
Assessment criteria for seed accelerators in entrepreneurial project selections

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Abstract: This paper contributes to the literature on accelerators by filling the gap concerning the criteria used to select venture projects. Seed accelerators develop strict and rated assessment criteria for project selection that grants them objectivity and guarantees program success. This study uses a sample of 309 cases to analyse the criteria applied by an accelerator when selecting projects. Among these cases, 15 entered the accelerator stage. Our work first examines variables linked to the business project, such as the extent of innovation, extent of investability, speed of acceleration and extent of team consistency. It then assesses entrepreneurial skills such as negotiation, teamwork, creativity, communication and leadership. Our findings show that extent of team consistency and speed of acceleration are the most widely-used variables to assess a business project, while the most valued entrepreneurial skills are leadership followed by creativity. Furthermore, the project is more likely to enter the acceleration stage in the presence of higher team consistency and creativity.

Keywords: seed accelerator; entrepreneurship; start-up; venture capital.

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1 Introduction

Over recent years, entrepreneurship has become one of the most influential alternatives to economic growth. New institutional figures such as incubators and accelerators have emerged in the entrepreneurial ecosystem to develop mentoring programs, intensive training and tutor business ideas converted into projects that have culminated in a public pitch event or demo day for potential investors (Cohen, 2013; Fehder and Hochberg, 2015). Seed accelerators are organisations that aim to accelerate projects in their initial stages of development by providing training to previously selected projects (Miller and Bound, 2011). Furthermore, accelerators include a tutoring and development program, which eases external investor participation (Kim and Wagman, 2014). Accelerators offer the possibility to scale projects by combining services, infrastructure, financing, networking, mentoring and managerial skill training (Chang, 2013). Accelerators provide higher added value and contribute to initial funding and counselling for fund-raising (Christiansen, 2009). Networking enables accelerator participants to receive more financing rounds and heightens their likelihood of obtaining more help from mentors

once the training phase is completed (Radojevich-Kelley and Hoffman, 2012). However, entrepreneurs may have to modify network ties to adapt to turbulence and changes in external environments (Qian and Kemelgor, 2013).

The rapidly increasing number of global accelerators (Cohen, 2013; Cohen and Hochberg, 2014) promotes new ventures and creates economic vitality and dynamism. In fact, many local entities have attempted to transform their economies by developing accelerator patterns and creating start-up clusters, which play an important role in stimulating regional economic growth. Literature has proved that assigning enterprising capital in a region may have a direct impact on innovation capacity (Kortum and Lerner, 2000). Accelerators generate a significant impact on the regional enterprising ecosystem by increasing project financing activities and attracting venture capital (Feder and Hochberg, 2015).

This paper aims to analyse the criteria used by accelerators to select projects. By applying strictly rated selection criteria, accelerators gain objectivity, which ensures the success of their programs. Using the case of the VIAVIGO accelerator, our paper studies a sample of 309 projects of the 2015 program, 15 of which finally reached the accelerator stage. VIAVIGO is an acceleration program that provides initial support and assistance to entrepreneurs and companies. Under the sponsorship of the Consorcio de la Zona Franca de Vigo and the Xunta de Galicia (Spain), it aims to accompany entrepreneurs throughout the maturity, financing and implementation of innovative, accelerable, investable and relevant projects. To this end, it uses seed capital, face-to-face training, a mentoring network, infrastructure and intensive counselling. Our research questions are: among the variables linked to an enterprising project, which are the most relevant criteria for the selection? Are the variables related to entrepreneurial skills decisive in project selection processes? Which variables are the most relevant in selecting an investment project: the ones linked to enterprising projects or to entrepreneurial skills? The results of our study, which examines at VIAVIGO's aim to obtain venture capital during the acceleration stage, are very relevant to the entrepreneurial environment and prove to be closely related to regional development (Samila and Sorenson, 2011). Positive project selection may not only ensure the success of acceleration programs, but also encourage projects that pursue their aims. Furthermore, it will create an impact on the ecosystem in the areas where the projects operate (Feder and Hochberg, 2015) by creating job posts or generating a social or environmental impact (Casasnovas and Bruno, 2013).

