

'Gimme Shelter'

A Discrete Choice Experiment on how entrepreneurs choose an incubator

Master Thesis

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*Oh, a storm is threatening
My very life today
If I don't get some shelter
Oh yeah, I'm gonna fade away*

~

Rolling Stones – Gimme Shelter (1969)

Abstract

Technology-based start-ups often experience substantial resource constraints due to the so-called 'liability of newness'. One increasingly popular way to overcome these resource constraints is through the use of incubators. While choosing a suitable incubator is of major importance for the development of a start-up, little is known about the choice process of entrepreneurs for a particular incubator and the heterogeneity amongst their preferences. I address this gap by using a Discrete Choice Experiment (DCE) to study the influence of resources provided by an incubator in the choice of entrepreneurs for a particular incubator. A DCE allows to test for heterogeneity amongst preferences of entrepreneurs by identifying latent classes. These latent classes are grouped on the basis of similar choice behaviors across entrepreneurs. A total of 935 entrepreneurs are surveyed from across Europe and North America. The results demonstrate that heterogeneity of entrepreneurs' preferences indeed exists and that different latent classes of entrepreneurs can be identified. The three identified latent classes base their choice predominantly on 1) the reputation of an incubator, 2) the type of incubator and 3) financial capital. Notably, human capital is relatively unimportant in the choice, whereas this is often emphasized by incubators to attract entrepreneurs. Future studies, policies and incubator initiatives should take heterogeneity into account in order to improve the alignment with the needs of entrepreneurs. Better alignment with these needs enables tailoring the services to the specific needs, which can benefit the performance of incubators, start-ups and policy measures.

Acknowledgements

My special thanks go out to my supervisors Frank van Rijnsoever and Marijn van Weele for taking the time to provide me with extensive feedback in a very flexible manner. I also want to thank Climate KIC for making my research in Berlin possible and the TU Berlin for hosting me on location. Last, I would like to thank Kevin Broecks for his insights in Latent Gold, Fenna Cerutti for the countless brainstorm sessions and Matthee, Oskar and Anne for their critical remarks.

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1. Introduction

Technology-based entrepreneurship is regarded as being important for economic growth, job creation and innovation in international policies (Aerts et al., 2007; European Commission, 2004; Schumpeter, 1947). However, technology-based start-ups often experience substantial resource constraints due to the so-called 'liability of newness' (Freeman et al., 1983; Stinchcombe, 1964). While technological knowledge is usually available, business expertise and complementary resources required for firm success, such as distribution channels, are often insufficiently developed in start-ups (Chan & Lau, 2005; Vohora et al., 2004). Furthermore, early-stage entrepreneurs often face difficulties in attracting resources. They lack credibility and assessing the business value of start-ups is difficult due to high uncertainty and complexity around new technologies (Bruneel et al., 2012; Bruton et al., 2010). One increasingly popular way to overcome these resource constraints of entrepreneurs is through the use of incubators (Bruneel et al., 2012; Hackett & Dilts, 2004). Chan & Lau (2005) describe incubators as organizations that create a supportive environment that is conducive to the "hatching" and development of new firms by offering tangible and intangible resources. The first incubator arose in 1959 in New York, after which the concept became widespread during the 1980s, primarily as provider of office space (Barrow, 2001; Hackett & Dilts, 2004). The value proposition evolved quickly during the following decades beyond infrastructural services towards more intangible support services, as skills training and giving access to networks, to accelerate new firms' learning processes (Lalkaka & Abetti, 1999; Hansen et al., 2000). NBIA (2014) estimates that there are currently around 7000 incubators worldwide, varying in governance structure and resources provided to start-ups.

In conjunction with the rapid growth in the number of incubators, the diversity amongst incubators increased as well (Bøllingtoft & Ulhøi, 2005; Colombo & Delmastro, 2002). Several studies focused on explaining the incubator diversity (Bergek & Norrman, 2008; Grimaldi & Grandi, 2005; Hackett & Dilts, 2004). Often-mentioned factors inducing this diversity are the type of incubator (Barbero et al., 2014; Bhabra-Remedio & Cornelius, 2003), different industry scope (Schwartz & Hornych, 2010; Clarysse et al., 2005) and dissimilar selection criteria for new start-ups (Aerts et al., 2007; Roberts & Malone, 1996). These structural attributes lead to variation in resources provided by incubators (Bergek & Norrman, 2008; Hackett & Dilts, 2004). While most modern incubators offer to some extent similar resources like office space, shared administrative services, professional business advice and access to networks, variation exists in how these resources are provided and their quality (Bergek & Norrman, 2008; Vanderstraeten & Matthyssens, 2012).

The differences between incubators imply that the initial choice of an entrepreneur for a particular incubator determines which resources can be accessed during the incubation phase. The choice for a suitable incubator is of critical importance, as the alignment of the incubator's provided resources with entrepreneur's needs is important for the success of both the start-up and the incubator (Bøllingtoft & Ulhøi, 2005; Bruneel et al., 2012; Hackett & Dilts, 2004; Phan et al., 2005). However, only a limited number of studies touched upon this entrepreneurial choice (e.g. Soetanto & Jack, 2013; Vanderstraeten & Matthyssens, 2012). Thus, still little is known about how exactly entrepreneurs decide which incubator best suits their needs (Bruneel et al., 2012).

This study focuses on three particular areas that have been insufficiently examined in literature to date. First, while the needs of start-ups and thus entrepreneurs differ, heterogeneity amongst entrepreneurs has only been taken into account in terms of the more commonly-used and visible characteristics, such as age and experience (e.g. Colombo & Delmastro, 2002). They fail to include unobserved sources of heterogeneity, based on choice behavior of different latent – unobserved – classes of entrepreneurs, which may have additional explanatory power. Second, the few studies that have touched upon the entrepreneur's choice for a particular incubator are based on surveys. Consequently, they have a rather low internal validity, and causality is hard to establish (Bryman, 2008). Finally, they also fail to deal adequately with the 'common method bias', referring to variance due to the measurement method rather than to actual variances in stated preferences and/or behavior (Reio, 2010). This can undermine the validity of drawn conclusions.

This paper aims to fill these research gaps by answering the following research question:

How do the resources provided by incubators influence the choice by latent classes of entrepreneurs for a particular incubator?

To determine this influence, it is important to understand the needs that are to be fulfilled. These needs are linked to the start-up, for which the Resource-Based View is used as a framework for identifying and categorizing the start-up needs and subsequently the accessible resources for entrepreneurs (e.g. Barney, 1991; Gassmann & Becker, 2006; Mahoney & Pandian, 1992). These resources are tested by means of a Discrete Choice Experiment (DCE) amongst North American and European entrepreneurs with technology-based start-ups. A DCE is able to distinguish between groups based on observed and unobserved characteristics of entrepreneurs, has a higher internal validity than surveys and enables causality statements. Theoretically, this study adds value to the incubation literature, as it sheds light on the perceived importance of resources by entrepreneurs in the choice of an incubator. The results show that credibility, type of incubator and financial capital are the most important resources in the choice for an incubator. It also contributes to the understanding of heterogeneity amongst latent classes of entrepreneurs, as this is revealed systematically by using a DCE (Louviere & Woodworth, 1983).

Practically, this study can help with enhancing an incubator's performance by providing insights into the needs of latent classes of entrepreneurs. Several authors indicate that incubators are not able to match the needs of start-ups, which may explain the disappointing performance of many incubators (Bruneel et al., 2012; Totterman & Sten, 2005). Helping to understand the heterogeneity amongst entrepreneurs can support the provision of specialized and tailored support and enhance the performance of start-ups and incubators (Hansen et al., 2000; Chan & Lau, 2005; Bruneel et al., 2012). Finally, the findings can serve as guidelines for public and private policy makers to increase the effectiveness of policy measures to stimulate entrepreneurship according to the actual needs of entrepreneurs. The remainder of this thesis consists of a theoretical section (section 2), the methodology (section 3), the results (section 4) and ends with a discussion (section 5).

2. Theoretical framework

The theoretical concepts influencing the entrepreneur's choice for an incubator are outlined in the following section. First, the basic notions of the Resource-Based View (RBV) are outlined. Next, the RBV is used to identify critical resources in the early development of start-ups and helps to explore how incubators can provide those resources to start-ups. However, not every incubator has the same access to resources and the same strategic focus. The structural attributes inducing this heterogeneity of incubators are discussed in section 2.2. The influence of both the provided resources as well as the structural attributes are subsequently tested.

2.1 Start-up needs

2.1.1 Resource-Based View

According to the Resource-Based View, firms can be seen as bundles of resources, in which resources are heterogeneously distributed (Wernerfelt, 1984). Resources are defined as:

“all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enables the firm to conceive of and implement strategies that improve its efficiency and effectiveness” (Barney, 1991, p. 101).

The RBV has extensively been used to analyze firm level resources, crucial to the firm's performance and competitive advantage. A sustainable competitive advantage can be obtained through the development and intelligent application of valuable, rare, inimitable and nonsubstitutable resources (Barney, 1991; Wernerfelt, 1984).

As previously mentioned, start-ups are inherently limited in their resource base and thus their competitive advantage due to the liability of newness (Stinchcombe, 1965; Freeman et al., 1983). Incubators are seen as a means to help start-ups overcome these constraints by enhancing and complementing the existing resource base of the start-up (Somsuk et al., 2012; Aernoudt, 2004). In this way, incubators act as a buffer between market forces and the start-up, mitigating resource constraints and thus reducing the liability of newness. The choice of entrepreneurs for a particular incubator determines which resources can be accessed during incubation. This choice is defined as the decision of an entrepreneur to apply for a certain incubator, where an entrepreneur can be described as an individual trying to start an independent business (Reynolds, 1997). The choice depends on the perceived importance of an incubator's provided resources, which is in itself contingent upon the start-up's needs (Van Weele, 2012).

2.1.2 Provided resources

The RBV distinguishes between various types of resources important for early stage start-up development. An overview of the most important resources is given below, followed by how incubators can fulfill these start-up needs.

Physical capital – Physical capital encompasses a firm's physical technology, the firm's production plants, machinery and equipment, its location and its access to raw materials (Barney, 1991). Especially for young start-ups, these physical resources are relatively expensive to acquire and their acquisition distracts from critical business activities (McAdam & McAdam, 2008). By providing access to physical capital, incubators not only reduce overhead costs due to economies of scale, but also enable knowledge transfer and experience sharing by locating multiple start-ups under the same roof (Bøllingtoft & Ulhøi, 2005; Lewis, 2001). Provision of physical capital is typical for incubation institutes and has been indicated by incubated start-ups as an important resource (Bruneel et al., 2012; Chan & Lau, 2005). Office space and furniture rented out under favorable conditions are commonly-provided resources, but also administrative services such as a reception are often supplied (Bergek & Norrman, 2008). Some incubators – predominantly those with university affiliation – also provide access to specialized equipment, such as tools or production equipment (Quintas et al., 1992).

Financial capital – Financial capital is defined as all different monetary resources available for the discovery and exploitation of the venture’s idea (Barney, 1997). Most technology-based start-ups are in need of relatively large financial investments in order to grow, because developing technology or acquiring specialized capabilities may be expensive, particularly if no or limited revenues can be obtained in the early stages of development (Bøllingtoft & Ulhøi, 2005). Moreover, due to large uncertainties and a lack of credibility, they may encounter difficulties with attracting funding (Chan & Lau, 2005; Vohora et al., 2004). Incubators can aid start-ups by providing financial resources in varying forms and amounts, such as direct seed funding in the form of a subsidy, a loan or in exchange for equity (Chan & Lau, 2005). The percentage of equity ‘bought’ by incubators in exchange for funding generally varies between approximately 5% and 15%, predominantly depending on the amount of funding (Clarysse et al., 2015).

Human capital – Human capital includes the training, experience, judgement, intelligence and insight of individuals in a firm (Barney, 1991). Technology-based start-ups often lack the necessary business management and marketing skills and therefore may have limited chances to survive (Bruneel et al., 2012; Freeman et al., 1983). Incubators can provide business support services to mitigate this liability, such as coaching and training, which are regarded as crucial elements of entrepreneurial learning in incubators (Mian, 1996; Hansen et al., 2000). In some incubators technological support is also provided. Coaching refers to personal support to enhance learning and skill development processes (Barrow, 2001), and may be provided by experienced entrepreneurs acting as mentors or advisors for a start-up. Training refers to collective learning processes via workshops and master classes (Rijnsoever & Kempkes, 2014).

Social capital – Social capital refers to the ability of an individual to extract benefits from social structures, social ties and memberships, which can be fostered by creation of networks (Davidsson & Honig, 2003). Several authors argue that networking is a critical factor in the development of a start-up in order to approach potential customers, suppliers, experts or investors to ease the acquisition of required resources for further growth (Hansen et al., 2000; Bruneel et al., 2012; Scillitoe & Chakrabarti, 2010). Soetanto & Jack (2013) make a clear distinction between internal and external networks. Internal networks refer to formal or informal interactions with other start-ups within the incubator. These networks can decrease the availability and affordability barriers to valuable resources, as it enables the sharing and pooling of resources like capabilities, equipment, services, experiences and ideas (Hansen et al., 2000; Wenger & Snyder, 2000; Totterman & Sten, 2005). An incubator can undertake activities to strengthen the network among incubatees, through for example group debates or cultural trips. However, strong internal networks may also be experienced as a ‘distraction’, interfering with the entrepreneurs’ focus on developing their own business (Cooper et al., 2012). External networks are the interactions with actors outside of the incubator, such as experts, potential customers and partners (Soetanto & Jack, 2013). Those interactions may provide a start-up with specialized resources, such as specialized knowledge or production equipment, without the often-needed prior investments to develop them internally (Löfsten & Lindelöf, 2005).

Credibility – Credibility refers to an actor’s trustworthiness, expertise and reliability (Van Weele et al., 2014), which may indirectly ease the acquisition of other resources such as social and financial capital (Shane & Cable, 2002). The intrinsic lack of credibility of a start-up can be counterbalanced by being associated with an incubator (Rothschild & Darr, 2005; Studdard, 2006). The extent to which the credibility is enhanced by an incubator is related to the reputation of the incubator (McAdam & McAdam, 2008), which is primarily dependent on the track record (Bruton et al., 2010).

2.2 Structural attributes

Some structural attributes like the type of incubator or the strategy can have a large influence on the resources they offer and thus which start-up needs they meet. These structural attributes induce heterogeneity in the resources provided by incubators, which thereby influence the decision process of entrepreneurs as well. The following three main structural attributes are identified in literature.

