Business Panel Prediction of Nascent Entrepreneurs Success

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Abstract

University-based incubators guide entrepreneurs through the start-up and growth process. As such, they are catalysts promoting innovation and business development (Aerts, Matthyssens, & Vandenbempt, 2007). They do much more than provide a home for startups (Patton, 2014). University-based incubators create and provide many opportunities for new firms to develop their network with the business environment, get coaching assistance, and perhaps most importantly develop their business models and business plans. (Bollingtoft and Ulhoi 2005). Little attention has been placed on how the impact of constructive feedback from experts in developing a better business plan can help entrepreneurs start and grow their businesses. In this paper, we will explore the predictive ability of business panel assessments of business planning and startup firm success in a University-based incubator context.

Key Words: Business models, business planning, Incubators, Survival

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Introduction

In order to stimulate economic growth through business development Northern European public and private parties founded Venture Lab Twente in 2010. It was started to help high tech spin offs that often remain small find their growth potential through a yearlong program that combined training content, coaching and access to many resources. In addition to business development, a research model based on the "Entrepreneurship in Networks" model was used to try to understand from the earliest moment of the entrepreneurship process how entrepreneurs start and grow businesses. Overall, we take a multilevel and longitudinal approach to studying entrepreneurship: from the field to the individual level and *in vivo*.

Venture Lab Twente was based on four building blocks. The first goal was training to build competent teams, able to fulfil all necessary roles of high tech entrepreneurial teams. Second by using coaching, the goal was to help entrepreneurs develop strong new technologies, to use continuous assessment by (international) experts and to develop a viable strategy for the firm. The third goal was to a global technology-market-network relevant to the development of the firm. Finally, entrepreneurs were given access to an international network of financial partners in informal and formal venture capital to encourage and facilitate growth of the firm. In general, there are three main stages entrepreneurs go through in the startup process (Bhave, 1994; Shane & Venkataraman, 2000; Van der Veen & Wakkee, 2004). These are opportunity recognition (discovery or creation of a new business idea), opportunity preparation (construction of a viable business model based on the business idea) and opportunity exploitation

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(realization of the business model into a real organization). Although we assumed that most entrepreneurs would have some initial idea (opportunity recognition), the data capturing system at Venture Lab Twente was created to capture firms as they moved through the entrepreneurial process.

In the entrepreneurial process after an opportunity has been recognized or created, entrepreneurs are involved in both the development of a viable business model and putting this model into practice. This implies that a central construct in the process of starting up a new business is the business model. A business model represents "*the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities*" (Amit & Zott, 2001: 511), or as Morris et al have defined it: "*A business model is a concise representation of how an interrelated set of decision variables in the areas of venture strategy, architecture, and economics are addressed to create sustainable competitive advantage in defined markets.*" (Morris, Schindehutte, & Allen, 2005: 727).

For this study, we assume that some initial idea is present, either with the entrepreneur or in the technology base available at the participating persons and organizations of Venture Lab Twente. This is not to say that this idea is fully developed or fixed. On the contrary, it is likely that substantial refinements or even complete shifts in ideas can take place. Hence, the idea as assumed to be present might be not more than a vague notion of what type of new business could be developed. Based on this assumption, this study concentrates on opportunity preparation and opportunity exploitation.

The paper first presents the literature review and builds to the research hypothesis. In the next section, the general approach to data collection is described, followed by operationalization of constructs and data collection. Finally, the initial results and an assessment of the program are discussed. The paper closes with suggestions for university incubator programs and public policy.

Literature Review

Success of new ventures is not just based on having a successful invention or technology (Fassin, 2000). Rather, high tech startup firms and the entrepreneurs that lead them need to develop specialist business management skills (Oakey 2003). University-based incubators can help them do this. Several scholars have noted that "*the links between education, training and the capabilities related to innovation and growth are poorly understood*" (Patton, 2014) while others have concluded that university incubators are not fully utilized – particularly in terms of social and business networks inputs (McAdam et al., 2006). We do know that University-based incubators create and provide many opportunities for new firms to develop their network with the business environment, get coaching assistance, and perhaps most importantly develop their business models and business plans. (Bollingtoft & Ulhoi 2005).

