision-making process; coded 1, otherwise, coded 0
(6)	Consideration of alternatives	The entrepreneur considered other possibilities or alternatives; coded 1, otherwise, coded 0
(7)	Perceived risk	The entrepreneur perceived risks in the decision-making process; coded 1, otherwise, coded 0
(8)	Problems/bottlenecks	The entrepreneur encountered problems or bottlenecks during his decision-making process; coded 1, otherwise, coded 0
(9)	Economic situation	The entrepreneur felt the economic situation influenced his/her decision; coded 1, otherwise, coded 0
<i>Validation variables:</i>		
(10)	Expenses	Expenses involved with the realisation of the decision; coded into six classes, 1 (< 10,000 euro), 2 (10,000 -< 25,000 euro), 3 (25,000 -< 100,000 euro), 4 (100,000 -< 500,000 euro), 5 (500,000 -< 2,500,000 euro), and 6 (>= 2,500,000 euro)
(11)	Type of decision	The nature of the decision that was made; open-ended question coded 1 (co-operation or take-over), 2 (organisational change), 3 (development of new products or concepts), or 4 (other type of investment)
(12)	Realisation of new-to-the-industry innovations	In the past three years, the entrepreneur's firm had new product or process introductions that were new to the industry; coded 1, otherwise, coded 0
(13)	Co-operation status	At the time of the survey, the entrepreneur's firm cooperated with other parties (e.g., other firms, research institutes) to developed innovations; coded 1, otherwise, coded 0

Table 2 Descriptive statistics (n=646)

Variable	Mean/frequency
(1) Frequency of decision-making (no. of decisions in past three years)	2.8
(2) Dependence	0.77
(3) Confidence	0.93
(4) Innovativeness	0.47
(5) Information search	0.66
(6) Consideration of alternatives	0.50
(7) Perceived risk	0.35
(8) Problems/bottlenecks	0.64
(9) Economic situation	0.44
(10) Expenses	
- < 10.000 euro	19%
- 10.000 to 25.000 euro	7%
- 25.000 to 100.000 euro	22%
- 100.000 to 500.000 euro	28%
- 500.000 to 2.5 million euro	19%
- > 2.5 million euro	5%
(11) Type of decision	
- Cooperation or take-over	15%
- Organisational change	46%
- Development of new products or concepts	14%
- Other type of investment	25%
(12) New-to-the-industry innovations	0.27
(13) Cooperation status	0.51

Table 3 Comparison of the five types of entrepreneurial decision-makers in small firms

	I: Dare Devils (n=139)	II: Lone Rangers (n=134)	III: Doubtful minds (n=126)	IV: Informers' friends (n=210)	V: Busy Bees (n=37)	Total sample (n=646)	F-value
(1) Frequency of decision-making (no. of decisions in past three years)	3.1	2.6	2.2	2.4	5.9	2.8	263.5**
(2) Dependence	97%	0%	96%	100%	100%	77%	1,124.8**
(4) Innovativeness	67%	48%	23%	47%	60%	47%	14.5**
(5) Information search	77%	49%	86%	60%	60%	66%	13.7**
(6) Consideration of alternatives	66%	34%	89%	26%	65%	50%	51.3**
(7) Perceived risk	99%	22%	24%	5%	46%	35%	190.7**
(8) Problems/bottlenecks	88%	46%	80%	46%	81%	64%	29.8**
(9) Economic situation	46%	32%	93%	21%	41%	44%	60.8**

** p < 0.001, * p < 0.01, ^ p < 0.05.

Table 4 Comparison of the five types of decision-makers on validation variables

Variables	I: Dare Devils (n=139)	II: Lone Rangers (n=134)	III: Doubtful minds (n=126)	IV: Informers' friends (n=210)	V: Busy Bees (n=37)	Total sample (n=646)	χ^2 -value
(10) Expenses							43.4*
- < 10.000 euro	12%	20%	25%	21%	12%	19%	
- 10.000 to 25.000 euro	3%	11%	8%	6%	6%	7%	
- 25.000 to 100.000 euro	17%	23%	24%	26%	9%	22%	
- 100.000 to 500.000 euro	33%	31%	25%	24%	27%	28%	
- 500.000 to 2.5 million euro	25%	11%	15%	20%	34%	19%	
- > 2.5 million euro	10%	4%	3%	3%	12%	5%	
(11) Type of decision							42.3**
- Cooperation or take-over	22%	18%	10%	13%	11%	15%	
- Organisational change	53%	34%	59%	42%	43%	46%	
- Development of new products or concepts	12%	22%	11%	11%	20%	14%	
- Other type of investment	13%	26%	20%	34%	26%	25%	
(12) New-to-the-industry innovations	38%	24%	30%	18%	38%	27%	21.1**
(13) Cooperation status	65%	31%	56%	48%	65%	51%	36.9**

** p < 0.001, * p < 0.01, ^ p < 0.05.