Type of incubator - The differences between incubators may be due to the different types of incubators (Barbero et al., 2014; Bergek & Norrman, 2008), which is frequently indicated by the affiliated organizations (Grimaldi & Grandi, 2005; von Zedtwitz & Grimaldi, 2006). Most common affiliations are universities, multinational companies and regional governments, each of which has different goals and resources to supply the incubator with. As a result, heterogeneity exists in the different goals of incubators (Aernoudt, 2004) and/or offered resources to start-ups (Clarysse et al., 2005; Grimaldi & Grandi, 2005). For instance, an incubator with a strong relation with a university may provide the start-up with specialized technological knowledge or specific tools and machinery (Barbero et al., 2012; Vohora et al., 2004), while affiliation with a multinational company may open up access to specialized business knowledge (Allen & McCluskey, 1990).

Industry scope - Second, heterogeneity is also induced by differences in industry scope of an incubator. While some incubators select start-ups without a specific technology or industry focus, others specialize their support elements and processes in a specific technological field or industry, such as ICT or Clean-tech. An advantage of a diversified scope is the wide array of complementary competencies and resources available within the incubator (Vanderstraeten & Matthyssens, 2012), whereas the specialized approach may lead to more specific and higher quality of advisory services, premises and equipment (Barbero et al., 2012; Schwartz & Hornych, 2010). Furthermore, specialized incubators generally have a higher reputation than incubators with a diverse scope, as they have more specialized resources to provide to tenants (Aerts et al., 2007; Schwartz & Hornych, 2010; Vanderstraeten & Matthyssens, 2012). Although some authors associate a specialized scope with improved incubator performances (Aerts et al., 2007; Grimaldi & Grandi, 2005), this is not sufficiently empirically established (Schwartz & Hornych, 2010). A more narrow scope may also result in a stronger community feeling among the start-ups in the incubator, because all tenants are working within the same industrial field, contributing to a stronger clustering effect (Chan & Lau, 2005; McAdam & McAdam, 2008). However, this notion needs more empirical substantiation as well (Schwartz & Hornych, 2010).

Selection process - Third, an often-mentioned aspect is the selection process of new start-ups by incubators (Aerts et al., 2007; Bergek & Norrman, 2008; Hackett & Dilts, 2004). There seems to be consensus amongst scholars that selection of suitable start-ups is an important incubator aspect, since it is a basis for effective resource allocation (Bergek & Norrman, 2008; Colombo & Delmastro, 2002; Peters et al., 2004). However, the scope of this research is on the choice of the entrepreneurs. Entrepreneurs first decide which incubators to apply for, after which they will be subjected to the selection process of the incubator. Therefore, the selection process is outside the scope and not taken into account in the rest of this study.

3. Methods and Data

3.1 Research design

To measure the influence of resources provided by incubators on the incubator choice of entrepreneurs, I opted for a discrete choice experiment (DCE) (Louviere & Woodworth, 1983). DCEs have a number of advantages over regular methods for measuring preferences. First, a DCE forces respondents to make trade-offs between alternatives, which allows for exposing the utility attached to every attribute. Furthermore, such an experimental design ensures a higher internal validity than a traditional survey (van Rijnsoever et al., 2012) and no ‘common method bias’ (Podsakoff et al., 2003; Reio, 2010). Last, the number of attributes and the amount of information available can be controlled more easily than in traditional methods (Carson et al., 1994). The unit of analysis of the DCE is the technology-based entrepreneur². These entrepreneurs are most benefitted by joining an incubator, making them the target market of many incubators (Chan & Lau, 2005; Vohora et al., 2004). Additionally, interviews held with entrepreneurs served as building blocks for the DCE and gave qualitative insight in the theoretical concepts identified. The interview data was also used to illustrate the results of the DCE. An extensive description of the interview methodology can be found in Appendix 1.

3.1.1 Incubator attributes

To construct a DCE, a valid list of attributes and corresponding attribute levels is of critical essence for the meaningfulness of the results and to ensure a high internal validity (Hensher et al., 2005). First, an exhaustive list of attributes was distilled from literature as discussed in *Section 2 Theoretical Framework*, after which this list was evaluated by interviewing entrepreneurs and incubators in Berlin³. Berlin was selected as location for the interviews because of its recent development into a major start-up hub in Europe, with many incubators and high entrepreneurial activity (Clarysse et al., 2015). It has an ‘entrepreneurial vibe’, which correlates with high attractiveness to start a new firm and a high density of new start-ups (McKinsey, 2013).

Subsequently, the most influential attributes were chosen by combining literature and insights from interviews. The selection procedure and the remaining shortlist was verified by academic experts in the field of incubation. Next, the specific levels of the attributes were distilled from the interviews by evaluating the offered resources of the studied incubators in Berlin. Criteria used to define the levels were the range of variation per attribute and how frequently it was mentioned. For example, the funding amount often ranged from € 0 to € 25.000 and in rare occasions as high as € 100.000, such that funding levels were defined as € 0, € 10.000, € 25.000 and € 100.000. In Table 3, the complete set of attributes and their levels are shown.

3.1.2 Discrete Choice Experiment

In a DCE, respondents receive a series of choice tasks in which alternatives are presented with varying attribute levels. A DCE is based on a research technique that combines random utility theory (RUT) (see Manski, 1977) with the theory of value (see Hanley et al., 1998). According to the RUT, an individual (i) attaches an amount of utility (U) to an alternative (j), where U_{ij} consists of an observed V_{ij} and an unobserved component ε_{ij} :

$$U_{ij} = V_{ij} + \varepsilon_{ij}$$

In this case, the observed component V_{ij} represents the incubator attributes that are associated with incubator alternative j and individual characteristics i that explain the choice. The error component ε_{ij}

² The complete survey can be found in Appendix 3.

³ The interview questions are listed in Appendix 1.4

captures the unobserved factors that influence the choice. Based on similarities of choice patterns, respondents can be assigned to latent classes (Magidson & Vermunt, 2002). In this way, additional insights in heterogeneity amongst entrepreneurs can be obtained, next to traditional observable attributes measured in surveys. As well, scale classes can be identified through similar choice consistency of respondents, based on the variance of responses (Magidson & Vermunt, 2007). Identifying scale classes solves respondent inconsistency by adding a correction for bias (Swait & Louviere, 1993).

In this DCE, every respondent received a series of choice tasks, each comprising two incubator alternatives with different attribute levels. The choice tasks were based on a hypothetical simulation (mimicking reality) that the respondents had just initiated a technology-based start-up and were now looking for an incubator to enhance their chances of success. An exemplary choice task is shown in Table 1. First, instructions about how a DCE works were given, after which respondents received a series of choice tasks. For each choice task the respondent was forced to choose between the two incubators listed. The two incubator alternatives were based on seven attributes with systematically varying attribute levels, as detailed in the previous section. Every attribute was explained prior to the choice tasks, and the explanation could be consulted again during the choice tasks.

To avoid errors due to correlations between the attributes, a fractional orthogonal design was used. This means that the levels of the attributes vary systematically and in an uncorrelated manner over the choice tasks and between the different survey versions. Each respondent received a fraction of the total number of choice tasks to be able to test a large set of alternatives. By using a fractional orthogonal design a high internal validity is upheld and the ‘common method bias’ is no longer a potential issue, making assessments of attributes possible without any confounding factors (Podsakoff et al., 2003; van Rijnsoever et al., 2012). It should be noted that DCEs measure stated preferences or intended behavior, instead of actual preferences or actual behavior. Nevertheless, studies have shown that DCEs can be used to forecast actual preferences and/or behavior. The method has successfully been used in other complex decisions, for instance in knowledge acquisition strategies of SMEs (Schlereth et al., 2012; van Rijnsoever et al., 2015).

3.1.3 Choice task

For each choice task the following introduction was given:

“Imagine that you were to choose an incubator to help you establish your business. We ask you to choose between two hypothetical incubators.”

In Table 1 an example of a choice task is shown:

Table 1. Exemplary choice task

Attributes	Option 1	Option 2
1. Physical capital	No office space	Free office space
2. Financial capital	\$ 25,000 as a grant	\$ 100,000 as a loan against commercial rates
3. Human capital	Coaching only	Training and coaching
4. Social capital	Strong external network only	Strong internal network only
5. Credibility	Good track record	No track record (yet)
6. Type of incubator	Independent, privately owned	Affiliated with start-up investor
7. Industry focus	No specific industry focus	Focus on your industry
Which incubator would you most likely choose to help establish your business?	<input type="checkbox"/>	<input type="checkbox"/>

The incubator alternatives were named ‘Option 1’ and ‘Option 2’. Labels were avoided for incubator alternatives due to the uncontrollable influences they have on the choice for an incubator, for instance in the form of reputation bias (Hensher et al., 2005). A labeled alternative may infer certain emotions that influence the choice, instead of the choice being solely based on the attributes of the incubator (Loewenstein et al., 2001).

3.2 Data collection

Data was collected from entrepreneurs that were currently establishing their start-up at the time the survey was conducted. A strict list of conditions was used to identify a set of comparable entrepreneurs. First, the respondents had to be actively starting a business, limiting the sample to entrepreneurs only. Second, only technology-based start-ups were included, which was described as a new firm whose business is based on the exploitation of technological know-how through the creation of new products and services. Third, to ensure the entrepreneurs were in an early stage, any salaries paid could have been at most from one year prior, and the respondents had to own at least part of the business. Only respondents satisfying all conditions were allowed to fill in the questionnaire.

The DCE was distributed through Research Now, a commercial marketing agency, and the respondents received a monetary reward. Respondents (n=935) were surveyed in the United States, Canada, United Kingdom, Ireland, France, Germany, Austria, Switzerland, the Netherlands and Belgium. These geographic locations were selected based on fact that technology based entrepreneurs are primarily located in North America and Europe (GEM, 2015), in addition to practical limitations regarding the online panel from Research Now. The large size of the sample enhanced the external validity of the results by improving their representativeness. An overview of the respondents per country is presented in Table 2.

Table 2. Description of DCE sample

Country Code	USA	CA	UK	IE	FR	DE	AT	CH	NL	BE	Total
# of respondents	241	109	104	65	125	125	37	24	67	38	935
% of total sample	26%	12%	11%	7%	13%	13%	4%	3%	7%	4%	100%

3.3 Operationalization

3.3.1 Dependent variable

Incubator choice – To measure the choice of entrepreneurs for a particular incubator, participants first chose between two different incubators. The chosen incubator was given a value of 1, and the not-chosen alternative a value of 0.

3.3.2 Independent variables

Physical capital – Physical capital was described as the physical infrastructure that an incubator provides to a start-up, including office space and shared facilities or equipment. An incubator can either not supply this to start-ups, provide it in exchange for (reduced) payment, or allow free access to physical capital. These three possibilities were set as the levels of this attribute.

Financial capital – For financial capital, I took the amount and type of funding supplied by incubators into account. The funding may be provided in different amounts to start-ups, for which I chose fixed levels of “€ 0”, “€ 10,000”, “€ 25,000” and “€ 100,000”. The funding may be provided in various forms, from which I established the levels “grant or subsidy”, “loan against commercial rates”, “in exchange for 6% equity” and “in exchange for 15% equity”. These levels are those which were most frequently encountered during the field study in Berlin, and were verified by experts in the field of incubation. As these levels occur in random combinations together, it leads to 16 different levels of financial capital.

Human capital – Human capital is supplied by incubators in the form of coaching and training, predominantly to enhance the business competencies of start-ups. The attribute has four levels: “none”, “coaching only”, “training only” and “training and coaching”.

Social capital – This attribute is operationalized according to the internal start-up community network and the external network of the incubator. If networks are strong, members are well-connected and feel a strong willingness to help each other, for example by making introductions or sharing expertise. Thus, this attribute has four levels: “no strong networks”, “strong external network only”, “strong internal network only” and “strong internal and external networks”.

Credibility: Credibility reflects the impact reputation of the incubator on the credibility of the start-ups. It is operationalized by the track record of that given incubator, described as the start-ups that previously participated in the incubator. Incubators with a good track record have a history of incubating successful start-ups. The attribute has four levels: “no track record yet”, “bad track record”, “neutral track record” and “good track record”.

Type of incubator: The type of incubator is based on the affiliated organizations of the incubator, since those organizations determine to a large extent the incubator strategy, their goals and the resources provided to start-ups. The attribute has six levels: “none: independent, privately-owned”, “start-up investor”, “local university”, “multinational company active across global markets”, “internationally renowned university”, and “regional government”.

Industry focus: The industry focus is represented by the strategic scope of incubators. An incubator may only support start-ups in a specific industry, or the incubator may support start-ups from diverse industries. Thus this attribute has two levels: “focus on your industry” and “broad range of industries”.

3.3.3 Covariates⁴

In addition to the incubator attributes, a number of covariates were added to the questionnaire to describe the latent classes of entrepreneurs. Personal characteristics as age, gender, experience with incubators and previous start-up experience may influence the choice for an incubator (Colombo & Delmastro, 2002). For instance, a younger entrepreneur may be more prone to choosing incubators providing significant amounts of money due to their limited financial resources, whereas an entrepreneur with previous relevant business experience may value the business skills training of incubators less.

Additionally, the start-up characteristics of technology intensiveness and developmental stage may influence the choice for an incubator (Colombo & Delmastro, 2002). For instance, start-ups with a high-tech hardware product may need larger financial resources than a start-up from the ICT industry and thus may value the resources provided by an incubator differently. A complete overview of the attribute levels and the covariates is shown in Table 3.

⁴ Further details about the covariates can be found in Appendix 2.

Table 3. Operationalization of incubator attributes

Variable	Indicator	Levels	Measurement
Dependent variables			
Forced choice for incubator	Choice for incubator alternative	0. Inferior alternative 1. Chosen alternative	Binary
Choice for incubator in real life setting	Choice for incubator alternative	0. No 1. Yes	Binary
Independent variables			
Physical capital	Physical infrastructure	1. Free access 2. No access 3. Paid access	Nominal
Financial capital	Amount and type of funding	Funding amount: 1. € 0 (no funding) 2. € 10.000 3. € 25.000 4. € 100.000 Funding form: 1. Grant or subsidy 2. Loan against commercial rates 3. 6 % equity 4. 15 % equity	Nominal
Human capital	Training and coaching	1. None 2. Coaching only 3. Training only 4. Training and coaching	Nominal
Social capital	Start-up community and external network	1. No strong networks 2. Strong external network only 3. Strong internal network only 4. Strong internal and external networks	Nominal
Credibility	Track record	1. No track record yet 2. Bad 3. Neutral	Nominal

Type of incubator	Affiliated organization	4. Good 1. None: independent, privately-owned incubator 2. Start-up investor 3. Local university 4. Multinational company active across global markets 5. Internationally renowned university 6. Regional government	Nominal
Industry focus	Industry focus	1. Focus on your industry 2. Broad range of industries	Nominal
Covariates			
Stage of development	Number of business activities performed	Sum of performed business activities ⁵	Ordinal
Technology intensiveness	Technology intensiveness	0. High-tech 1. Low-tech	Nominal
Salary payment	Duration of payment	0. Shorter than 3 months 1. Longer than 3 months	Nominal
Start-up experience	Directly involved with setting up a business before current start-up	0. No 1. Yes	Nominal
Incubator experience	Start-up membership of an incubator	0. Not part of an incubator 1. Is or was part of an incubator	Nominal
Gender	Gender of entrepreneur	0. Male 1. Female	Nominal
Age	Age of entrepreneur	18-99	Numeric

⁵ For further details about the covariates see Appendix 2.