We consider the formation of a business model as a decision making process in which entrepreneurs, individually or in teams, make decisions based on information they receive (Simon, 1977, 1997; Smith, 1988, 1989). During the formation of the business model, entrepreneurs are confronted with a wide range of information. They can create this information, but it can also stem from a variety of sources within and outside the

University-based incubator program. Sources include potential customers, the Internet, media, potential investors, and other entrepreneurs. Entrepreneur process the information from these sources and use to improve and develop their business models.

Current explanations of the effect of external and internal factors on the entrepreneurial process of developing a business model are mostly variance-theory based. Past studies have mainly focused on three types of causal explanations. First, some studies have analysed whether external factors such as venture capital, networks, and scientific knowledge are associated with firm growth (e.g., Gartner & Bhat, 2000; Minniti, Bygrave, & Autio, 2006; Scholten, 2006; Wakkee, 2004). Other studies explain firm growth by looking at a firm's internal characteristics. Examples are a firm's resources (Bruton & Rubanik, 2002), size (Cabral, 1995), and age (Yasuda, 2005). Finally, some studies explain firm growth by looking at psychological characteristics of entrepreneurs (Robinson, Stimpson, Huefner, & Hunt, 1991; Timmons, 1999). Common to each of these types of studies is that the entrepreneur is considered as a passive factor, or is not considered at all and that they have directly analyzed the effect of factors on the entrepreneurial process.

In this study, we take a different, process-theory approach (Van de Ven, 2008). By considering the process of developing a business model explicitly as a decision making process, we recognize that the effect of information and other factors on a business model is mediated by the entrepreneur. We assume that events happening in the macro, meso, or microenvironment of an entrepreneur do not directly affect the business model of that entrepreneur. Rather, we assume that such events come to the entrepreneur in the form of information that he or she can or cannot take into consideration. We expect

that this process-theory approach will lead to more accurate and more complete explanations of the entrepreneurial process and firm survival and growth than the existing variance-theory approaches do.

Business Planning and Survival

Over the past two decades, research on the impact of business planning on startup firm survival and performance has grown (Delmar & Shane, 2003; Brinckmann et al, 2010). However, there is no clear consensus about the impact of business planning with some studies showing that business planning increases the likelihood of startup firm survival (i.e., Gruber, 2007; Shane & Delmar, 2004) and others showing no impact (Honig & Karlsson, 2004; Karlsson & Honig, 2009; Honig & Samuelsson, 2012). Most of the studies supporting business plan completion suggest that firms that complete business plans are more likely to launch (Liao & Gartner, 2006) and less likely to fail (Shane & Delmar, 2004). Studies on business planning and survival that have found no association tend to focus on the reasons for writing the plans - entrepreneurs only write business plans due to institutional forces (Honig & Karlsson, 2004). Others suggest that there is no compelling reason to write a detailed business plan before opening a new business unless an entrepreneur needs to raise substantial start-up funds from venture capital or business angels (Lange, et. al., 2007). While these findings are contradictory, all of these studies agree that business planning is a heterogeneous task. Dynamism and environmental complexity may also impact business planning effectiveness and especially for University-based incubator firms that tend to be high tech and knowledge intensive, the novel technologies that they use may not be easily understood by the market to develop their businesses (Englis et al, 2007).