Our study contributes to the literature on accelerators by filling the gap on the criteria used by accelerators to select enterprising projects. Studies have scarcely approached this research area (Cohen and Hochberg, 2014). In fact, there still is no universally accepted definition for accelerators despite their novelty, success and broad dissemination (Barregh et al., 2012; Cohen, 2013) or their features and drivers (Birdsall et al., 2013). Moreover, much of the existing research is conceptual, which either lacks empirical analysis (Kim and Wagman, 2014; Isabelle, 2013) or is based on study cases with no empirical support (Radojevich-Kelley and Hoffman, 2012).

This research paper is structured as follows. After the introduction, Section 2 reviews existing literature and presents the hypotheses. Section 3 focuses on the methodology by explaining the phases of the VIAVIGO program, defining the sample and describing how the variables are measured. Section 4 reviews the findings. Finally, Section 5 concludes and presents some limitations and future lines of research.

2 Conceptual framework: rating projects in seed accelerators

Recent years have witnessed the emergence of venture accelerators, distinct patterns that guide entrepreneurs in new technologies. Accelerators centre more on accelerating business growth than incubators (Bosma and Stam, 2012; Wise and Valliere, 2014). In practice, seed accelerator programs combine different services or functions that are potentially more expensive for the individual entrepreneur. Among them are seed investment, value added advice mentor, teamwork with other start-up business, training, networking and, especially, the opportunity to present a pitch to multiple investors. This represents a significant cost reduction as compared to the high cost of alternative individual interviews. Furthermore, emerging seed accelerators have significantly cut experimentation costs for start-ups over the last decades (Ewens et al., 2015).

Seed accelerators need to apply useful selection criteria to choose the start-ups that best qualify to access the next level. This is a complex matter because they occasionally establish ratings for ideas pending corporate implementation. Thus, no feedback is available to support their decisions. Asymmetry of information influences seed accelerator project selection (Lehmann, 2014). During the selection process, investors study venture business plans and design contracts with entrepreneurs to minimise potential agency costs (Gompers, 1995) and entrepreneurial risk behaviour (Miles, 2014). Asymmetry of information may lead to an opportunistic behaviour accompanied by an adverse selection process (namely, hidden information) and moral hazard (namely, hidden actions) (Sanders and Boivie, 2004). Investors therefore encounter severe difficulties in obtaining valuable and reliable information (Festel, 2013). Entrepreneurs are known to negotiate within the context of asymmetric information and the risk associated to the real value of the object of negotiation. This grants them an advantage concerning the use of this information (Artinger et al., 2013). To reduce this uncertainty, investors must base their decisions on a set of observable indicators that ease the decision-making process (Festel, 2013).

2.1 *Criteria related to the business project*

The advantage of start-ups is that they identify small opportunities in the market that are often overlooked by larger corporations with a more global vision of the market and more profitable segments. Start-ups, however, may identify niches where the level of investability may represent an opportunity (Ireland et al., 2003). This opportunity, market good, generates value for clients or succeeds in accomplishing venture goals, which are better identified if information is available (Chen et al., 2015).

Some theories on teamwork explore the effect of the enterprising team on outcome by observing aspects like demography (Pitcher and Smith, 2001). In other theories based on inputs-mediators-outcomes (IMO) structure, the circumstances of the founder team formation may determine subsequent enterprising activity, strategy and business behaviour (Mathieu et al., 2008). Another approach focuses on variables that range from team obligations, consistency and team member cooperation to cognitive extent and shared leadership, scarcely studied in literature (Zhou et al., 2015). According to Whitley (2006), apart from being cooperative, a team should also be able to accommodate to changes likely to happen at some point throughout the life of the project. It is the team's responsibility to minimise risk behaviour and entrepreneurial ventures will succeed if the teamwork gathers former and new members (Ferriani et al., 2009).

Hybrid teams, which combine members of different backgrounds, will benefit from a common understanding that favours sharing ideas in support of innovation. In this sense, Hmieleski and Ensley (2007) studied the level of differences among teamwork members on education, specialisation, capabilities and experience. Ferriani et al. (2009) proved that the team composition selected for a project positively affected commercial performance, whereas Foo (2010) showed teamwork experience influenced the people assessing the business idea. Zhou (2016) studied how diversity in team member personality affected shared leadership and team behaviour. His results demonstrated that the intensity of the relationships depends on the distinct personalities of the team members. Thus, results improve in the presence of shared leadership.