3.4 Descriptive statistics and analysis

Table 4 describes the means and standard deviations of the studies variables. The mean age was 37,34 years and the percentage male was 79,5%. Highly educated people were overrepresented, probably due to a sample bias of Research Now towards more highly educated people. A total of 87% of the entrepreneurs had never been involved in a start-up before, whereas the average experience in the respective industry of the start-up was 8,7 years. This indicates that entrepreneurs have extensive market experience before they start a new business in that particular industry. Respondents were predominantly active in the IT/ICT sector (27,6%) and the average size of the start-up founding team was 3,37 people. Regarding respondent perception of incubators, 52,9% indicated that they were aware of incubators, almost half of which are or had been part of an incubator. The remaining 47,1% filled in the survey without knowledge about incubators, for whom the phenomenon and the attributes were explained.

Table 4. Descriptive statistics sample

Covariates	Descriptive statistics
Gender	Male: 79,5% Female: 20,5%
Age	37,34 year (std. 8,58)
Continent of origin	Europe: 62,6 North America: 37,4
Marital status	Living alone: 29,4% Living together: 70,6%
Education	No university: 28,2% University degree: 71,8%
Start-up-experience	No: 87% Yes: 13%
Industry experience	8,7 (std. = 6,88)
Salaries	Salaries < 3 months: 48,4% Salaries > 3 months: 51,6%
Incubator awareness	Not aware: 47,1% Aware: 52,9%
Previously/currently incubated	Not incubated: 76,8% Incubated: 23,2%
Size founding team	3,37 (std. = 2,28)
Start-up size	9,08 (std. = 14,11)

The analysis was done using the software Latent Gold, which is specifically built for DCE analyses. This program outperforms others when it comes to identifying latent classes (Houghton et al., 2009). Respondents were assigned to latent classes based on similarities in choice behavior. The number of latent classes was determined on the basis of the Bayesian Information Criterion (BIC), which functions as a heuristic tool to determine the most parsimonious model (Magidson & Vermunt, 2002; Schwarz, 1978). The BIC balances the number of parameters with the explanatory power of the model used, where a lower BIC implies a more parsimonious and thus better solution. Scale classes were also determined according to the lowest BIC-value, to solve respondent inconsistency by adding a correction (Swait & Louviere, 1993).

In addition to the BIC value, I reported the McFadden pseudo-R² as an indication of model performance (McFadden, 1974). The relative influence of the attributes on the choice for an incubator is indicated by the Wald X². Finally, the coefficients assigned to each attribute level signify the utility attached to that level by entrepreneurs. The coefficients are effect coded, implying that they indicate the deviation from the average effect and that the estimators add up to one (Magidson & Vermunt, 2002). Only if those coefficients are indicated as being significant, there is a difference from no effect. An issue potentially affecting data reliability arose from a small group of respondents who only chose the left option or only the right option, which may be purposively done in order to complete the questionnaire in as little time as possible. The chance that this happened at random is 0,5⁸, which is a negligible 0,39%. A new variable was added to the model to control for this effect, indicating if the chosen incubator alternative was the left or the right choice in the given choice task.

In order to describe the classes according to the covariates, a multinomial logit regression was performed, with the assigned class as independent variable and the covariates as predictors of the classes. By describing the classes according to the observed entrepreneur- and firm characteristics, the entrepreneurs belonging to a certain class can be identified, and for entrepreneurs with a certain set of characteristics it can be predicted to which class they belong.

4. Results

4.1 Model fit

The BIC-indicator revealed that a model with three latent classes and two scale classes fit the data best. The model has a McFadden R^2 of 0.26, which is a good fit for a choice model (Vermunt & Magidson, 2005) and a large improvement compared to a one-class model with a similar BIC (McFadden $R^2=0,13$). The latent classes are dependent on the choice behavior concerning all attributes except for 'financial capital'. Financial capital did not seem to be class dependent in this dataset, although it did significantly influence the choice for an incubator. It was hard to make non-overlapping classes based on the financial capital attribute, presumably because the levels of 'funding amount' and the 'funding form' were coupled in the DCE. This resulted in 15 different levels, which made it difficult to find a parsimonious – and especially a consistent – solution. Therefore, this attribute is made independent of the class division, resulting in an equal and consistent influence of financial capital on the classes.

4.2 Results of the latent class analysis

Table 5 presents the results of the latent class analysis, Table 6 the absolute and relative importance of the attributes per class and Table 7 the respondent characteristics per class. The results confirm the notion of heterogeneity by showing that the three classes are significantly different from each other and that there are differences in the utility attached to the attributes per class.

Table 5. Latent class model

Attribute	Level	Wald χ^2	Sig.	Wald (=)	Sig.	Class ind.	Sig.	Class 1		Class 2		Class 3	
								Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Physical capital	No access	69,17	***	59,68	***			-0,12	***	-0,22	***	0,01	
	Paid access							-0,19	***	0,14	***	-0,05	***
	Free access							0,31	***	0,08	***	0,04	***
Financial capital	€ 0 for free	47,41	***			-0,01							
	€ 0 for 6% equity					-0,15	***						
	€ 0 for 15% equity					-0,17	***						
	€ 10.000 as grant/subsidy					0,06	**						
	€ 10.000 as loan					-0,03							
	€ 10.000 for 6% equity					0,01							
	€ 10.000 for 15% equity					-0,01							
	€ 25.000 as grant/subsidy					0,10	***						
	€ 25.000 as loan					-0,09	***						
	€ 25.000 for 6% equity					-0,03	*						
	€ 25.000 for 15% equity					0,00							
	€ 100.000 as grant/subsidy					0,25	***						
	€ 100.000 as loan					0,02							
	€ 100.000 for 6% equity					0,04	*						
€ 100.000 for 15% equity			0,01										
Human capital	None	66,73	***	65,81	***			-0,07	*	0,04		-0,01	
	Coaching only							-0,10	**	0,15	***	-0,02	*
	Training only							-0,02		-0,10	***	0,05	***
	Training & coaching							0,20	***	-0,10	***	-0,02	*
Social capital	No strong network	84,41	***	80,99	***			-0,40	***	0,14	***	-0,01	
	Strong external network only							0,06	*	0,08	*	0,01	
	Strong internal network only							0,08	**	-0,26	***	0,00	
	Strong internal & external network							0,26	***	0,03		0,00	

Credibility	No track record yet	92,27	***	88,64	***	0,09	**	0,26	***	-0,01	
	Bad					-0,95	***	-0,13	***	-0,03	**
	Neutral					0,22	***	-0,06	**	0,03	**
	Good					0,64	***	-0,07	*	0,01	
Type of incubator	None: independent, privately owned	88,26	***	82,69	***	-0,07		-0,42	***	0,03	**
	Start-up investor					-0,08		0,09		-0,01	
	Local university					-0,11	**	0,43	***	-0,06	***
	Multinational company active across global markets					0,28	***	-0,34	***	0,03	
	Internationally renowned university					0,00		0,22	***	0,03	*
	Regional government					-0,01		0,02		-0,02	
Industry focus	Focus on your industry	33,36	***	21,09	***	0,04	**	-0,06	**	0,03	***
	Broad range of industries					-0,04	**	0,06	**	-0,03	***
Left/right correction		62,93	***	61,30	***	-0,16	***	-0,66	***	0,00	
N (class)						283		169		483	
Number of parameters	72										
McFadden R ² (0)	0,26										
BIC	10181,01										

* p < 0.05

** p < 0.01

*** p < 0.001⁶

⁶ For full results of latent class analysis see Appendix 4.

Table 6. The absolute importance (left) and relative importance (right) per attribute per class

Absolute Importance					Relative importance			
Attribute	1	2	3	Total	Attribute	1	2	3
Physical capital	0,50	0,36	0,09	0,95	Physical capital	0,12	0,10	0,11
Financial capital	0,42	0,42	0,42	1,27	Financial capital	0,10	0,12	0,52
Human capital	0,30	0,26	0,08	0,63	Human capital	0,07	0,07	0,09
Social capital	0,66	0,40	0,03	1,09	Social capital	0,16	0,12	0,03
Credibility	1,59	0,39	0,06	2,04	Credibility	0,39	0,11	0,07
Industry scope	0,08	0,12	0,05	0,25	Industry scope	0,02	0,03	0,07
Type of incubator	0,39	0,85	0,09	1,33	Type of incubator	0,10	0,25	0,11
Left/right cor.	0,16	0,66	0,00	0,82	Left/right corr.	0,04	0,19	0,00
Total	4,09	3,45	0,81	8,36	Total	1,00	1,00	1,00

Table 7. Respondent characteristics per class.⁷

Covariates	Wald	Class	Estimator	Sig.
Business activities	10,85	1	0,05	***
		2	-0,03	.
		3	-0,02	.
High-tech	6,15	1	-0,02	.
		2	0,18	*
		3	-0,16	*
Salaries (<3 months)	3,41	1	0,09	.
		2	-0,11	.
		3	0,02	.
Start-up experience	2,81	1	-0,12	.
		2	0,11	.
		3	0,01	.
Incubator experience	11,46	1	-0,17	**
		2	0,22	***
		3	-0,05	.
Gender – <i>male</i>	1,12	1	-0,06	.
		2	0,04	.
		3	0,02	.
Age	0,83	1	-0,01	.
		2	0,00	.
		3	0,00	.

. p < 0.10
* p < 0.05
** p < 0.01
*** p < 0.001

⁷ For full results of the multinomial logit regression analysis, see Appendix 5.

Class independent: Financial capital

As aforementioned, the class division is not based on the financial capital attribute, which means that all three classes in this model attach the same absolute value to financial capital. Note that making this attribute class independent does not mean that funding is relatively equally important for all classes, as can be seen in Table 6. Relatively speaking, where class 1 and 2 attach similar importance to this attribute, financial capital is more important for class 3, simply because entrepreneurs in this cluster are indifferent towards the other attributes.

A few conclusions of can be drawn from the results. First, the provision of financial capital is important for entrepreneurs' incubator choice. Entrepreneurs are often looking for some financial security, giving them the opportunity to focus on building the start-up. An interviewee illustrated this:

"For us the most important thing would be financial security. The problem is that we are all in a stage that we need to earn money as well, which costs time and effort and we can't properly use that time to focus on our idea."

Second, they prefer funding provided for nothing in return over the other options with the same amount of funding. Entrepreneurs are likely to choose an incubator offering a grant of € 25.000 over an incubator offering a loan of € 25.000 or in exchange for equity. Third, they prefer funding in exchange for 6% equity over the same amount in form of a loan. Fourth, the higher the grant or subsidy, the stronger the preference becomes. Intuitively, a grant of € 100.000 is preferred over a grant of € 10.000. Last, entrepreneurs are less likely to choose an incubator if an incubator takes an equity stake in start-ups, until the funding amount is high enough to counteract this influence (€ 100.000).

Class 1: Credibility hunter – 30,3% of respondents

Members of this class are grouped together predominantly based on the preference for at least a neutral, but preferably a good track record. These entrepreneurs are presumably looking for a stamp of credibility to ease the acquisition of new resources and gain the trust of partners or potential clients (Shane & Cable, 2002). The credibility hunters are less experienced and are less likely to be paying salaries for longer than three months compared to other classes. A lack of credibility is especially an issue for inexperienced entrepreneurs, since they have no proven track record or legitimacy (Bruton et al., 2010). In line with McAdam & McAdam (2008), one entrepreneur interviewed illustrated this concept with the following statement:

"The reason why I want to join that incubator is because their brand is extremely good; it would all of a sudden validate us and our idea, which makes finding partners and customers much easier."

Similarly, Vanderstraeten & Matthyssens (2012) argue on basis of qualitative data that entrepreneurs looking for credibility also prefer strong networks from which resources can be acquired or partnerships can be made. The findings show a similar relation, since this class of entrepreneurs has a slight preference for a strong external network as well as a strong internal network, but especially a preference for a combination of both strong networks. Furthermore, 'credibility hunters' have a slight preference for specialized incubators as well, which often coincides with a higher reputation (Aerts et al., 2007; Vanderstraeten & Matthyssens, 2012).

Additionally, entrepreneurs in Class 1 prefer incubators affiliated with a multinational company. Multinational companies are especially those with a proven track record and a very credible status, which makes them suitable for enhancing the credibility of young start-ups. As most of the incubators affiliated with multinationals focus on the core business of the parent firm, they tend to be rather specialized (von Zedtwitz & Grimaldi, 2006), which is preferred by this class. Furthermore, although they are less experienced entrepreneurs, the credibility hunter class has performed significantly more business activities compared to the other classes. This indicates that they are somewhat further in development of their start-up. As start-ups mature, they develop internal basic

operational services in their transition toward autonomy, which may decrease the added value of diversified incubators (McAdam & McAdam, 2008). Entrepreneurs in Class 1 benefit more by the supply of specialized knowledge and networks, increasing the added value of specialized incubators. As an interviewee argued:

“I would go for a specialized incubator – they have the relevant knowledge and contacts. I don’t see how I can profit so much from a diversely-focused incubator, because I already have the general knowledge.”

They also prefer access to physical capital and a combination of training and coaching. Negatively influencing the incubator choice are no- or paid access to physical capital, no training or coaching and no access to strong networks.

Class 2: Knowledge-intensive start-ups – 18,1% of respondents

This relatively small class is mainly grouped due to their choice behavior regarding incubator type. They strongly prefer both local and internationally-renowned universities, which could indicate that the competitive advantage of Class 2 start-ups is based on cutting-edge knowledge. The reason for this may be that university-related incubators place more emphasis on scientific and technological support (Grimaldi & Grandi, 2005), which may be beneficial to those knowledge intensive start-ups (Rothaermel et al., 2007). The results confirm this, suggesting that Class 2 start-ups are more high-tech. Furthermore, in case of university spin-offs, the entrepreneurs often have plentiful technological knowledge, while business knowledge is often insufficient (Chan & Lau, 2005; Lyons, 2002). Moreover, the results demonstrate that Class 2 entrepreneurs performed fewer business activities, indicating that the business side of the start-up is less developed, but they are more likely than other classes to have paid salaries for more than three months. This indicates that the business development is slower than for other classes, similar to university spin-offs. This is in line of expectations for university-related start-ups, since the development time of these start-ups is generally longer (Vohora et al., 2004).