Effectiveness of Panel Predictions

While there is an abundance of incubators, university-based startups programs, and venture labs featuring business panel presentations and feedback to evaluate the business potential (Warren, Patton, & Bream, 2009), there is very little empirical effectiveness of panel predictions in the entrepreneurship literature. As discussed above, most research on business planning examines whether or not a plan exists and its impact on firm success and survival. The plan just has to exist – whether it is written on a napkin or 40 pages, it may be very simple or quite complex, it may or may not have a clear business model, a discussion of how the business will be organized, an analysis of the market with an understanding of consumer needs and expectations, and it may or may not include detailed financial pro-forma statements. Indeed, Heriot, Campbell and Finney (2004) argue that there is not enough research focused on the <u>content</u> of business plans and too much emphasis on the <u>existence</u> of a business plan. They add that many assume that if a plan exists, it represents a good idea, which has been well developed. In the same vein, Trailor and Wolford (2001) argue that, "*listing the important topics in a business plan creates only generalities. Details must support the arguments made about and for the topics ... . That is, effective business plans are the outcome not only of covering all the bases, but also of covering them well*" (p. 41). Entrepreneurs may face significant challenges in writing meaningful business plans and explaining their ideas to investors. These challenges are compounded when the product or service is based on novel technologies.

Business panels can serve as translators of a sort helping high tech, knowledge intensive startup firms to present their businesses in ways that can more easily be

understood by the market and investors (Patton, 2014). Business panellists generally have years of experience and are likely to be able to understand which value propositions and business plans are more likely to be embraced by consumers and the market. As such, they are in a unique position of being able to predict startup firm success.

One of the few articles that examines the role of professional feedback in the startup firm/University-based incubator environment is from McAdam and Marlow (2011). While focusing on attracting investment for startup ventures, they noted that the role of professional client advisors seems to be undervalued. They argue that business professionals act as sense makers between technology-based startups and venture fund access. They give feedback and advice about how to explain technology or their business model in a way that is easy for investors and customers to understand (McAdam &Marlow, 2011). They argue that, "*their technical and entrepreneurial abilities are rarely matched by their managerial and presentation skills necessary to reassure investors that their venture is a sound prospect*…" (p.454). Feedback from professionals can help entrepreneurs to translate their business models to investors (Englis, Ratinho, Englis, & Groen, 2011). In a study of University-based technology incubators and their effectiveness, Patton and Marlow (2011) note that for entrepreneurs embedded in University-based incubator settings, business panel reviews can give very effective feedback. They suggest that the process of explorative learning happens during these review panels and that they can help entrepreneurs evaluate whether or not their strategies will be effective. In other words, the business panel reviews provide an opportunity for the entrepreneur and entrepreneurial team to learn and consequently adjust their business models and/or business plans (Patton & Marlow, 2011).

Moving beyond the existence of the business plan to examine the content of the plan (Heriot, Campbell and Finney 2004) makes business panels an interesting actor in assessment of the new venture creation process and likelihood of success. They read and assess the quality of the plan, the business model, the industry, technology and marketing, the individuals starting the business, and the team composition. The business panels also have the opportunity to hear the team present their ideas and interact asking questions and clarifications. As such, they may provide unique insight into startup firm success or failure. Given the findings in the literature, we expect that business experts in business review panels are likely to recognize business plans that have more value and create startup firms that are more likely to survive. Thus, we present the following hypothesis.

H1:   After reviewing business plans and hearing them presented, expert business panels will accurately predict survival for high tech, knowledge intensive University-based incubator startup firms.

Methodology

Data was gathered from Venture Lab Twente which aimed at developing high-potential, high tech spin offs and combining training, coaching and access to other resources and services (e.g., Hansen, Chesbrough, Nohria, & Sull, 2000). Government funding was used to subsidize entrepreneur participation in the program.

Based on best practices for business University-based incubators (i.e., Ratinho, 2011), Venture Lab Twente research program focused on what happens to entrepreneurs as they move through the entrepreneurial process using a systems theory approach (Groen, Wakkee, & De Weerd-Nederhof, 2008; Parsons, 1964). Data collection was

embedded throughout the Venture Lab Twente program. Participants could not move forward in the program until they completed their assignments.