In line with the research question, we identify the most relevant criteria used by the accelerators. The literature contains a broad range of valuation criteria related to the business project. Hence, team consistency is one of the most important criteria for distinguishing between the success/failure of venture capital projects (Macmillan et al., 1985; Muzyka et al., 1996). Concerning investment preferences, several studies (Goslin and Barbe, 1986; Dixon, 1991; Franke et al., 2008) indicate that venture capital prefer to invest in multidisciplinary teams with industry experience comprising a mix of educational background and management expertise. Team consistency collects all of these features. Mason and Stark (2004) highlighted the differences between banker criteria, focused on financial aspects; business angels, focused more on the entrepreneur and venture capitals, placing team consistency as the most important criterion.

According to these arguments, we propose the following hypothesis:

H1 Some of the criteria related to business projects are more relevant in the project selection process.

2.2 Criteria related to entrepreneurial skills

The word entrepreneur defines a person who is capable of creating a successful new venture. Literature commonly agrees that most entrepreneurs are characteristically different from the rest of the population. The start-up step markedly highlights this. Entrepreneurs are endowed with innate intuition and self-esteem. They are willing to take risks to achieve success. Yet creativity, negotiation, leadership, communication and team management are among some of their most relevant qualities.

2.2.1 Creativity

Creativity is defined as the generation of innovative and useful ideas. Successful entrepreneurs should generate profitable ideas for goods or services that attract a target market. Once entrepreneurs identify these ideas, they then design a business project to develop them. Novelty and utility are distinctive factors in creativity, so the relationship between creativity and entrepreneurship are clearly of interest (Gilad, 1984; Whiting, 1988). All companies acknowledge this relationship as the motor for business success (George and Zhou, 2007). It is also widely accepted given its potential impact on economic growth and job creation (Lee et al., 2004). These authors point out that business activity requires not only a productive and understandable business environment, but also a place where creativity and innovation may thrive. Integrating technology and creativity may lead to marketing an idea, product or service. Furthermore,

a full understanding of the drivers of entrepreneurship may greatly benefit entrepreneurial activity (Mukundan and Thomas, 2016). Sarooghi et al. (2015) found a strong positive link between creativity and innovation, mainly at an individual level. They studied the impact of creativity on innovation by using a sample of 10,538 observations concerning organisational, environmental and cultural factors that adjust the connection between creativity and innovation.

Some studies show that creativity and personality are interrelated. Fillis and Rentschler (2010) analysed the impact of personality, cognitive style and subsequent implications on the decision-making process. Other studies, apart from those related to personality, also relate to factors such as ability, motivation and environment. Hirakimoto and Watada (2012) used these four factors to define creativity. In a study conducted on 303 individuals, these authors asserted that this factor could be a more suitable indicator of business behaviour than intellectual quotient.

2.2.2 *Negotiation*

One outstanding characteristic of entrepreneurs is negotiation. Understanding how entrepreneurs negotiate according to previous experience, how their behaviour affects business results, or how they behave within this context is vital for measuring its impact on business projects.

Some findings reveal that entrepreneurs with prior business experience perform better than those with no experience at all (Neale and Northcraft, 1991). Neale and Bazarman (1992) and Zhang (2011) studied the relationship between founder experience within the negotiation process and the failure/success of a project in achieving financial support from venture capital (Zhang, 2011), or the impact on results (Neale and Bazarman, 1992). Zhang (2011) compared novel and experienced entrepreneurs. In this sense, experienced entrepreneurs raised more funds from venture capitals in first financing rounds and they were faster at fulfilling these financing rounds. Results showed that experience increases entrepreneurial knowledge and skills linked to negotiation.

Studies on behaviour and interaction in business negotiation are limited (Hellmann and Wasserman, 2010). Some authors, such as Maxwell and Lévesque (2014), analysed entrepreneurial behaviour during the first round of negotiations with business angels in the reality show, *Dragon's Den*. Entrepreneurs presented their business idea in a pitch to a five-member team of business angels to persuade them to invest in their project. Those who received investment offers behaved confidently and made fewer mistakes than did those who received no offers at all. Artinger et al. (2013) based the analysis of the behaviour on whether entrepreneurs revealed their emotions. Their study compared small and medium company founders with employees who were not entrepreneurs. The results uncovered significant differences in negotiation behaviour. Entrepreneurs relied more on persuasion and revealed their emotions. They obtained more profit when closing a deal, but they closed fewer deals than did the non-entrepreneurs. Findings suggested that emotions play an important role in negotiation for entrepreneurs. Studies have proven the adaptability of entrepreneurs in adjusting to the environment (Sexton and Bowman, 1986) as well as their willingness to take risks (Holm et al., 2013).