The notion of knowledge intensive start-ups is further corroborated by their strong preference for external networks over internal networks. A competitive advantage based on cutting-edge knowledge may lead to cautious behavior when interacting with internal networks, since valuable spillovers could diminish their competitive advantage (Schwartz & Hornych, 2010; Totterman & Sten, 2005). The strong preference away from internal networks can also be because entrepreneurs in Class 2 see such networks as non-valuable or even distracting (Cooper et al., 2012). A skeptical attitude towards internal networks and a preference for strong external networks was explained by an interviewee:

“You would share the same space, so on a friendship level it would be amazing but it doesn’t mean the other’s expertise is useful per se [...] It is difficult to find good value from other start-ups. It is good to discuss and network with them, but usually I don’t see a big business opportunity with them. The biggest network value comes from experts and corporations linked to them”.

Furthermore, since Class 2 members are explicitly looking for university-related incubators, they are less likely to choose an independent incubator or an incubator affiliated with a multinational. Another possible explanation for the aversion towards multinational affiliations is that there is some doubt amongst entrepreneurs regarding their actual motives. As an interviewee expressed:

I don’t think I want to join a corporate incubator, just because of their bias and the wrong incentives. It feels like most of them do it because it looks cool, instead of really wanting to build businesses.”

Class 2 entrepreneurs are more likely to choose an incubator where physical capital is supplied for free or in exchange for a fee, whereas they firmly reject incubators without physical capital supply. High-tech start-ups often need specialized equipment, which is generally expensive (McAdam & McAdam,

2008). Thus, supplying physical capital is an added value to those start-ups. As suggested by an interviewee:

“We would need office space where everybody can work on the prototype and some equipment for production. Or at least give access to places where we can borrow equipment from, because we cannot afford buying it.”

As well, incubators offering coaching are more likely to be chosen than incubators offering training (or a combination of both). This class also seem to favor incubators that haven't developed a track record yet. Although slightly counter intuitive, this may be because when an incubator has a high reputation, it will receive a lot of applications and subsequently has a strict selection process, reducing the chances of getting selected. Last, it appears that the position of the incubator alternative (left or right choice) influenced the choice for an incubator alternative since the left option has a higher likelihood of being chosen.

Class 3: Indifferent – 51,7% of respondents

Class 3 entrepreneurs are less explicit in their preferences than the other classes. The absolute importance of the attributes (Table 6) and the coefficients of the attribute levels (Table 5) are lower than in Classes 1 and 2. The only exception is the financial capital attribute, but since this attribute is the same for all three classes, no distinction can be made. This class has a mild preference for incubators supplying free access to physical capital, and is less likely to choose an incubator with paid access to physical capital. Offering training increases the likelihood that a Class 3 entrepreneur will choose that incubator, whereas offering coaching only or a combination of training and coaching negatively influences the likelihood. Regarding the type of incubator, they have a slight preference for an independent incubator or an internationally-renowned university as affiliation. Considering the apparent indifference of the members of this class, questions arise as to whether their choice behavior is due to a lack of involvement, interest or knowledge. The start-ups from members of this class are less likely to be high-tech, which may imply that they are less interested in the services from an incubator because the added value is lower.

5. Conclusions and Discussion

This research aimed to explain the choice of entrepreneurs for an incubator by identifying the influence of the provided resources on this choice. The decision phase of entrepreneurs before being incubated is an often neglected area of research, but nevertheless an important aspect for incubator-incubatee alignment (Hackett & Dilts, 2004). Seven incubator attributes were identified in accordance with the Resource-Based View and subsequently tested by means of a discrete choice experiment amongst 935 entrepreneurs from Europe and the United States. The latent class analysis revealed that heterogeneity exists in preferences regarding the choice for an incubator. The best-fitting model had three classes with significantly distinctive choice behavior between classes, but similar behavior within each class.

The results show that, besides the decisive influence of financial capital for all classes, two factors predominantly divided the entrepreneurs into classes. Entrepreneurs in the first class selected incubators primarily by reputation, suggesting a focus on enhancing the credibility of their start-up. Member of this class were more likely to be inexperienced, but were also further along in the development process. Class 2 selected incubators predominantly based on university affiliation and are likely to be high-tech start-ups. Class 3 was relatively indifferent about the incubator choice, and could only be characterized as less likely to be high-tech. The indifference implies either a lack of involvement or knowledge, or simply no interest in incubators. Furthermore, it is clear that financial capital is an important factor in the decision for an incubator, but additional research is needed to determine the preference variations according to classes. Finally, it appears that yet unobserved characteristics play an important role in the choice for an incubator. Although the classes can be characterized by certain covariates, it is not sufficiently clear to be able to predict which type of entrepreneurs belong to certain classes.

5.1 Theoretical implications

According to the RBV, a start-up should acquire rare and hard-to-imitate resources in order obtain a competitive advantage (Barney, 1991). A growing stream of incubation literature argues that the added value of an incubator lies in these intangible resources instead of tangible resources, since there are more difficult to imitate and influence the allocation of other resources (e.g. Bruneel et al., 2012; Aaboen, 2009; Grimaldi & Grandi, 2005). Thus, one would expect that intangible resources highly influence entrepreneurial choice. The results of this study demonstrate that the choice for an incubator is predominantly based on the attributes of credibility, type of incubator and financial capital, and that preferences differ among groups of entrepreneurs.

The strong influence of the intangible resource credibility is in line with the aforementioned stream of literature. It suggests that enhancing start-ups' credibility is an important feature of an incubator for entrepreneurs (McAdam & McAdam, 2008; Soetanto & Jack, 2013). However, the results of this study also show two contradictory outcomes with this perspective. First, the tangible resource financial capital is found to be decisive in incubator choice. This suggests a mismatch between what entrepreneurs perceive to be an important resource constraint and what incubators and literature identify as being important for start-up development (Grimaldi & Grandi, 2005; van Weele, 2012). Nevertheless, it may be that the value of financial capital for entrepreneurs aligns with the view from incubators and from literature when they are actually incubated. Being incubated may solve an entrepreneur's information deficit regarding the importance of provided resources, resulting in a different perspective on what actually is important (Vohora et al., 2004). Note that since the class division was not dependent on financial capital, the attached value did not differ per class. Thus, more research is needed to clarify how the importance of financial capital varies over entrepreneurial classes. Second, the results show that human capital is relatively unimportant in the decision for an incubator, contrasting with studies that consider it crucial elements of entrepreneurial learning in incubators (Mian, 1996; Hansen et al., 2000). This could be explained by the suggestion that entrepreneurs are unable to recognize a lack of (business-related) knowledge as a constraint for further start-up development (van Weele, 2012).

Social capital, in the form of networks, is increasingly mentioned in literature as an important intangible attribute (Soetanto & Jack, 2013, Hansen et al., 2000). The findings regarding external networks agree with this, which are quite influential in this study. However, the results show some ambiguity regarding the importance of internal networks. Whereas for instance Lyons (2002) and Aernoudt (2004) stress the importance of internal networking, the results found in this study are more in line with the findings of Bakouros et al. (2002) and Chan & Lau (2005), suggesting that there are limited benefits gained from internal networking. Possible explanations are that strong internal networks are associated with danger for valuable knowledge spillovers (Totterman & Sten, 2005) or that internal networks distracts entrepreneurs from their day-to-day business (Cooper et al., 2012).

The mild influence of physical capital aligns with the view that tangible resources should not be decisive in the decision, but deviates from studies by Chan & Lau (2005) and in particular Soetanto & Jack (2013). Both studies found that business support in the form of shared facilities and access to research facilities is one of the main reasons why entrepreneurs want to be located at an incubator. A possible explanation for the different results from Chan & Lau (2005) is that they collected data from already incubated entrepreneurs, whereas this study is based on data mainly from non-incubated entrepreneurs. Differences with the study by Soetanto & Jack (2013) can be explained by the fact that they also included 'grants and potential financial investors' in the variable. In this study, physical capital is limited to the supply of office space and shared facilities or equipment; the financial aspect is included separately.

Furthermore, the importance of the structural attribute type of incubator suggest that entrepreneurs have strong assumptions regarding the added value of the affiliated organizations. Recent studies agree that different types of incubators achieve different results, since these differences are reflected in the goals, activities and available resources of an incubator (Aernoudt, 2004; Barbero et al., 2014). Moreover, the results show that the preference for a type of incubator varies strongly amongst entrepreneurs, especially with regard to independent incubators and incubators affiliated with universities and multinationals. It seems that a focus on cutting-edge knowledge is correlated with a preference for a university-related incubator, whereas a focus on enhancing the start-ups credibility directs to a multinational affiliated incubator. Further research should study these relations and clarify which exact expectations of entrepreneurs are attached to the affiliated organizations. Last, an often-mentioned factor for incubator differentiation is industry scope (Vanderstraeten & Matthyssens, 2012; von Zedtwitz & Grimaldi, 2006), but this does not seem to be very influential in the decision for an incubator. Subsequently, differentiation on the basis of industry scope does not seem to be a fruitful strategy. The presumed correlation between a focused incubator and the aim of entrepreneurs to enhance their credibility (Studdard, 2006; Vanderstraeten & Matthyssens, 2012) is confirmed in this study, but again this relation does not have a large effect.

In terms of methodology, the application of a Discrete Choice Experiment and analysis with Latent Gold enabled heterogeneity to be uncovered in a complex entrepreneurial choice. The advantages of DCEs over conventional methods - namely, increased rigor and greater control over the available information - make it a valuable method for further studies of complex choice behavior. For constructing the tested attributes in the DCE, a trade-off between parsimony and specificity of the attributes is inevitable. Nevertheless, it should be noted that increasing the number of attributes and the corresponding levels comes at the expense of simplicity and thus consistency of respondent's choices. Last, combining the DCE method with interviews resulted in qualitative insight in the attributes was valuable for constructing a parsimonious list of tested attributes and the illustration of the results.

5.2 Practical implications

Multiple implications for incubators as well as regional policy makers arise from this study. An apparent paradox seems to exist. Whereas many studies indicate that the field of incubators is becoming more heterogeneous (Bøllingtoft & Ulhøi, 2005; Vanderstraeten & Matthyssens, 2012), Bruneel et al. (2012) argue that the appearance of incubators becomes more standardized. This implies that the

communicated value proposition does not reflect the actual differences between incubators. Since heterogeneity of preferences exists, an opportunity arises to target a group of entrepreneurs more specifically according to their choice behavior, and specialize their communication and marketing strategy accordingly. A better-aligned strategy with the needs of the targeted start-up class could enlarge the pool of relevant applications they receive, which is beneficial for the quality of the chosen start-ups. Moreover, targeting start-ups with similar needs offers the opportunity to tailor the resources provided by incubators, which may enhance the performance of incubators and start-ups (Bergek & Norrman, 2008; Hackett & Dilts, 2004). Future research should focus on further disentangling the characterization of entrepreneurial groups in order to make targeting the best suited entrepreneurs more effective.

An often emphasized resource in the communication by incubators is human capital in the form of training and coaching. However, the results demonstrate that human capital is not seen as an important resource by entrepreneurs in the decision for an incubator. Hence, communication by incubators should rather focus on credibility enhancing factors, the type of incubator and the provided financial resources. A similar line of argumentation applies to the industry focus of incubators, which is not decisive in the choice. Nevertheless, this does not directly mean that the actual provision of human capital and industry focus should be changed accordingly. The perceived needs of entrepreneurs change over time, especially when they become incubated (Vohora et al., 2004). Moreover, van Weele (2012) argues that many starting entrepreneurs are unconsciously incompetent, meaning that they are unaware that they lack a particular resource and may deny the usefulness of the resource.

Next, the results show that the credibility hunters (Class 1) often prefer an incubator affiliated with a multinational, in combination with a good track record and strong networks. Multinationals are exemplary for firms with a proven track record and often have a high credibility. Hence, they may be particularly suitable for enhancing the start-up's credibility. Thus, multinationals affiliated with an incubator should focus on the credibility stamp aspect of their incubator in order to attract more entrepreneurs. This is somewhat different for university-affiliated incubators, since the most important benefit of a university-affiliated incubator is the connection to the university itself, as seen in Class 2 entrepreneurs' choices. Subsequently, exploiting the apparent advantages of being close to state-of-the-art knowledge and expertise is one of the main advantages for incubators to promote (Grimaldi & Grandi, 2005).

Incubators are also a frequently-used tool for policy makers to stimulate entrepreneurship and thereby regional economic growth, job employment and innovation (Aerts et al., 2007). Those policy makers should not only look at the average needs of the entrepreneurial population, but should also account for heterogeneity by configuring incubators and their communication strategy. Emphasis could be placed on the knowledge-intensive start-ups to stimulate high-tech innovation and economic growth. Also involving those that are currently indifferent regarding incubators (Class 3) could be valuable. Taking this class into account and convincing them about the value of incubators increases the total pool of interested entrepreneurs that may be benefitted by joining an incubator, which may be beneficial for economic purposes. However, it should be noted that this class is less likely to be high-tech start-ups and that it is not known if this indifference comes from a lack of knowledge, by low involvement or a lack of interest.

5.3 Limitations

This study has a number of limitations. First, the data poses restrictions to the generalizability of the results to other regions. The relatively large dataset is gathered in North America and (Western) Europe, because technology-based entrepreneurship is mainly located in these areas (GEM, 2015). It may give a valuable indication how the decision process of entrepreneurs works in other parts of the world as well, since no significant differences exist between Europe and North America in this sample. Still, more research is needed to corroborate the findings from this study in other parts of the world. Second, the tested incubator attributes are formulated in an encompassing way to construct a parsimonious list of

attributes and reduce the complexity of the choice task. Although the list is deduced from recent literature and checked by experts in the field of incubation, parsimony and a low complexity may come at the expense of specificity and nuances. Future research could consider specifying the attributes further to create higher granularity. Suggestions for such specification to split financial capital into funding form and funding amount and physical capital into provision of office space and specialized equipment, both in order to distinguish further.

Last, this study is conducted with the assumption that entrepreneurial behavior is rational and thus that the entrepreneur makes rational decisions. Theoretically, the decision for an incubator is important for start-up development, since there is a wide variety of incubators supplying diverse resources. In practice, however, this decision may be less rational due to uncertainty, boundaries of time, too much or too little information or cognitive restrictions (Baron, 1998; Simon, 1955). Entrepreneurs may potentially choose the incubator where they actually pass the selection phase and thus may not make optimal choices. Nevertheless, entrepreneurs will always try to join the incubator best suited to their needs, which makes insights into the decision process valuable. Furthermore, the rationale behind the preference for an incubator is important knowledge for incubators since it may help with targeting and selecting their focus group.