Participants

216 entrepreneurs participated in the Venture Lab Twente over a three-year period. These entrepreneurs entered the program in a series of 10 groups ranging in size from 5 to 27; there was overlap in program residency between groups. The program was designed to span roughly an 8 to 12 month period for each entrepreneur. Approximately ~13 % of entrepreneurs were female. Many of the entrepreneurs were from the University and this was their first experience commercializing a technology into a business. Thus, Venture Lab Twente focused heavily on training the participants with all kinds of business knowledge that would them to in turn develop their businesses. In this research we are particularly concerned with the development of their business model and business plan over time. Because this is our focus, we include much of the detail about how this information was collected and the how the training process helped the entrepreneurs to develop their business models and plans.

Most of the businesses were in very early stages of development upon entry into the program with 47% of participants having organized a "start-up team" upon entry. 53% of entrepreneurs had businesses with zero FTEs at outset, 19% reported 1 FTE and only 3.6% had 5 or more FTEs. Upon program completion 25% reported having 5 or more FTEs, only 3.5% of businesses reported 0 FTE, 26% reported 1 FTE and 13% 2 FTEs.

Data Collection

First, participants completed an intake survey with many measures including motivation, self-efficacy, previous business and international experience, etc. Once the participants started the program, they went through training to create a Personal Development Plan that set goals and was updated on a regular basis. Participants were required to complete weekly diaries detailing their business activities and development.

The main collection of data of the independent variables occurred within Venture Lab Twente. As part of the program, participants kept track of their ideas on the business model of their company by means of a pre-structured diary. This diary was structured along the broad components of a business model (value proposition, architecture, and revenue model). At the start of the program, participants had vague notions about that, but in the course of the program the business model were expected to crystallize. To guarantee the quality of the data, applicants received training on business models right at the start of the program. They were asked to develop their business model over the next few months (plan and realization). Moreover, after 5/6 weeks (before starting with their business) they received a more operational explanation of how to write things down, how to work with the forms/system etc.

The Business Plan

Participants also produced a live version of their business model/plan. This was developed and structured according to the three components of a business model. In the first weeks of Venture Lab Twente program participants worked on their business model, thereafter on translating this into a business plan. Versions of the business model/plan were automatically captured on a daily basis. For participants this was unobtrusive data

collection. A short weekly diary for reflection, structured according to the three components of a business model was also gathered. The diary served as a reflection tool for the participants to stimulate learning and as information for the weekly meetings with their coach. At the end of each week participants were asked to fill out how they think about their business model at that time, based on four questions: 1. value proposition: what & for whom, 2. architecture: how & with whom, 3. revenue model: how make money with it, 4. other ideas / worries about business: to capture ideas they have and things they are worrying about.

In addition to the data above, monthly network surveys were also built into the program. Participants were surveyed every four months for an updated evaluation on their business and experience. During the program, when the entrepreneur and the business were ready, they also presented their business plans to a panel of experts and received feedback. Before hearing the presentations, the panel of experts had the opportunity to read and evaluate the business plans and supporting materials that the entrepreneurs had developed during the program.

When the participants finished Venture Lab Twente, they completed an exit interview and participated in a focus group about the program and their business development. Alumni participants are surveyed every year to track the success or failure of their business. Figure 1 shows the data collection process.

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Insert Figure 1 about here

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As this is such a large project, there are many studies embedded in the research program. For this particular project, we used expert panels' evaluations of entrepreneurs' business plan presentations and data collected from 1-year alumni survey.

Measures

Dependent Variable – Survival. Survival was measured based on data collected from an alumni telephone survey. Alumni were asked if the firm was still operating. The answers were "Yes (I am operating the business)," "Yes-Oth" (teammate is operating the business) or "No" (business is not operating). We collapsed Yes and Yes-Oth into success "1" and No was coded as "0". Of the 216 entrepreneurs, 101 responded with 91 still in business and 10 failed.