2.2.3 Leadership and communication power

Leadership and entrepreneurship are particularly important in the start-up phase, in which the founder is more than just an entrepreneur. The founder needs to create a vision of the business as it develops (Becherer et al., 2008) to attract employees and find resources for its development. Leadership is the process through which an individual may influence and motivate workers so they contribute to the achievement of goals and the overall business success of organisation (House et al., 2002).

The relevance of leadership in the business foundation is the object of numerous in-depth studies in literature (Vecchio, 2003). Yet one must analyse a profuse number of factors to identify the most effective kind of leadership. Every theory attempts to determine the effect of leader behaviour on the extent of employee commitment and satisfaction. However, every action of the leader seems to directly affect employee satisfaction, morale, motivation, performance and degree of leadership acceptance (House and Mitchell, 1975).

The interchange theory, LMX, is a wide-spread research area with strong empirical support (Gerstner and Day, 1997; Graen and Uhl-Bien, 1995; Liden et al., 1997) that describes the relationship between a leader and employees. The essential premise is the presence of differences in established exchange typologies. The leader can heavily influence employees, but must trust employee skill and capability to fulfil critical duties to implement suggestions (Dienesch and Liden, 1986). In line with the LMX theory, Castro (2008) used a sample of 554 individuals to conduct a study aimed at analysing the extent to which workers perceived congruence between their leaders' actual behaviour (attributes) and their implicit leadership theories as well as the extent to which they perceived discrepancy concerning their relation with their superiors. The result showed that higher discrepancy between the leaders' actual and ideal attributes presented worse quality in their relation with superiors.

As entrepreneurship and leadership merge, entrepreneurs must fulfil several attributes: vision, opportunity, influence, planning, motivating others, achievement-orientation, creativity, flexibility, patience, persistence, risk-tolerance, tenacity, self-confidence, proactivity and control (Renko et al., 2015). Entrepreneurs should recognise the business and communicate it through suitable formal and informal channels to all levels of the managerial stages. Furthermore, they should prove themselves leaders, both by developing the business strategy and using creative thinking to motivate the team (Darling et al., 2007; De Jong and Den Hartog, 2007). According to Jago (1982), another feature is thoughtfulness, understood as the ability to communicate and the capacity to empathise with other opinions. This study revealed a correlation between thoughtfulness and performance, which increased when thoughtfulness, sensibility and tolerance were at their peak.

In line with the research question, it is interesting to identify the most relevant criteria used by the accelerators. In this case, these criteria relate to entrepreneurial skills. The studies proposed by Wells (1974) and Poindexter (1976) established the relative importance of the project valuation criteria in the case of venture capital. Wells (1974) ranked management commitment as the most valued first criterion, while Poindexter (1976) and Silva (2004) ranked quality of management as the first criterion. Other

authors such as Muzyka et al. (1996) pointed out potential leadership of the entrepreneur or the management team and industry expertise as the most important valuation criteria for venture capital. The results of Franke et al. (2008) indicated that leadership was one of the three most important characteristics of entrepreneurial skill. In the case of informal investors, such as business angels, Landström (1998) pointed out that few studies highlighted the nuances of the criteria determining a business angel's investment decision. However, the literature lists a number of critical factors (Van Osnabrugge, 2000; Sudek, 2006; Maxwell et al., 2011), among which are skills, experience, track record and management team (Haines et al., 2003), entrepreneur experience and personality (MacMillan et al., 1985). Eisele et al. (2011) emphasised that the criterion of management personality (including variables such as negotiation, communication and leadership) is crucial to the assessment of all the investment stages.

According to the aforementioned arguments, we propose the following hypotheses:

- H2 Some of the criteria related to founders' entrepreneurial skills are more relevant in the project selection process.
- H3 Criteria linked to business projects are more relevant than those linked to entrepreneurial skills when selecting an investment project.