5.4 Future research

Future challenges for more effective stimulation of entrepreneurship are to couple indicators for entrepreneurial potential with their heterogeneity of preferences. A question to be answered is for instance “Which preferences do the most promising entrepreneurs have?”. By answering this, it becomes possible to identify and stimulate the start-up groups with the highest potential, creating the opportunity to tailor incubator services to the most promising start-ups. Preliminary ideas for entrepreneurs’ indicators of potential are ambition level, motivation and technological know-how (Bergek & Norrman, 2008; Clarysse et al., 2005). Third, an interesting and somewhat expected result is that financial capital is of critical importance in the choice for an incubator. However, as Hackett & Dilts (2004) state, many incubators do not provide significant funding. An interesting venue for further research is to find out the potential of an incubator with venture capitalist services, implying more intensive support and more financial contributions (Hackett & Dilts, 2004b). Last, some studies argue that preferences change once entrepreneurs become incubated and align more to what is supplied by the incubator (Vohora et al., 2004). Further research could focus on the question of whether preferences across different classes of entrepreneurs change in similar ways, or some classes maintain their preferences over time. This information is relevant to understanding if the provided resources by incubators should be aligned with the perceived needs of the entrepreneur.

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Appendix 1: Qualitative study

1.1 Research design

First, a qualitative multiple case study design is applied to obtain rich and in-depth insights (Miles & Huberman, 1994). I used a semi-structured interview design to obtain a complete set of data, allowing interviewees to formulate their own view in a dialogue, rather than simply answering a set of questions (Kvale, 2008). Additionally, the interviewer can pose follow-up questions to ensure every topic is covered. As aforementioned, the obtained data was used to construct the DCE and to embed the quantitative results in.

1.2 Data collection & sample description

Data was collected using semi-structured face-to-face interviews with staff of incubators and technology-based nascent entrepreneurs in Berlin. Berlin was selected as location, because it can be seen as a critical case due to its recent development into a major start-up hub in Europe, comprising many incubators and high entrepreneurial activity (Clarysse et al., 2015). It has an 'entrepreneurial vibe', which correlates with high attractiveness to start a new firm and a high density of new start-ups (McKinsey, 2013). The incubators and nascent entrepreneurs are purposively sampled from technology intensive industries (for instance clean-tech, ICT and biotech) with the aim obtain an as diverse as possible sample to cover the variety of attributes of incubators and nascent entrepreneurs. Out of the set of interviews, nine were conducted with incubator staff and fifteen were held with entrepreneurs. Each of the nine technology-based incubators focused on a different market and with different affiliated organizations (see Table 2). Staff of the incubator was interviewed because of their rich knowledge base and their view on the needs of entrepreneurs. When possible, multiple informants per incubator were interviewed for the sake of triangulation of data (Yin, 2009).

As for the entrepreneurs in the sample, both already incubated, previously incubated as well as not yet incubated entrepreneurs are interviewed in order to obtain insights in the perceived importance of resources of these groups. Entrepreneurs were sampled by visiting entrepreneurial events and referrals from interviewees. This resulted in fifteen interviews with in total sixteen entrepreneurs from six different technology-based industries (see Table 1). After the 24 interviews no new concepts emerged and was concluded that theoretical saturation was reached. The interview structure is included in Appendix 1.

Table 8. Sample description entrepreneurs

Entrepreneur	Industry	Age	Previously/currently incubated
1	Agriculture	36	No
2	Smart transportation	29	Yes
3	Agriculture	28	No
4	Agriculture	28	No
5	Consumer electronics	25	Yes
6	Energy Efficiency	24	No
7	Information Technology	26	No
8	Energy Efficiency	24	No
9	Consumer electronics	33	Yes
10	Information Technology	31	No
11	Finance	25	No
12	Information Technology	27	Yes
13	Information Technology	33	Yes
14	Consumer electronics	29	Yes
15	Finance	35	Yes
16	Information Technology	35	No

Table 9. Sample description incubators

Company	Affiliated organization	Industry of focus
Start-upbootcamp	Independent	Energy/ smart transportation
Microsoft Incubator	Microsoft	Information Technology
Techstars	Independent	Information Technology
Start-up	TU Berlin	No focus
Berlin Start-up Consulting	Independent	No focus
Hitfox	Independent	Finance
Hardware.co	Independent	Hardware
Green Garage	Climate KIC	Sustainability
Atomleap	Independent	Hardware

1.3 Data preparation & analysis

The interpretation of raw data from interviews is a critical component of qualitative research. It served to validate and add to theory as the foundation of the DCE as well as for selecting the next interviewees (Flick, 2009). This implies that not a linear but an iterative method of collecting data is used with constant comparison between data, codes and theory. To break the data down the basic coding guidelines of Corbin & Strauss (1990) are followed. First, to uncover the reasons behind the choice for an incubator, an attempt was made to stay close to the text, resulting in codes of a rather low level of abstraction (Gouldin, 2002). Initially, the concepts were formed without using the theoretical concepts of the RBV to eliminate subjectivity where possible. Then, the identified concepts were refined and differentiated based on the theoretical concepts, followed by a focus on cross-case concepts and patterns.

1.4 Preliminary interview schemes

1.4.1 Incubator staff

Introduction

I am writing a scientific report on entrepreneurs in relation to incubators for my study program Science and Innovation Management at Utrecht University. I aim to provide deeper insights in what entrepreneurs' value about incubators and why entrepreneurs choose for a certain incubator. I will conduct interviews with incubators as well as starting entrepreneurs. Any information coming from this interview will be treated confidential and all the results will be analyzed anonymously. First I will ask you first some basic information about the incubator and your personal role. Then we will discuss the necessity/value of an incubator and some factors influencing the choice for an incubator.

Incubator and personal background

- What is your age and background in terms of education and work and specifically entrepreneurial experience?
- What is your role in the incubator?
- Can you describe the incubator in terms of background, focus groups, goals
 - o Points to cover
 - What is the year of establishment
 - What is the size in terms of staff (FTE), the annual budget and the number of incubated start-ups
 - On which industry(ies) does the incubator focus and why?
 - On which development phase focus does the incubator focus and why?
 - What is the business model? How does the incubator make money?
 - Does the incubator have any closely affiliated organizations? What do they contribute?

Entrepreneurial climate

- How would you describe the general entrepreneurial climate in Germany and how is Berlin in relation to that?
 - o Strengths/weaknesses in terms of regulations, availability of capital, entrepreneurial culture
 - o Comparison to other regions/nations: London, Munich, Silicon Valley
 - o What can be done to improve the ecosystem?
 - o What are reasons for start-ups to come to Berlin or to go away?
 - o Which type of start-ups are particularly well-suited in Berlin?

Choice

Now we turn to incubator and its value for entrepreneurs/start-ups.

- What are the key things in start-ups to succeed in your opinion?
- What is generally lacking in starting firms in your opinion? Why do they fail?
 - o Why is it hard to succeed for them?
- Why do entrepreneurs need an incubator?
- What kind of support do you offer to tenants to overcome the previously mentioned challenges and how are they delivered to tenants?

Based on the answers given to the previous question, check if the following types of resources have been addressed, and how valuable they are perceived to be.

- Physical capital
 - Office space, administrative services
 - Specialized equipment or raw materials
- Financial capital
 - Funding/loans: Do you take equity stakes in exchange for financial funding? How much funding?
- Human capital
 - Coaching – Business / technical / market knowledge
 - Training – Business / technical / market knowledge
- Social capital
 - Network access: Internal/External
 - Network access target: Customers, suppliers, experts, investors
 - Incubator credibility: How do you think that credibility plays a role in the choice for an incubator?
- Which forms of support are the most important for success of start-ups in your opinion?
- What are the other options for acquiring missing resources for entrepreneurs in ecosystem?
- Why do you think that entrepreneurs choose for your incubator, from their perspective?
 - o What are the most important factors for start-ups in this choice?
 - o To what extent does the personal needs of entrepreneurs influence this? In form of personal development for instance.
 - o Is this different per start-up? (Important factors and personal needs) Why and how?
 - o How does this incubator market itself towards potential tenants?
 - What is the unique selling point? Why should tenants choose yours?
 - o Do you as incubator market the same forms of support as you deliver to tenants. Are there (subtle) differences?
 - o What could the incubator improve in your opinion with respect to reaching out to potential tenants?

Rest:

- Is there anything that we didn't discuss which is of influence on the choice for a location and/or an incubator

I would like to thank you for your co-operation and this interview. Right now I'm still in the process of collecting data. I'm expecting to finish my projects somewhere at the end of September. Would you like me to send you the management report that I'm writing? If you have any other questions later on, please do not hesitate to contact me.

1.4.2 Non-incubated nascent-entrepreneur

Introduction

I am writing a scientific report on entrepreneurs in relation to incubators for my study program Science and Innovation Management at Utrecht University. I aim to provide deeper insights in what entrepreneurs value about incubators and why entrepreneurs choose for a certain incubator. To conduct this study, I will conduct interviews with incubators as well as starting entrepreneurs. Any information coming from this interview will be treated confidential and all the results will be analyzed anonymously. During this interview I will ask you first some basic information about your start-up and your personal motivation. Then I we will discuss the necessity/value of an incubator and why you would choose a certain incubator.

Personal

- What is your age and your background in terms of education and work experience? (e.g. Technical/business, Entrepreneurial experience)
- Why did you decide to start your own business? Why a start-up?
- What is your ambition? What are you trying to accomplish?

Start-up

- Could you state the company name, year of founding and the number of employees,
- Can you tell in short what is the company about, how/when did it start and what makes it special/unique?
- What is your responsibility within the start-up?

Choice of location

- Why did you choose this location
 - o What was important in this decision?
 - o Why Germany / why berlin. Advantages/disadvantages
 - o Did you consider alternatives
 - o Was there a distinction between business and personal considerations to come here?
 - o Did you first choose for an incubator or location
 - o For how long are you planning to stay? What are your future plans for your start-up?

Start-up needs

- What are the key things in start-ups to succeed in your opinion?
- What do you deem to be important for your own development/happiness in a start-up? What are you personally looking for?
- Which problems/challenges are you currently facing in your start-up?
 - o What (which resources/capabilities/expertise) do you think is currently lacking in your firm?

Incubators

- Do you want to join an incubator?
 - o From the start-up perspective
 - o Personal perspective

- What are you looking for in an incubator?
- Have you considered joining an incubator? Yes: Which specific one do you prefer? Why did you choose not to do it yet? No: Why not?
- Can you describe the ideal incubator?
- What would you value the most about an incubator?
 - o What would you think they can add to your business?
 - o What are the disadvantages?
- What are you looking for from a personal perspective in an incubator?
- Are you involved in a community of entrepreneurs around your idea/start-up? Do you think it is important for your business? Could an incubator help with that?

Influence of incubator characteristics

- Which factors play a role in the decision for an incubator?
- Would you rather choose a specialized incubator or a general oriented incubator? Why?
 - o With regard to colleagues. Why?
 - o With regard to specialization of staff. Why?
- Would you rather choose an independent incubator or an incubator with affiliated corporations or a university-related incubator?
- Would you choose an incubator according to a certain location? World-wide and within Germany/Berlin?

Rest:

- What could an incubator do better in your opinion, for instance in trying to reach out to you? Could their marketing/selection process be improved?
- Is there anything that we didn't discuss which is of influence on the choice for a location and/or an incubator

I would like to thank you for your co-operation and this interview. Right now I'm still in the process of collecting data. I'm expecting to finish my projects somewhere at the end of September. Would you like me to send you the management report that I'm writing? If you have any other questions later on, please do not hesitate to contact me.

Self-recap

- Physical capital
 - o Office space, administrative services
 - o Specialized equipment or raw materials
- Financial capital
 - o Funding/loans: Would you give up equity in exchange for financial funding?
- Human capital
 - o Coaching – Business / technical knowledge
 - o Training – Business / technical knowledge
- Social capital
 - o Network access: Internal/External
 - o Network access target: Customers, suppliers, experts, investors
 - o Incubator credibility: do you feel that being associated with the incubator brings certain credibility to your company?

1.4.3 Incubated nascent entrepreneurs

Introduction

I am writing a scientific report on entrepreneurs in relation to incubators for my study program Science and Innovation Management at Utrecht University. I aim to provide deeper insights in what entrepreneurs value about incubators and why entrepreneurs choose for a certain incubator. To conduct this study, I will conduct interviews with incubators as well as starting entrepreneurs. Any information coming from this interview will be treated confidential and all the results will be analyzed anonymously. First I will ask you some basic information about your start-up and your personal motivation. Then I we will discuss the necessity/value of an incubator and why you would choose a certain incubator.

Personal

- What is your age and your background in terms of education and work experience? (e.g. Technical/business, Entrepreneurial experience)
- Why did you decide to start your own business? Why a start-up?
- What is your ambition? What are you trying to accomplish?

Start-up

- Could you state the company name, year of founding and the number of employees,
- Can you tell in short what is the company about, how/when did it start and what makes it special/unique?
- What is your responsibility within the start-up?

Choice of location

- Why did you choose this location
 - o What was important in this decision?
 - o Why Germany / why berlin. Advantages/disadvantages
 - o Did you consider alternatives
 - o Was there a distinction between business and personal considerations to come here?
 - o Did you first choose for an incubator or location
 - o For how long are you planning to stay? What are your future plans for your start-up?

Start-up needs

- What are the key things in start-ups to succeed in your opinion?
- What do you deem to be important for your own development/happiness in a start-up? What are you personally looking for?

Choice

Let's go back to the point when you were looking for additional support, so before choosing an incubator.

- What did you deem to be important for your start-up to succeed back then?
 - o And what was lacking?
- What resources/personal utilities did you deem to be important for yourself as person? So what were you trying to achieve for personal basis?
- Why did you decide to join an incubator?
 - o What were the most important/influential factors in this decision?
- Were there other options to choose? Why this specific one?
- At what stage of your business development were you when you decided to join an incubator?

Now back to where we are now

- Which problems/challenges are you currently facing in your start-up? Is the incubator useful by dealing with those problems?
- On hindsight: Would you have done something different in the decision for a location/incubator?
- What are the most valuable resources an incubator can provide? Is your perception about what is important for business success changed since joining an incubator?
- What are you looking for in social sense in an incubator? (Creative or collegial climate/ strong or weak community) Has this changed compared to before joining an incubator? Does the incubator provide you with the right community strength?
- Are you involved in a community of entrepreneurs around your idea/start-up? Do you think it is important for your business? Could an incubator help with that?