Independent Variables. All independent variable were created from the judgment of a two person expert panel. The panel was charged with evaluating the business presentations of entrepreneurs in the VL program. Their goal was to predict the likeliness of success for the new venture. The measures were based on Frei's (2004, 2006) research on how investors assess new ventures in practice. There are four content areas: 1. The individual members of the team, 2. The overall quality of the team, 3. An assessment of the business model, and 4. The technology, market and industry – we focus particularly on industry attractiveness. For each set of questions, business panel members were asked to use a Likert rating scales with items ranging from "1" (strongly disagree) to "6" (strongly agree). The questions are shown in Appendix 1. The measures had an acceptable level of reliability (alpha - .68-.84). We also looked at inter-rater reliability (Cohen's kappa) for each of the measures across the two experts. Since these fell in the acceptable range, we created an average evaluation score for each variable based on

multiple expert panel reviews. The four independent variables are INDIV (have much experience, have entrepreneurial attitudes, have a good business judgment have great motivation/commitment have the necessary social competences know their strengths and limitations), TEAM (has strong historical track record/experience, has complete set of necessary skills, has financial incentives to keep them in place structure and has division of labor suited for growth), MODEL (makes sense, serves a broad customer base, involves an easy distribution of products, has a unique selling proposition and is financially sound), INDUSTRY (shows great market potential, is heavily dependent on legal and political policies, involves few substitutes, shows little rivalry among existing competitors, has low barriers of entry, shows a low bargaining power of suppliers and shows a low bargaining power of buyers). Table 1 shows the correlations.

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Insert Table 1 about here

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Results

Preliminary analysis shows that of the 213 firms, 194 firms participated in business panel presentations. The panel members read the business plans and supporting materials and evaluated the presentations in terms of the management team, individual members, board, product viability and scalability, business model, the industry, intellectual property, the technology, partnerships and alliances, and future innovation.

Of the 213 participant firms, 189 are registered with the Chamber of Commerce (in Venture Lab Twente's home base country) at Year 1. This shows a survival rate of

88.7%. The average number of employees is 5.4 (Alumni YR1) versus 2.7 at intake. In addition, 81% had sales in last 4 months versus 33% at intake.

Logit regression analysis was used to test our hypothesis that business panel experts would predict firm survival in high tech startup firms. Our hypothesis was supported with experts able to predict survival 93.3% of the time (Table 2). As shown in Table 3, while all variables remained in the model the significant predictors of firm survival were TEAM and INDUSTRY. The overall model was also significant (chi-square 10.9, p<.05).

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Insert Tables 2 & 3 about here

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Discussion

Taken together, our results show that business panel experts are accurate in their predictions of high tech, knowledge intensive University-based incubator startup firm's success (100% accurately predicted) – at least in the short term. Their predictions of failure were not as good (only 33% accurate that firms would fail). Our results also show that business planning does make a difference in the success of high tech, knowledge intensive startups. When evaluating the plans and the presentations, business plan experts moved beyond looking for existence or coverage of content to examine the quality of the content. We found that the most important predictor of success by business panel expert evaluations was the quality of the team. The attractiveness of the industry was a negative predictor of startup firm survival.

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Due to the structure of training at Venture Lab Twente, the entrepreneurs were constantly assessing and reflecting on aspects of their business models and business plans. This pattern of behaviour showed up in the weekly diaries, the weekly coaching comments and the changes in the business plans over time from entry to completion of the program.

These findings are quite interesting and add to the debate about the effectiveness of business planning. Our results are consistent with those previous researchers who found that business planning increases the likelihood of startup firm survival (i.e., Gruber, 2007; Shane & Delmar, 2004). In terms of significant predictors, teams were the most important determinant of high tech knowledge intensive University-based startup firm success. Startup firms that had a team with a strong historical track record/experience, a complete set of necessary skills, the financial incentives to keep the team members in place, and an organizational structure suited for growth were significantly more likely to succeed.