3 Methodology

3.1 Designing the methodology

One of the main research difficulties is the absence of databases with representative samples on seed acceleration programs. Moreover, these programs are developed by short-staffed organisations, which limit information collection and storage (Cohen and Hochberg, 2014). This work uses case study methodology, allowing us to properly examine the phenomenon within an actual framework (Yin, 1992, 2013). One of the fundamentals of this methodology is the fact that examining the context is just as important as examining the phenomenon itself. Moreover, the approach is not limited to quantitative or qualitative data, and it may even lead to the construction of ideas and proposals yet to be developed (Yin, 1992). Case study methodology is commonly used in seed accelerator research (Lehmann, 2014; Radojevich-Kelley and Hoffman, 2012; Cohen and Hochberg, 2014).

In our research, the election of VIAVIGO accelerator allows us to analyse accelerators as a case study. We process qualitative information provided by databases that properly order and systematise the criteria and factors used for project selection. VIAVIGO is an accelerator program supporting and assisting ventures and entrepreneurs at initial stages. In 2013, the Consorcio Zona Franca de Vigo and the Xunta de Galicia created a program aimed at accelerating innovative and investable projects by guiding them through their creation, financing and maturity. We chose this case because the program is a benchmark for entrepreneurship in Spain. It allows us to identify and channel all the resources and tools within the ecosystem both at a public and private level, placing them at the entrepreneurs' disposal to attain their goals. The program provides seed capital, training through face-to-face courses, and a network of mentoring,

infrastructure and intensive assistance. Additionally, it counts on the prior experience of two former programs and contains detailed information on all the selection processes.

3.2 The sample

The VIAVIGO program is open to all kinds of entrepreneurial innovative initiatives, whether they are in product/service, process and/or the business model. Minimum requirements must be met to access the program. The entrepreneurial team must have at least two people. The initiative must be no more than 42 months old and the promoters must be the intellectual authors of the ideas presented. The project selection is based on the scientific, technological or knowledge supporting the proposed value and associated business model. The selection also takes the market impact of this technology into account, i.e., the extent to which the market accepts or assimilates it. A total of 309 projects were presented for the official call (see Table 1). Most of the projects, accounting for 24.9% of the total, represented the TIC area. Business services represented 13.9%, and projects linked to agriculture and food industry, represented 12.9%. Finally, 15 out of 309 projects were chosen to enter the acceleration stage according to the assessment given by advisors and the technical committee of the program. These 15 candidates were mainly related to TIC (33.3%), agriculture, food and fishery (13.3%) and other consumer goods (13.3%).

Table 1 Distribution of projects according to economic activity

<i>Economic activity</i>	<i>Total presented</i>		<i>Total selected</i>	
	<i>Projects</i>	<i>%</i>	<i>%</i>	<i>%</i>
Aeronautics and naval	6	1.9	1	6.7
Agriculture, food and fishery	40	12.9	2	13.3
Automotive	5	1.6	1	6.7
Equipment goods	2	0.6		
Communication and publicity	12	3.9		
Construction	5	1.6		
Culture and leisure	27	8.7	1	6.7
Energy and natural resources	9	2.9		
Furniture and decoration	1	0.3		
Other consumer goods	21	6.8	2	13.3
Other business services	43	13.9	1	6.7
Plastics and chemistry	2	0.6		
Healthcare and medicine	22	7.1	1	6.7
Textile and fashion	10	3.2		
TIC	77	24.9	5	33.3
Transportation and logistics	7	2.3		
Tourism and hospitality	20	6.5	1	6.7
<i>Total</i>	<i>309</i>	<i>100.0</i>	<i>15</i>	<i>100.0</i>

3.3 *Measuring variables*

3.3.1 *Dependent variable*

Our study highlights the most relevant criteria used in the selection process to assess projects entering the acceleration stage. To this end, it is interesting to identify different behaviours among projects finally gaining access to the acceleration level as well as those rejected. The dependent variable is therefore categorical, representing 1 when the project enters the acceleration phase and 0, otherwise. The selection process of VIAVIGO is divided into two phases. The first phase values the variables of the business project and the second values entrepreneurial skills. The committee members are technicians with extensive business project analysis experience. Some members of the committee are experts in assessing variables connected to the business project. Others conduct group dynamic assessments that allow us to take the variables related to entrepreneurial skills into account. Each of these specific variables has the same weight.

3.3.2 *Independent variables*

The variables used to select projects entering the accelerator stage may be classified into two categories:

- 1 variables linked to the business project
- 2 variables linked to the founders' entrepreneurial skills.

A five-point Likert scale measures the different variables, in which 1 represents a very low rating for the variable according to the project and 5 represents a very high rating.