Based on the answers given to the previous question, check if the following types of resources have been addressed, and how valuable they are for tenant firms.

- Physical capital
 - o Office space, administrative services
 - o Specialized equipment or raw materials
- Financial capital
 - o Funding/loans: Would you give up equity in exchange for financial funding?
- Human capital
 - o Coaching – Business / technical knowledge
 - o Training – Business / technical knowledge
- Social capital
 - o Network access: Internal/External
 - o Network access target: Customers, suppliers, experts, investors
 - o Incubator credibility: do you feel that being associated with the incubator brings certain credibility to your company?

Influence of incubator characteristics

- Which factors play a role in the decision for an incubator?
- Would you rather choose a specialized incubator or a general oriented incubator? Why?
 - o With regard to colleagues. Why?
 - o With regard to specialization of staff. Why?
- Would you rather choose an independent incubator or an incubator with affiliated corporations or a university-related incubator?
- Would you choose an incubator according to a certain location? World-wide and within Germany/Berlin?

Rest

- What could an incubator do better in your opinion, for instance in trying to reach out to you? Could their marketing/selection process be improved?
- Is there anything that we didn't discuss which is of influence on the choice for a location and/or an incubator

I would like to thank you for your co-operation and this interview. Right now I'm still in the process of collecting data. I'm expecting to finish my projects somewhere at the end of September. Would you like me to send you the management report that I'm writing? If you have any other questions later on, please do not hesitate to contact me.

Appendix 2. Covariates

2.1 High-tech variable

Industry list and high-tech/low-tech division based on combination of following sources:

- Central Statistics Office (2011). Community Innovation Survey 2008-2010. Acquired through: http://www.cso.ie/en/media/csoie/releasespublications/documents/multisectoral/2010/co_mminn0810.pdf
- OECD (2011). ISIC REV. 3 Technology Intensity Definition. Acquired through: <http://www.oecd.org/sti/ind/48350231.pdf>
- Colombo, M. G., & Grilli, L. (2010). On growth drivers of high-tech start-ups: Exploring the role of founders' human capital and venture capital. *Journal of Business Venturing*, 25(6), 610-626.

Table 10. Industry overview and division high-tech/low-tech.

Sector	Input	N	%	High-tech	N	Low-tech	N	Other	N
Aerospace	224	14	1,5	1	14		0		0
Artificial Intelligence	704	44	4,7	1	44		0		0
Basic metals	304	19	2		0	1	19		0
Biotechnology & Pharmaceuticals	448	28	3	1	28		0		0
Chemistry	400	25	2,7	1	25		0		0
Clean technology	1248	78	8,3	1	78		0		0
Coke and petroleum products	64	4	0,4	1	4		0		0
Electrical engineering & equipment	704	44	4,7	1	44		0		0
Energy	592	37	4	1	37		0		0
Fabricated metal products	112	7	0,7	1	7		0		0
Functional or processed food	352	22	2,4	1	22		0		0
ICT & Computers	2160	135	14,4		0	1	135		0
Information systems	1968	123	13,2		0	1	123		0
Machinery	240	15	1,6		0	1	15		0
Medical & dental instruments	256	16	1,7	1	16		0		0
Motor vehicles	368	23	2,5		0	1	23		0
Nanotechnology	144	9	1	1	9		0		0
Optical products	160	10	1,1	1	10		0		0
Other non-metallic mineral products	16	1	0,1	1	1		0		0
Photonics	48	3	0,3	1	3		0		0
Repair & installation machinery	224	14	1,5		0	1	14		0
Reproduction recorded media	192	12	1,3		0	1	12		0
Robotics	304	19	2	1	19		0		0
Rubber and plastic products	144	9	1	1	9		0		0
Ships and boats	64	4	0,4		0	1	4		0
Tele-communications	608	38	4,1		0	1	38		0
Transport	528	33	3,5		0	1	33		0
Transport equipment	144	9	1		0	1	9		0
Water	160	10	1,1		0	1	10		0
Weapons & ammunition	144	9	1	1	9		0		0
Other, please specify:	1936	121	12,9		0		0	1	121
Total	14960	935	100	0	379		435	1	121

2.2 Business activities

The covariate business activities is the cumulative amount performed business activities, which are listed below.

1. Formally registering the business
2. Preparing a written business plan
3. Organizing a start-up team
4. Devoting yourself full time to the business (more than 35 hours per week)
5. Developing a proof of concept or working prototype
6. Applying for a patent / copyright / trademark
7. Defining market opportunities
8. Hiring employees
9. Asking financial institutions or other people for funds
10. Receiving money from the sales of goods or services
11. Purchasing materials, equipment, facilities, or other tangible goods for the business
12. Discussing the new business' product or service with potential customers

Sources: Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18(3), 301–331.

2.3 Salaries

The covariate *Salaries* is used as indication for nascent entrepreneurs. It is derived from the definition of nascent entrepreneurs by Wagner (2000):

*“a person who is now trying to start a new business, who expects to be the owner or part owner of the new firm, who has been active in trying to start the new firm in the past 12 months and whose start-up did not yet have a positive monthly cash flow that covers expenses and **the owner-manager salaries for more than three months**”* (Wagner, 2000; p.16).

Source: Wagner, J. (2000). *Nascent entrepreneurs* (pp. 15-37). Springer US.

Appendix 3. Survey questions (incl. DCE)

Dear participant,

This study is about entrepreneurial decision making. Policy makers around the world are currently trying to create favorable conditions for innovative entrepreneurship. Such policies not only aim to support domestic entrepreneurs, but also aim to attract foreign entrepreneurs. A prominent part of these policies is the creation of 'incubators'. These incubators provide early-stage start-ups with a wide range of services and resources such as office space or funding. We explore why entrepreneurs favor a particular location or incubator over another. We can thereby help to design policies that are in line with entrepreneurs' demands.

This survey consists of three parts. In the first part, we give you a series of choice tasks in which you are asked to state which location you are most likely to choose to establish your business. In the second part, you are asked to state which incubator you are most likely to choose to help you develop your business. In the third part, we will ask you some questions about yourself and your business.

Completing the entire survey will take approximately 20 minutes. Please answer all questions honestly; there are no right or wrong answers! We will evaluate the data anonymously.

This study is conducted by Utrecht University and is funded by the European Climate-KIC program (see www.Climate-KIC.org).

Thank you for your participation!

On behalf of Utrecht University,

Marijn van Weele

Frank van Rijnsoever

Fenna Cerutti

Menno Groen

3.1 Screening questions

Are you, alone or with others, currently trying to start a new business? This includes any self-employment or selling of goods or services to others.

1. No
2. Yes

Would you consider the new business to be a technology - based start-up?

A technology - based start-up is a new firm whose business is based on the exploitation of technological know-how through the creation of new products and services. Examples include the development of a new drug or software service.

1. No
2. Yes

What is the primary sector in which your business operates, or will operate?

1. Aerospace
2. Artificial Intelligence
3. Basic metals
4. Biotechnology & Pharmaceuticals
5. Chemistry
6. Clean technology
7. Coke and petroleum products
8. Electrical engineering & equipment
9. Energy
10. Fabricated metal products
11. Functional or processed food
12. ICT & Computers
13. Information systems
14. Machinery
15. Medical & dental instruments
16. Motor vehicles
17. Nanotechnology
18. Nuclear physics
19. Optical products
20. Other non-metallic mineral products
21. Photonics
22. Repair & installation machinery
23. Reproduction recorded media
24. Robotics
25. Rubber and plastic products
26. Ships and boats
27. Tele-communications
28. Transport
29. Transport equipment
30. Water
31. Weapons & ammunition

- 98 Other, please specify:

In the past 12 months, in which of the following activities have you engaged during the development of your business?

Tick all that apply:

1. Formally registering the business
2. Preparing a written business plan
3. Organizing a start-up team
4. Devoting yourself full time to the business (more than 35 hours per week)
5. Developing a proof of concept or working prototype
6. Applying for a patent / copyright / trademark
7. Defining market opportunities
8. Hiring employees
9. Asking financial institutions or other people for funds
10. Receiving money from the sales of goods or services
11. Purchasing materials, equipment, facilities, or other tangible goods for the business
12. Discussing the new business' product or service with potential customers

- 99 None of the above

Has the new business paid any salaries, wages, or payments in kind, including your own?

"Payments in kind" refers to goods or services provided as payments for work rather than cash.

Payments in kind do not include stock options.

1. No
2. Yes

For how long has the new business been paying salaries, wages or payments in kind, including your own?

1. For 0 to 3 months
2. For 3 to 6 months
3. For 6 to 12 months
4. For 1 to 2 years
5. For 3 to 5 years
6. For more than 5 years

Do you, or will you, personally own all, part, or none of this business?

1. All
2. Part
3. None

Is or will the new business be a subsidiary?

A subsidiary is a venture of which another organization owns more than 50% of voting shares.

1. No, the new venture is not the subsidiary of another organization
2. Yes, the new venture is a subsidiary of another organization

98 Other, please specify:

97 Don't know

Where do you currently live?

1. State / region / province:
2. City

Are you currently considering to relocate your business to another region? *By 'region' we refer to a particular city and the greater metropolitan area around it.*

1. No
2. Yes

Can you briefly explain your considerations for choosing the region where your business is currently located, or will be located?

If you were to relocate your business to another region, which of the following regions-would you consider?

Tick all that apply.

Europe

1. Amsterdam (The Netherlands)
2. Berlin (Germany)
3. London (United Kingdom)
4. Paris (France)
5. Tel Aviv (Israel)

North America

6. Boston (United States)
7. New York (United States)
8. Silicon Valley (United States)
9. Toronto (Canada)
10. Vancouver (Canada)

Asia

11. Hong Kong (China)
12. Seoul (South Korea)
13. Shanghai (China)
14. Tokyo (Japan)

South America

15. Santiago (Chile)
16. Sao Paulo (Brazil)

Australia

17. Melbourne (Australia)
18. Sydney (Australia)
- 98 Other, please specify
- 99 None

3.2 Incubator choice

The next part of the questionnaire focuses on incubators. Incubators (and accelerators) are programs or organizations that support the development of early-stage companies through an array of business support services and resources (e.g. office space, network, coaching, etc.)

Were you familiar with the concept of 'incubators' and / or 'accelerators' prior to participating in this study'?

1. No
2. Yes

Are you currently, or have you ever been, part of an incubator or acceleration program?

1. No
2. Yes, I am currently part of an incubator or acceleration program
3. Yes, I have been part of an incubator or acceleration program in the past

Can you briefly explain why you have chosen for this particular incubator or accelerator program?

Imagine that you were to choose an incubator to help you establish your business. We ask you to choose between two hypothetical incubators. Each incubator has its own characteristics. Below is a table to help you understand these characteristics and their respective levels. Based on these characteristics we ask you to choose the preferred incubator to help you establish your business.

Characteristics that are not mentioned in the table, do not vary across the incubators.

Characteristic	Explanation	Levels
1. Incubator affiliation	The incubator may have various organizations as its core partner.	<ol style="list-style-type: none"> 1. None: independent, privately-owned incubator 2. Start-up investor 3. Local university 4. Multinational company active across global markets 5. Internationally renowned university 6. Regional government
2. Physical resources	The incubator may provide your business with the appropriate physical resources, which include office space and shared facilities or equipment.	<ol style="list-style-type: none"> 1. No access to physical resources 2. Paid access to physical resources 3. Free access to physical resources 4. Free access to physical resources
3. Funding	<p>The incubator may provide different amounts of funding to your business</p> <p>The funding may be provided as a grant, as a loan, or the incubator may take a certain amount of equity and shares in the start-up.</p> <p>This leads to different combinations of funding amounts and funding forms.</p>	<p>Funding amount:</p> <ol style="list-style-type: none"> 1. € 0 (no funding) 2. € 10.000 3. € 25.000 4. € 100.000 <p>Funding form:</p> <ol style="list-style-type: none"> 1. Grant or subsidy 2. Loan against commercial rates 3. 6 % equity 4. 15 % equity
4. Training and coaching	<p>The incubator may provide coaching by experienced entrepreneurs who act as mentors or advisors.</p> <p>The incubator may also provide training such as master classes and workshops.</p>	<ol style="list-style-type: none"> 1. None 2. Coaching only 3. Training only 4. Training and coaching
5. Networks	<p>The internal network refers to interaction with other entrepreneurs in the incubator.</p> <p>The external network includes access to experts, customers and investors.</p>	<ol style="list-style-type: none"> 1. No strong networks 2. Strong external network only 3. Strong internal network only 4. Strong internal and external networks

	If networks are strong, members are well-connected, accessible and willing to help each other.	
6. Track record	The start-ups that previously participated in the incubator. Incubators with a good track record have a history of incubating successful start-ups.	<ol style="list-style-type: none"> 1. No track record yet 2. Bad 3. Neutral 4. Good
7. Industry focus	The incubator may only support start-ups in your specific industry, or the incubator may support start-ups from a broad range of industries	<ol style="list-style-type: none"> 1. Focus on your industry 2. Broad range of industries

Imagine that you were to choose an incubator to help you establish your business. We ask you to choose between two hypothetical incubators. Each incubator has its own characteristics. You can find the table to help you understand these characteristics and their respective levels [here](#). Characteristics that are not mentioned, do not vary across incubators.

Question 1: which hypothetical incubator would you most likely choose to help you establish your business? Answer the questions by ticking the boxes below each incubator

Characteristics	Incubator #1	Incubator #2
Incubator affiliation	incubator 1.a	incubator 1.a
Physical resources	incubator 1.b	incubator 1.b
Funding	incubator 1.c	incubator 1.c
Training and coaching	incubator 1.d	incubator 1.d
Networks	incubator 1.e	incubator 1.e
Track record	incubator 1.f	incubator 1.f
Industry focus	incubator 1.g	incubator 1.g
Which incubator would you most likely choose? <i>Please select one of the two incubators</i>	<input type="checkbox"/>	<input type="checkbox"/>

3.3 Personal and start-up characteristics

What is the number of people of your business' founding team?

Not counting the founding team, how many people (full time equivalent) are currently working for your business?

Is the business a spin off or independent start-up? *A spin-off occurs when a division of an organization (like a company, research lab, university department etc.) becomes an independent business, whereby the founders of this new venture take assets (such as intellectual property, technology or products) from the parent organization.*

1. An independent start-up
2. A spin-off from a university or research lab
3. A spin-off from another company

98 Other, please specify:

97 Don't know

Did your business make use of any of the following sources to raise funds? Tick all that apply:

1. Governmental subsidy
2. Bank loan
3. Crowdfunding
4. Investor
5. Friends & Family
6. Own investment

99. None of the above

How much money did your business raise (in total, including your own investment)?