On the other hand, industry had a negative relationship to survival. A strong industry rating reflected great market potential, high dependency on legal and political policies (with good relationships), few substitutes, little rivalry among existing competitors, low barriers of entry (firm assumed to be already operating in industry), low bargaining power of suppliers and low bargaining power of buyers. A possible explanation of this finding is that incubated knowledge intensive startup firms are likely to develop in industries with novel technologies that may not necessarily be understood by the market and may be difficult to translate into business plans (Englis, Ratinho, Englis, & Groen, 2011). In addition, these technologies may be disruptive or create new

industries perhaps making them hard to assess. Other factors such as the strength of the individual members and the effectiveness of the business model did not significantly predict high tech, knowledge intensive startup firm survival. This may explain previous studies of business planning and the lack of evidence tying extensiveness of planning to startup firm success (i.e., Honig & Karlsson, 2004; Karlsson & Honig, 2009; Honig & Samuelsson, 2012).

Our findings also support previous research the role of expert business in the startup firm/incubator environment (McAdam & Marlow, 2011; Patton, 2014). Our research shows that business University-based incubators can successfully guide entrepreneurs through the start-up and growth process acting as catalysts for business development and innovation (Aerts, Matthyssens, & Vandenbempt, 2007). We recommend that given the results, University-based incubators continue to use expert panels to give feedback to entrepreneurs develop their business plans. Another recommendation is to building a team versus having a single entrepreneur drive the firm.

Of course, every study has its limitations. One of the limitations of the present study is the sample. First, all the startup firms were from a University-based incubator program located in the Northern Europe. Thus our results can only be generalized to other University-based incubated firms. Second although we have longitudinal data, it represents predicting one year in the future. To further build on the results of this research, we will continue to assess firms in the sample over time. We hope to be able to contrast short term (1 year) versus long term (3 to 5 year) predictions of survival. Another limitation of the present study is that only firm survival was used as an outcome measure. Other outcomes such as sales growth and number of employees would provide interesting

measures of the effects of business planning on the startup firms' degree of success. A final limitation is that there may be other aspects of business plan assessment that were not included in this study and should be included in future investigations.

In conclusion, our study contributes toward an understanding of the business panels in evaluating business planning to predict startup firm survival. We contribute to the literature on business planning and its impact on performance for startup firms by moving beyond the formal outcome of the planning effort (such as the existence of written business plans) by analyzing the content of the business plan and the business presentation by business panel experts. Our findings show that firms with more developed teams were more likely to survive. Other results showed that industry attractiveness can be a negative predictor of firm survival. We hope that our research will continue the debate on effectiveness of business planning – an issue that is of interest to both academics and entrepreneurs.

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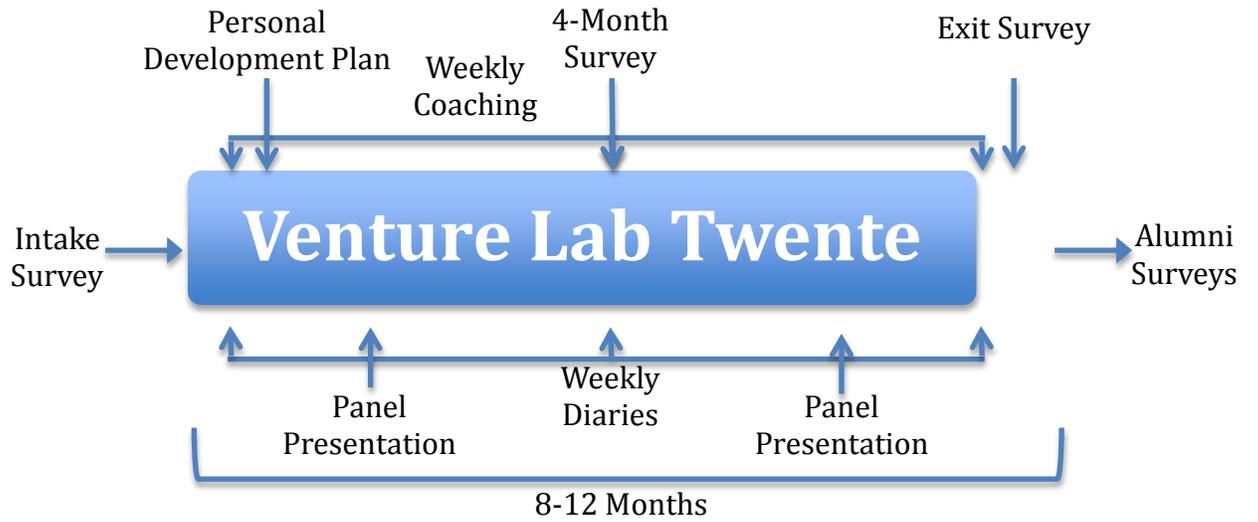
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Figure 1