Variables linked to business projects

- Extent of innovation comprises the scientific, technological or knowledge base supporting the entrepreneurial project, as well as the distinguishing items that increase its value.
- Extent of investability is understood to target a market niche and business pattern, which allows the project to increase its value and offer sufficient return on the investment to potential investors.
- Speed of acceleration refers to the current extent of the project development and its capacity to execute a minimally viable product/service throughout the acceleration period.
- Extent of team consistency considers the individual skills and competences of each of the business project members, while also considering the multidisciplinary nature and degree of complementarity of the members to measure whether team balance and previous entrepreneurial and professional experience, particularly in the sector of application, enables a team to design, execute and accelerate the project. This variable also evaluates the project sponsors' degree of commitment and dedication.

Variables linked to founders’ entrepreneurial skills

- Negotiation is defined as the capacity of team members to reach profitable agreements and solutions.
- Teamwork is one of the variables that measures the personal abilities and competences of the entrepreneurs according to the results of several exercises and group dynamics. It measures aspects like collaboration, initiative and conflict management.
- Creativity is the ability to generate new ideas leading to original solutions to develop the product/service.
- Communication relates to the exchange of information about the venture.
- Leadership is understood as the managerial skills of the founder that influence team attitude.

We verify the reliability of the scales (Cronbach’s alpha) to validate these measures. Additionally, a factorial analysis lets summarise all the previous variables into a single factor to adequately reflect the different types of measures. Table 2 shows scale validation figures. The statistics indicate the validity of the proposed patterns.

Table 2 Variables considered for project selection

	<i>5 points Likert-like scale (1 = less important; 5 = very important)</i>	<i>Scale validation</i>
Variables linked to business projects	Extent of innovation	Cronbach’s $\alpha = 0.815$
	Extent of investability	Factorial: 1 factor
	Speed of acceleration	Explained variance: 65.2%
	Extent of team consistency	Sig. Bartlett: 0.000 KMO: 0.745
Variables linked to founders’ entrepreneurial skills	Negotiation	Cronbach’s $\alpha = 0.771$
	Teamwork	Factorial: 1 factor
	Creativity	Explained variance 56.8%
	Communication	Sig. Bartlett: 0.000
	Leadership	KMO: 0.756

4 Analysis of the results

Table 3 shows the description of variables. The most valuable criterion of the variables linked to the venture was the extent of team consistency, ranked at an average of 2.99, followed by the speed of acceleration, which reached 2.61. The least valuable criteria with 2.50 and 2.43 were the extent of innovation and extent of investability, respectively. Among the variables linked to founders’ entrepreneurial skills, the criteria with the

highest rankings, 4.10 and 4.08 were leadership and creativity, respectively. Teamwork, 3.34 and communication, 3.37, ranked the lowest, and negotiation skill ranked at 3.78, an intermediate position.

Table 3 Description of the variables

		<i>Average</i>	<i>Standard deviation</i>
Variables linked to business projects	Extent of innovation	2.50	0.977
	Extent of investability	2.43	0.936
	Speed of acceleration	2.61	0.941
	Extent of the team consistency	2.99	0.995
Variables linked to founders' entrepreneurial skills	Negotiation	3.78	1.152
	Teamwork	3.34	1.149
	Creativity	4.08	0.884
	Communication	3.37	0.871
	Leadership	4.10	0.716

Table 4 Differences among groups (accepted vs. rejected projects)

		<i>Rejected projects</i>	<i>Accepted projects</i>	<i>Difference</i>	<i>(Sig.)</i>
Variables linked to business projects	Extent of innovation	2.41	3.06	0.65	0.016**
	Extent of investability	2.29	3.26	0.97	0.000***
	Speed of acceleration	2.51	3.26	0.75	0.003***
	Extent of team consistency	2.86	3.80	0.94	0.001***
Variables linked to founders' entrepreneurial skills	Negotiation	3.67	4.25	0.58	0.081*
	Teamwork	3.35	3.33	-0.02	0.954 n.s.
	Creativity	3.99	4.50	0.51	0.046**
	Communication	3.31	3.66	0.35	0.159 n.s.
	Leadership	4.07	4.25	0.18	0.394 n.s.

Notes: Sig: t-student with Leven's test for equality of variances.

* $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$, n.s.: non-significant.

In the case of no homogeneity in variances and no normality in the distribution, we calculated the significance by applying Mann-Witney's U non-parametrical test).