1. Less than \$1,000
2. \$1,000 - \$9,999
3. \$10,000 - \$49,999
4. \$50,000 – \$99,000
5. \$100,000 - \$249,999
6. \$250,000 - \$499,999
7. More than \$500,000

1. Less than £749
2. £750 – £7,499
3. £7,500 - £34,999
4. £35,000 – £74,999
5. £75,000 \$ - £199,999
6. £200,000 - £349,999
7. More than £350,000

1. Less than €1,000
2. €1,000 - €9,999
3. €10,000 - €49,999
4. €50,000 – €99,000
5. €100,000 \$ - €249,999
6. €250,000 - €499,999
7. More than €500,000

1. Less than CHF1,000
2. CHF 1,000 - CHF 9,999
3. CHF 10,000 - CHF 49,999
4. CHF 50,000 – CHF 99,000
5. CHF 100,000 \$ - CHF 249,999
6. CHF 250,000 - CHF 499,999
7. More than CHF 500,000

97 Decline to answer

Please rank the top 3 statements which best describe your ambitions for this business.

I want the business to...

1. ...survive as long as possible as an independent firm
2. ...make me a lot of money
3. ...solve an important problem
4. ...improve the world
5. ...grow and become a large company
6. ...be acquired by a larger company for a good price
7. ...be in my control
8. ...expand into global markets

1. 1 = most important ambition
2. 2 = second most important ambition
3. 3 = third most important ambition

Please indicate on a scale from 1-5 to what extent you agree with the following statement:

1. There are good conditions to start a business in the area where I live

SCALE

1. 1 = strongly disagree
2. 2
3. 3
4. 4
5. 5 = strongly agree

Please indicate on a scale from 1-5 to what extent you agree with the following statements:

1. Moving from place to place is exciting and fun
2. I could not be happy living in one place for the rest of my life
3. I like going places where no-one knows me
4. There is not much a future for me in my home town
5. Most of the people that I knew when I was growing up have moved away
6. I am extremely satisfied with my present home
7. My family is very close-knit and I would be unhappy if I could not see them on a regular basis
8. I have several close, life-long friends that I never want to lose
9. I love to reminisce about the places I played when I was a child

SCALE

1. 1 = strongly disagree
2. 2
3. 3
4. 4
5. 5 = strongly agree

What is your age?

Are you...

1. Male
2. Female

What is your current marital status or living arrangement?

1. Single
2. Living together with a partner
3. Married

Do you have any children?

1. No
2. Yes

What is the highest level of formal education you completed?

SHOW IF dCOUNTRY=1

1. Incomplete Secondary (high School) Education
2. Secondary (high school) Education
3. Some College, University, Technical School or Further Education
4. Vocational or Technical Degree
5. Associate's Degree
6. Bachelor's Degree
7. Master's Degree
8. Doctoral or Professional Degree (PhD, Ed.D, JD, DVM, DO, MD, DDS, or similar)

SHOW IF dCOUNTRY=2

9. Incomplete Secondary Education (Below GC SE / O Level)
10. Secondary Education Completed (GCSE / O Level / CSE or equivalent)
11. Secondary Education Completed (A Level or equivalent)
12. Some Vocational or Technical Qualifications
13. Vocational or Technical Qualifications Completed (e.g. HND, NVQ)
14. University Education Completed (First Degree e.g. BA, BSc)
15. Postgraduate Education Completed (e.g. Masters)
16. Doctorate, Post-doctorate or equivalent (Higher Degree)

SHOW IF dCOUNTRY=3

17. Incomplete Secondary Education
18. Secondary Education Completed
19. Some University or Vocational Certification
20. Vocational or Professional Certification Completed
21. University Education Completed
22. Postgraduate Education Completed
23. Doctorate, Post-doctorate or equivalent Completed

SHOW IF dCOUNTRY=4

24. Junior High or Middle School
25. Some High School, Secondary School/A-Levels
26. High School Diploma, Secondary School/A-Levels Graduate
27. Some College, University, Technical School or Further Education
28. Undergraduate, University Degree
29. Some Postgraduate
30. Graduate/Post Graduate Degree

SHOW IF dCOUNTRY=5

31. Incomplete Secondary Education
32. Secondary Education Completed (Baccalauréat or equivalent)
33. Some University or Vocational Certification
34. Vocational or Professional Certification Completed (BTS, DUT or equivalent)
35. University Education Completed (Bac+3)
36. Postgraduate Education Completed (Bac+5: Master, Engineering Degree or equivalent)
37. Doctorate, Post-doctorate or equivalent (Bac +8)

SHOW IF dCOUNTRY=6

38. No academic qualifications

39. Secondary school (very low qualification)
40. O-Levels / Secondary school (medium qualification)
41. A-Levels / International Baccalaureate / Higher secondary education
42. Vocational school / Apprenticeship
43. Specialised secondary school / Technical college
44. Advanced technical college / Polytechnic
45. University (Bachelor's, Master's degree or higher)

SHOW IF dCOUNTRY=7

46. No academic qualifications
47. Vocational secondary school (very low qualification)
48. Polytechnic
49. A-Levels
50. Specialised secondary school
51. Advanced technical college
52. Technical college
53. University

SHOW IF dCOUNTRY=8

54. Primary education
55. Secondary education
56. A-Levels
57. University degree or equivalent
58. Vocational diploma

SHOW IF dCOUNTRY=9

59. Incomplete Secondary Education
60. Secondary Education Completed
61. Some University or Vocational Certification
62. Vocational or Professional Certification Completed
63. University Education Completed
64. Postgraduate Education Completed
65. Doctorate, Post-doctorate or equivalent Completed

SHOW IF dCOUNTRY=10

66. General education
67. Technical education
68. Vocational education
69. University

SHOW ALL

- 97 Prefer not to answer

How many years have you been working in the same industry as your business' current primary industry?

Have you been directly involved in the starting up of other businesses?

1. No
2. Yes, in the following number of businesses:

Appendix 4: Results latent class analysis

Number of cases	935				
Number of replications	7480				
Number of parameters (Npar)	72				
Random Seed	1909719				
Best Start Seed	1909719				
Chi-squared Statistics					
Degrees of freedom (df)	863	p-value			
L-squared (L ²)	7379,4840	3,4e-1016			
X-squared	77113,7990	3,9e-15720			
Cressie-Read	27661,4028	2,4e-5173			
BIC (based on L ²)	1476,0924				
AIC (based on L ²)	5653,4840				
AIC3 (based on L ²)	4790,4840				
CAIC (based on L ²)	613,0924				
SABIC (based on L ²)	4216,9088				
Dissimilarity Index	0,9617				
Total BVR	0,0000				
Log-likelihood Statistics					
Log-likelihood (LL)	-4844,2434				
Log-prior	-10,5663				
Log-posterior	-4854,8097				
BIC (based on LL)	10181,0061				
AIC (based on LL)	9832,4867				
AIC3 (based on LL)	9904,4867				
CAIC (based on LL)	10253,0061				
SABIC (based on LL)	9952,3400				
Classification Statistics	sCI	Class			
Classification errors	0,0630	0,3315			
Reduction of errors (Lambda)	0,5974	0,3807			
Entropy R-squared	0,6953	0,3082			
Standard R-squared	0,6691	0,3183			
Classification log-likelihood	-5623,0778				
Entropy	778,8344				
CLC	11246,1556				
AWE	12447,1943				

ICL-BIC	11738,6749				
sCI Classification Table					
	Modal				
Latent	1	2	Total		
1	743,5051	45,4407	788,9458		
2	13,4949	132,5593	146,0542		
Total	757,0000	178,0000	935,0000		
sCI Classification Table					
	Proportional				
Latent	1	2	Total		
1	748,0872	40,8586	788,9458		
2	40,8586	105,1957	146,0542		
Total	788,9458	146,0542	935,0000		
Class Classification Table					
	Modal				
Latent	1	2	3	Total	
1	186,6748	16,5150	83,9524	287,1423	
2	26,9997	112,7843	73,4483	213,2324	
3	69,3255	39,7006	325,5992	434,6253	
Total	283,0000	169,0000	483,0000	935,0000	
Class Classification Table					
	Proportional				
Latent	1	2	3	Total	
1	156,7814	35,5424	94,8184	287,1423	
2	35,5424	104,8365	72,8535	213,2324	
3	94,8184	72,8535	266,9535	434,6253	
Total	287,1423	213,2324	434,6253	935,0000	
Prediction Statistics					
incpref					
Error Type	Baseline(0)	Baseline	Model	R²(0)	R²
Squared Error	0,5000	0,4937	0,3693	0,2613	0,2518
Minus Log-likelihood	0,6931	0,6868	0,5420	0,2180	0,2108
Absolute Error	1,0000	0,9875	0,7970	0,2030	0,1929
Prediction Error	0,5000	0,4446	0,3043	0,3914	0,3155
Prediction Table					
	Estimated				
Observed	1	2	Total		
1	3539,0	622,0	4161,0		

2	1654,0	1665,0	3319,0		
Total	5193,0	2287,0	7480,0		
Options					
threads	4				
algorithm					
tolerance	1e-008				
emtolerance	0,005				
emiterations	2000				
nriterations	50				
algorithm	NR				
MstepNR	no				
startvalues					
seed	1909719				
sets	10				
tolerance	1e-005				
iterations	50				
bayes					
categorical	1				
variances	1				
latent	1				
poisson	1				
quadrature					
nodes	10				
missing	includeall				
output					
parameters	effect				
standard errors	standard				
bivariate residuals	marginal				
identification	no				
validation LL	no				
sample size BIC	935				
predictionstatistics	posterior				
outfile					
file name	newdataoutfile1411.sav				
classification	posterior				
prediction	no				
simulation	no				
seed	0				

individualcoefficients	no				
id	no				
Variable Detail					
Latent					
sCI	Nominal	Case	2		
Class	Nominal	Case	3		
Case ID	id	935			
Choice Set	taskid	144			
Dependent					
incpref		2			
1	1	0			
2	2	0			
Attributes					
partner	Nominal	6			
None: independent, privately-owned incubator	1				
Start-up investor	2				
Local university	3				
Multinational company active across global markets	4				
Internationally renowned university	5				
Regional government	6				
access	Nominal	3			
No access	1				
Paid access	2				
Free access	3				
funding	Nominal	15			
f('dCOUNTRY').any('5','6','7','9','10')?€ 0 (no funding):f	1				
f('dCOUNTRY').any('5','6','7','9','10')?€ 0 (no funding) in	2				
f('dCOUNTRY').any('5','6','7','9','10')?€ 0 (no funding) in	3				
f('dCOUNTRY').any('5','6','7','9','10')?€ 10,000 as a grant	4				
f('dCOUNTRY').any('5','6','7','9','10')?€ 10,000 as a loan	5				
f('dCOUNTRY').any('5','6','7','9','10')?€ 10,000 in exchange	6				
f('dCOUNTRY').any('5','6','7','9','10')?€ 10,000 in exchange	7				

f('dCOUNTRY').any('5','6','7','9','10')?€ 25,000 as a grant	8				
f('dCOUNTRY').any('5','6','7','9','10')?€ 25,000 as a loan	9				
f('dCOUNTRY').any('5','6','7','9','10')?€ 25,000 in exchang	10				
f('dCOUNTRY').any('5','6','7','9','10')?€ 25,000 in exchang	11				
f('dCOUNTRY').any('5','6','7','9','10')?€ 100,000 as a gran	12				
f('dCOUNTRY').any('5','6','7','9','10')?€ 100,000 as a loan	13				
f('dCOUNTRY').any('5','6','7','9','10')?€ 100,000 in exchan	14				
f('dCOUNTRY').any('5','6','7','9','10')?€ 100,000 in exchan	15				
traincooach	Nominal	4			
None	1				
Coaching only	2				
Training only	3				
Training and coaching	4				
networks	Nominal	4			
No strong networks	1				
Strong external network only	2				
Strong internal network only	3				
Strong internal and external networks	4				
trackrec	Nominal	4			
No track record yet	1				
Bad	2				
Neutral	3				
Good	4				
industry	Nominal	2			
Focus on your industry	1				
Broad range of industries	2				
Index2	Numeric	2			
1	1	1			
2	2	2			

4.1 Syntax

```
options
maxthreads=all;
algorithm
  tolerance=1e-008 emtolerance=0.005 emiterations=2000 nriterations=50;
startvalues
  seed=1909719

sets=10 tolerance=1e-005 iterations=50;
  bayes
    categorical=1 variances=1 latent=1 poisson=1;
  montecarlo
    seed=0 replicates=500 tolerance=1e-008;
  quadrature nodes=10;
  missing includeall;

output
  parameters=effect standarderrors probmeans=posterior profile bivariateresiduals
  predictionstatistics setprofile setprobmeans classification;

outfile 'newdataoutfile1411.sav' classification;
  choice = 1;
variables
  caseid id;
choicesetid taskid ;
  dependent incpref choice;

  attribute
partner nominal,
access nominal,
funding nominal,
traincooach nominal,
networks nominal,
trackrec nominal,
industry nominal,
index2;
latent
  sCl nominal coding = 1,
  Class nominal 3;
equations
  sCl <- 1;
  Class <- 1 ;
  incpref <- partner|class+ access|class+ funding+ traincooach|class+ networks|class +
trackrec|class + industry|class + index2|class;
  incpref <<- sCl;
```