Venture Lab Twente Research Program

Personal Development Plan

Weekly Coaching

4-Month Survey

Exit Survey

Intake Survey

Venture Lab Twente

Alumni Surveys

Panel Presentation

Weekly Diaries

Panel Presentation

8-12 Months

Appendix 1 - Survey Questions - Business Assessment Venture Lab Twente

Please indicate the extent to which you agree or disagree with the following statements	Strongly disagree					Strongly agree	Don't know/ not applicable
	1	**2**	**3**	**4**	**5**	**6**	
The management team…							
…has a strong historical track record/experience	0	0	0	0	0	0	0
…has a complete set of necessary skills	0	0	0	0	0	0	0
…has financial incentives to keep them in place	0	0	0	0	0	0	0
…has a structure and division of labor suited for growth	0	0	0	0	0	0	0
Individual members…							
…have much experience	0	0	0	0	0	0	0
…have entrepreneurial attitudes	0	0	0	0	0	0	0
…have a good business judgment	0	0	0	0	0	0	0
…have great motivation/commitment	0	0	0	0	0	0	0
…have the necessary social competences	0	0	0	0	0	0	0
…know their strengths and limitations	0	0	0	0	0	0	0
The business model…							
…makes sense	0	0	0	0	0	0	0
…serves a broad customer base	0	0	0	0	0	0	0
…involves an easy distribution of products	0	0	0	0	0	0	0
…has a unique selling proposition	0	0	0	0	0	0	0
…is financially sound	0	0	0	0	0	0	0
The industry…							
…shows great market potential	0	0	0	0	0	0	0
…is heavily dependent on legal and political policies	0	0	0	0	0	0	0
…involves few substitutes	0	0	0	0	0	0	0
…shows little rivalry among existing competitors	0	0	0	0	0	0	0
…has low barriers of entry	0	0	0	0	0	0	0
…shows a low bargaining power of suppliers	0	0	0	0	0	0	0
…shows a low bargaining power of buyers	0	0	0	0	0	0	0

Adapted from Frei 2004, 2006

Table 1
Descriptive Statistics and Correlations

	Mean	SD	Survival	Indiv	Team	Busmodel	Industry
Survival	0.91	0.29	1				
Indiv	24.45	5.60	0.14	1			
Team	11.24	4.91	0.23*	.48**	1		
Busmodel	15.09	5.51	0.17	.53**	.47**	1	
Industry	19.30	6.09	-0.08	.32**	.40**	.46**	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2

Classification[a]

	Observed		Predicted		
			Survival		Percentage Correct
			Failed	Survived	
Step 1	Survival	Failed	2	4	33.3
		Survived	0	54	100.0
	Overall Percentage				93.3

a. The cut value is .500

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Table 3

Variables in the Equation

	B	S.E.	Wald	Df	Sig.	Exp(B)
Indiv	.098	.134	.533	1	.465	1.103
Team	.393	.163	5.851	1	.016	1.482
Busmodel	-.095	.118	.654	1	.419	.909
Industry	-.147	.083	3.147	1	.076	.863
Constant	.576	3.022	.036	1	.849	1.779