Table 4 shows the outcome of the univariate analysis. The analysis of the data focuses on determining whether the differences observed between the two groups of interest (projects entering the acceleration stage as well as those rejected) are enough to claim the significant impact of these factors on the different group behaviours. The statistical tests applied to analyse the variables were student's t for two independent populations, assuming equal or different variances depending on Levene's test. In the case of no homogeneity in variances and no normality in the distribution, we calculated the significance with Mann-Witney's U non-parametrical test. Regarding the variables linked to the venture, it clear that the projects selected to enter the acceleration stage reach higher rates. This is specifically the case of the variables linked to the extent of investability (difference of 0.97) and the founders' team consistency (difference of 0.94).

These data in the univariate analysis confirm H1, thus verifying the importance of the variables related to the business projects. However, the outcome for the variables on the founders' entrepreneurial skills is inconclusive. We can only corroborate the differences among the variables of creativity (significant difference of 95%) and negotiation (significant difference of 90%). This shows that the project selection process mainly assesses the choice of ventures entering the acceleration stage according to their founders' creativity and negotiation skills. By contrast, variables such as teamwork, communication and leadership reflect no significant differences. H2 is, therefore, partially observed.

Table 5 Multivariate analysis

<i>Independent variables</i>	<i>B</i>	<i>T.E.</i>	<i>Wald</i>	<i>Sig.</i>	<i>Exp (B)</i>
Extent of innovation	0.410	0.481	0.726	0.394	1.506
Extent of investability	0.675	0.640	1.114	0.291	1.964
Speed of acceleration	-0.434	0.752	0.334	0.563	0.648
<i>Extent of team consistency</i>	<i>1.170</i>	<i>0.578</i>	<i>4.102</i>	<i>**0.043</i>	<i>3.221</i>
Negotiation	0.619	0.398	2.427	0.119	1.858
Teamwork	-0.179	0.334	0.289	0.591	0.836
<i>Creativity</i>	<i>1.544</i>	<i>0.613</i>	<i>6.346</i>	<i>**0.012</i>	<i>4.685</i>
Communication	0.365	0.661	0.304	0.581	1.440
Leadership	-1.168	1.282	0.830	0.362	0.311
Constant	-12.361	5.885	4.411	0.036	0.000

Notes: Logistic regression estimation.

* $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$.

Dependent variable (dummy): projects entering the seed acceleration = 1, ventures not entering the seed acceleration = 0.

B: logistic coefficients measure changes in the ratio of probabilities, the so-called *odd ratio* in logarithmic terms. A positive coefficient increases probabilities, whereas a negative value decreases predicted probability. *T.E.*: standard error.

Wald: Wald's statistics. *Sig.*: stage of significance. *Exp (B)*: exponential coefficient. We determine the statistical significance of the pattern by using a significant chi-squared value [chi-squared: 21.672, sig: 0.010].

Hosmer-Lemeshow's test shows a chi-squared of 2.834 non-significant (sig: 0.944), which means that the estimated pattern correctly adjusts to the observed behaviour of the data. As the goodness of fit for the adjustment, we obtain a percentage of success of 65.8%, two log likelihood: 55.540. Cox and Snell's R^2 : 0.237, Nagelkerke's R^2 : 0.383.

Using a multivariate analysis with a logistic regression (see Table 5), we studied possible interrelations among variables. We chose this statistical technique given the binary and qualitative nature of the dependent and the abnormal distribution of most of the independent variables. We then calculated the validity of the model using the verisimilitude test, highest likelihood estimation of coefficients, Hosmer-Lemeshow's global adjustment measure, global percentage of success in classification and goodness of fit through Cox and Snell's alternative R^2 statistics and Nagelkerke's statistics.

We obtained positive and significant coefficients for extent of team consistency ($B = 1.170$; 95% significant) and creativity ($B = 1.544$; 95% significant). This proves that higher team consistency and creativity assessment results in a greater likelihood of the

project entering into the acceleration stage. Model adjustment measures and statistical descriptions validate the outcomes (see Table 5).

Table 6 Factor analysis

<i>Independent variables</i>	<i>Factor business projects</i>	<i>Factor entrepreneurial skills</i>
Extent of innovation	0.709	
Extent of investability	0.871	
Speed of acceleration	0.822	
Extent of team consistency	0.716	
Negotiation		0.715
Teamwork		0.671
Creativity		0.807
Communication		0.695
Leadership		0.912

Notes: Factor loadings for each variable on the components.