4.2 Regression parameters

term			coef	s.e.	z-value	p-value	Wald(0)	df	p-value	Wald(=)	df	p-value
sCI(1)	1		0,00	.	.	.	200,93	1,00	0,00			
sCI(2)	1		-1,68	0,12	-14,18	0,00						
Class(1)	1		-0,04	0,10	-0,37	0,71	13,10	2,00	0,00			
Class(2)	1		-0,34	0,11	-2,94	0,00						
Class(3)	1		0,38	0,11	3,41	0,00						
incpref	partner(None: independent, privately-owned incubator)	Class(1)	-0,07	0,05	-1,34	0,18	88,26	15,00	0,00	82,69	10,00	0,00
incpref	partner(Start-up investor)	Class(1)	-0,08	0,04	-1,90	0,06						
incpref	partner(Local university)	Class(1)	-0,11	0,04	-2,82	0,00						
incpref	partner(Multinational company active across global markets)	Class(1)	0,28	0,04	6,52	0,00						
incpref	partner(Internationally renowned university)	Class(1)	0,00	0,04	0,07	0,94						
incpref	partner(Regional government)	Class(1)	-0,01	0,04	-0,37	0,71						
incpref	partner(None: independent, privately-owned incubator)	Class(2)	-0,42	0,08	-5,24	0,00						
incpref	partner(Start-up investor)	Class(2)	0,09	0,05	1,61	0,11						
incpref	partner(Local university)	Class(2)	0,43	0,07	5,86	0,00						

incpref	partner(Multinational company active across global markets)	Class(2)	-0,34	0,06	-6,14	0,00						
incpref	partner(Internationally renowned university)	Class(2)	0,22	0,05	4,79	0,00						
incpref	partner(Regional government)	Class(2)	0,02	0,04	0,59	0,55						
incpref	partner(None: independent, privately-owned incubator)	Class(3)	0,03	0,01	2,83	0,00						
incpref	partner(Start-up investor)	Class(3)	-0,01	0,01	-1,10	0,27						
incpref	partner(Local university)	Class(3)	-0,06	0,01	-4,33	0,00						
incpref	partner(Multinational company active across global markets)	Class(3)	0,03	0,01	3,29	0,00						
incpref	partner(Internationally renowned university)	Class(3)	0,03	0,01	2,41	0,02						
incpref	partner(Regional government)	Class(3)	-0,02	0,01	-1,83	0,07						
incpref	access(No access)	Class(1)	-0,12	0,03	-3,50	0,00	69,17	6,00	0,00	59,68	4,00	0,00
incpref	access(Paid access)	Class(1)	-0,19	0,04	-4,37	0,00						
incpref	access(Free access)	Class(1)	0,31	0,05	6,18	0,00						
incpref	access(No access)	Class(2)	-0,22	0,04	-5,01	0,00						
incpref	access(Paid access)	Class(2)	0,14	0,03	4,52	0,00						
incpref	access(Free access)	Class(2)	0,08	0,02	3,30	0,00						
incpref	access(No access)	Class(3)	0,01	0,01	0,79	0,43						
incpref	access(Paid access)	Class(3)	-0,05	0,01	-3,76	0,00						
incpref	access(Free access)	Class(3)	0,04	0,01	3,98	0,00						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 0 (no funding):f)		-0,01	0,01	-0,98	0,33	47,41	14,00	0,00			
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 0 (no funding) in)		-0,15	0,03	-4,84	0,00						

incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 0 (no funding) in)		-0,17	0,03	-5,01	0,00						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 10,000 as a grant)		0,06	0,02	2,60	0,01						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 10,000 as a loan)		-0,03	0,02	-1,26	0,21						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 10,000 in exchang)		0,01	0,03	0,33	0,74						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 10,000 in exchang)		-0,01	0,02	-0,84	0,40						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 25,000 as a grant)		0,10	0,02	3,92	0,00						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 25,000 as a loan)		-0,09	0,02	-3,76	0,00						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 25,000 in exchang)		-0,03	0,02	-2,23	0,03						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 25,000 in exchang)		0,00	0,02	0,03	0,98						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 100,000 as a gran)		0,25	0,04	5,72	0,00						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 100,000 as a loan)		0,02	0,01	1,78	0,08						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 100,000 in exchan)		0,04	0,02	2,56	0,01						
incpref	funding(f('dCOUNTRY').any('5','6','7','9','10'))?'€ 100,000 in exchan)		0,01	0,02	0,25	0,81						
incpref	traincooach(None)	Class(1)	-0,07	0,03	-2,46	0,01	66,73	9,00	0,00	65,81	6,00	0,00
incpref	traincooach(Coaching only)	Class(1)	-0,10	0,04	-2,61	0,01						
incpref	traincooach(Training only)	Class(1)	-0,02	0,03	-0,89	0,37						
incpref	traincooach(Training and coaching)	Class(1)	0,20	0,04	4,79	0,00						

incpref	traincooach(None)	Class(2)	0,04	0,03	1,43	0,15							
incpref	traincooach(Coaching only)	Class(2)	0,15	0,03	5,21	0,00							
incpref	traincooach(Training only)	Class(2)	- 0,10	0,02	-4,60	0,00							
incpref	traincooach(Training and coaching)	Class(2)	- 0,10	0,03	-3,49	0,00							
incpref	traincooach(None)	Class(3)	- 0,01	0,01	-0,76	0,45							
incpref	traincooach(Coaching only)	Class(3)	- 0,02	0,01	-2,44	0,02							
incpref	traincooach(Training only)	Class(3)	0,05	0,01	3,86	0,00							
incpref	traincooach(Training and coaching)	Class(3)	- 0,02	0,01	-2,24	0,03							
incpref	networks(No strong networks)	Class(1)	- 0,40	0,05	-7,50	0,00	84,41	9,00	0,00	80,99	6,00	0,00	
incpref	networks(Strong external network only)	Class(1)	0,06	0,03	2,34	0,02							
incpref	networks(Strong internal network only)	Class(1)	0,08	0,03	2,59	0,01							
incpref	networks(Strong internal and external networks)	Class(1)	0,26	0,04	6,54	0,00							
incpref	networks(No strong networks)	Class(2)	0,14	0,03	4,11	0,00							
incpref	networks(Strong external network only)	Class(2)	0,08	0,03	2,36	0,02							
incpref	networks(Strong internal network only)	Class(2)	- 0,26	0,05	-5,27	0,00							
incpref	networks(Strong internal and external networks)	Class(2)	0,03	0,03	1,18	0,24							
incpref	networks(No strong networks)	Class(3)	- 0,01	0,01	-1,32	0,19							
incpref	networks(Strong external network only)	Class(3)	0,01	0,01	1,92	0,06							
incpref	networks(Strong internal network only)	Class(3)	0,00	0,01	0,36	0,72							
incpref	networks(Strong internal and external networks)	Class(3)	0,00	0,01	-0,21	0,83							
incpref	trackrec(No track record yet)	Class(1)	0,09	0,03	2,90	0,00	92,27	9,00	0,00	88,64	6,00	0,00	

incpref	trackrec(Bad)	Class(1)	-0,95	0,12	-8,23	0,00						
incpref	trackrec(Neutral)	Class(1)	0,22	0,03	6,41	0,00						
incpref	trackrec(Good)	Class(1)	0,64	0,08	7,52	0,00						
incpref	trackrec(No track record yet)	Class(2)	0,26	0,05	5,41	0,00						
incpref	trackrec(Bad)	Class(2)	-0,13	0,03	-4,74	0,00						
incpref	trackrec(Neutral)	Class(2)	-0,06	0,02	-2,66	0,01						
incpref	trackrec(Good)	Class(2)	-0,07	0,03	-2,52	0,01						
incpref	trackrec(No track record yet)	Class(3)	-0,01	0,01	-1,05	0,29						
incpref	trackrec(Bad)	Class(3)	-0,03	0,01	-2,62	0,01						
incpref	trackrec(Neutral)	Class(3)	0,03	0,01	3,16	0,00						
incpref	trackrec(Good)	Class(3)	0,01	0,01	0,77	0,44						
incpref	industry(Focus on your industry)	Class(1)	0,04	0,01	2,80	0,01	33,36	3,00	0,00	21,09	2,00	0,00
incpref	industry(Broad range of industries)	Class(1)	-0,04	0,01	-2,80	0,01						
incpref	industry(Focus on your industry)	Class(2)	-0,06	0,02	-3,25	0,00						
incpref	industry(Broad range of industries)	Class(2)	0,06	0,02	3,25	0,00						
incpref	industry(Focus on your industry)	Class(3)	0,03	0,01	4,00	0,00						
incpref	industry(Broad range of industries)	Class(3)	-0,03	0,01	-4,00	0,00						
incpref	Index2	Class(1)	-0,16	0,03	-5,31	0,00	62,93	3,00	0,00	61,30	2,00	0,00
incpref	Index2	Class(2)	-0,66	0,11	-6,19	0,00						
incpref	Index2	Class(3)	0,00	0,01	0,01	0,99						

4.3 Profile

	sCI		Class			
	1	2	1	2	3	Overall
Size	0,8434	0,1566	0,3071	0,2282	0,4647	
incpref						
1	0,5441	0,6178	0,5403	0,6862	0,5017	0,5557
2	0,4559	0,3822	0,4597	0,3138	0,4983	0,4443

4.4 ProbMeans-Posterior

	sCI		Class		
	1	2	1	2	3
Overall	0,8438	0,1562	0,3071	0,2281	0,4648

Appendix 5. Multinomial logit regression

5.1 Discriptives

1-Class Nominal Regression Model			
Number of cases	935		
Number of replications	935		
Number of parameters (Npar)	14		
Random Seed	323245		
Best Start Seed	323245		
Chi-squared Statistics			
Degrees of freedom (df)	921	p-value	
L-squared (L ²)	1574,185	6,00E-37	
X-squared	1532,488	3,10E-33	
Cressie-Read	1437,274	2,60E-25	
BIC (based on L ²)	-4725,96		
AIC (based on L ²)	-267,815		
AIC3 (based on L ²)	-1188,81		
CAIC (based on L ²)	-5646,96		
SABIC (based on L ²)	-1800,94		
Dissimilarity Index	0,528		
Log-likelihood Statistics			
Log-likelihood (LL)	-929,394		
Log-prior	-1,0298		
Log-posterior	-930,424		
BIC (based on LL)	1954,556		
AIC (based on LL)	1886,788		
AIC3 (based on LL)	1900,788		
CAIC (based on LL)	1968,556		
SABIC (based on LL)	1910,093		
Classification Statistics			
	Classes		
Classification errors	0		
Reduction of errors (Lambda)	1		
Entropy R-squared	1		
Standard R-squared	1		
Classification log-likelihood	-929,394		
Entropy	0		
CLC	1858,788		
AWE	2092,324		
ICL-BIC	1954,556		
Classification Table			
	Modal		
Latent	Class1	Total	
Class1	935	935	
Total	935	935	
Classification Table			
	Proportional		
Latent	Class1	Total	
Class1	935	935	

Total	935	935		
Prediction Statistics				
Class#_mean				
Error Type	Baseline	Model	R²	
Squared Error	0,6089	0,5986	0,0168	
Minus Log-likelihood	1,0121	0,994	0,0179	
Absolute Error	1,2177	1,1973	0,0168	
Prediction Error	0,4834	0,4834	0	
Prediction Table	Estimated			
Observed	1	2	3	Total
1	18	0	265	283
2	4	0	165	169
3	18	0	465	483
Total	40	0	895	935
Files				
Infile	C:\Users\M. Groen\Google Drive\Master Thesis\DCE\databestanden\inputformnl2aggr.sav			
Options				
threads	4			
algorithm				
tolerance	1,00E-08			
emtolerance	0,01			
emiterations	250			
nriterations	50			
startvalues				
seed	0			
sets	16			
tolerance	1,00E-05			
iterations	50			
bayes				
categorical	1			
variances	1			
latent	1			
poisson	1			
quadrature				
nodes	10			
missing	includeall			
output				
parameters	effect			
standard errors	standard			
bivariate residuals	marginal			
sample size BIC	935			
predictionstatistics	no			
Variable Detail				
ID	id			
Dependent				
Class#_mean	Nominal	3		
1	1			
2	2			

	3	3		
6 Predictors				
activities_mean	Num-Fixed		12	
1	1	1	1	
2	2	2	2	
3	3	3	3	
4	4	4	4	
5	5	5	5	
6	6	6	6	
7	7	7	7	
8	8	8	8	
9	9	9	9	
10	10	10	10	
11	11	11	11	
12	12	12	12	
ambition_6_mean	Num-Fixed		4	
1	1	1	1	
2	2	2	2	
3	3	3	3	
4	4	4	4	
Nascent1_mean	Nominal		2	
1	1			
2	2			
age_mean	Num-Fixed		45	
20	20	20	20	
21	21	21	21	
22	22	22	22	
23	23	23	23	
24	24	24	24	
25	25	25	25	
26	26	26	26	
27	27	27	27	
28	28	28	28	
29	29	29	29	
30	30	30	30	
31	31	31	31	
32	32	32	32	
33	33	33	33	
34	34	34	34	
35	35	35	35	
36	36	36	36	
37	37	37	37	
38	38	38	38	
39	39	39	39	
40	40	40	40	
41	41	41	41	
42	42	42	42	
43	43	43	43	
44	44	44	44	
45	45	45	45	
46	46	46	46	
47	47	47	47	
48	48	48	48	
49	49	49	49	

50	50	50		
51	51	51		
52	52	52		
53	53	53		
54	54	54		
55	55	55		
56	56	56		
57	57	57		
59	59	59		
60	60	60		
61	61	61		
62	62	62		
63	63	63		
68	68	68		
69	69	69		
startup_exp_mean	Nominal	2		
1	1			
2	2			
incubator_awareness_mean	Nominal	2		
1	1			
2	2			

5.2 Model Covariates

		Class1		Overall			
R ²		0,0168		0,0168			
	Class#_mean	Class1	z-value	Wald	p-value	Mean	Std.Dev.
Intercept							
	1	-0,571	-1,672	4,6812	0,096	-0,571	0
	2	0,0317	0,0852			0,0317	0
	3	0,5394	1,8386			0,5394	0
Predictors	Class#_mean	Class1	z-value	Wald	p-value	Mean	Std.Dev.
activities_mean							
	1	0,0483	2,879	8,3799	0,015	0,0483	0
	2	-0,0328	-1,6657			-0,0328	0
	3	-0,0155	-1,0096			-0,0155	0
ambition_6_mean							
	1	0,1892	2,8066	8,5523	0,014	0,1892	0
	2	-0,1725	-2,4702			-0,1725	0
	3	-0,0167	-0,2953			-0,0167	0
Nascent1_mean							
1	1	0,1232	2,3347	7,6034	0,022	0,1232	0
	2	-0,1612	-2,6532			-0,1612	0
	3	0,038	0,8137			0,038	0
2	1	-0,1232	-2,3347			-0,1232	0
	2	0,1612	2,6532			0,1612	0
	3	-0,038	-0,8137			-0,038	0
age_mean							
	1	-0,0054	-0,8857	0,9986	0,61	-0,0054	0
	2	0,0018	0,2527			0,0018	0
	3	0,0036	0,6755			0,0036	0
startup_exp_mean							
1	1	-0,128	-1,7148	2,9854	0,22	-0,128	0
	2	0,1218	1,3182			0,1218	0
	3	0,0062	0,0901			0,0062	0
2	1	0,128	1,7148			0,128	0
	2	-0,1218	-1,3182			-0,1218	0
	3	-0,0062	-0,0901			-0,0062	0
Incubator awareness							
1	1	0,0104	0,1996	4,7012	0,095	0,0104	0
	2	-0,1042	-1,7341			-0,1042	0
	3	0,0938	2,0356			0,0938	0
2	1	-0,0104	-0,1996			-0,0104	0
	2	0,1042	1,7341			0,1042	0
	3	-0,0938	-2,0356			-0,0938	0

5.3 Profile

Class#_mean	Class1
1	0,3027
2	0,1807
3	0,5166