Extraction method: main component analysis. Rotation method: varimax standardisation with Kaiser. Factorial: two factors. Explained variance: 57.6%. Sig. Bartlett: 0.000; KMO: 0.702.

Table 7 Multivariate analysis

<i>Independent variables</i>	<i>B</i>	<i>T.E.</i>	<i>Wald</i>	<i>Sig.</i>	<i>Exp (B)</i>
Business projects	1.175	0.443	7.036	0.008	3.237
Founders' entrepreneurial skills factor	1.008	0.606	2.763	0.096	2.740
Constant	-2.405	0.519	21.450	0.000	0.090

Notes: Logistic regression estimation.

* $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$.

Dependent variable (dummy): venture that moves on to the accelerator = 1, venture that fails to move on to the accelerator = 0.

B: logistic coefficients measure changes in the ratio of probabilities, the so-called *odds ratio* in logarithmic terms. A positive coefficient increases probabilities, whereas a negative value decreases predicted probability. *T.E.*: standard error.

Wald: Wald's statistics. *Sig.*: stage of significance. *Exp(B)*: exponential coefficient. We determine the statistical significance of the pattern by using significant chi-squared value [chi-squared: 21.672, sig: 0.010].

Hosmer-Lemeshow's test shows a chi-squared of 2.834 non-significant (sig: 0.944), which means that the estimated pattern correctly adjusts to the observed behaviour of the data. As a goodness of fit for the adjustment, we obtain 76.3% success of, two log likelihood: 64,609. Cox and Snell's R^2 : 0.146, Nagelkerke's R^2 : 0.235.

To test H3 and verify whether the factors linked to the business project variables are more relevant than those related to the founders' entrepreneurial skills, we run a factorial analysis with all the variables (see Table 6). The analysis aggregates all the variables into two factors to explain 57.6% of the variance. The first factor adequately aggregates the business project variables and the second factor includes the variables related to the founders' entrepreneurial skills. In both cases, the factor loadings are homogeneous. Using these two factors, we then conduct a logistic regression to determine which of the two (see Table 7) is the most relevant. Our result shows that the factor linked to the

business projects (extent of innovation, speed of acceleration, extent of investability and teamwork consistency) has a greater impact than the one related to the entrepreneurial skills (negotiation, teamwork, creativity, communication and leadership). The business project factor shows a $B = 1.175$ and 99% significant, whereas the entrepreneurial skills factor shows a $B = 1.008$ and 90% significant. These data confirm H3. Therefore, the factors related to the business projects are more important than those related to entrepreneurial skills in selecting projects for the accelerator stage. Model adjustment measures and statistical descriptions validate the outcome (see Table 6).

5 Discussions and conclusions

Based on the VIAVIGO experience in Spain, this research analyses the factors used by accelerators to select entrepreneurial projects for the accelerator stage. Literature shows that, in sharp contrast with failing projects, the projects supported by accelerators have higher success rates due to both financing and business continuity (Lynn and Radojevich-Kelley, 2012). Particularly, our study is based on the information provided by VIAVIGO, which is currently developing an accelerator program for entrepreneurs and ventures at initial stages. We study a sample of ventures in initial stages by assessing different criteria linked to the entrepreneurial project and entrepreneurial skills.

We analyse the most relevant criteria or variables used to select ventures that continue to the accelerator stage. Firstly, our findings show that the extent of innovation and speed of acceleration are the most relevant criteria among the variables linked to business projects (Hypothesis 1). We also study whether founders' entrepreneurial skills are decisive in selecting projects (Hypothesis 2) and we finally examine whether innovative and acceleration extents are more relevant than founders' entrepreneurial skills when choosing projects (Hypothesis 3). Upon analysing specific assessment criteria used by accelerators versus investors, we may observe that accelerators prioritise the extent of team consistency criterion while investors mainly use criteria that maximise business potential (Landström, 1998). The extent of team consistency criterion is also relevant to investors (Eisele et al., 2011), but its importance varies according to the stage of the investment project (Macmillan et al., 1985). Investors, such as the venture capitalist, value an entrepreneurial business more in terms of its chances of survival (Shepherd, 1999), a criterion that is less relevant to accelerators in projects at very early stages of entrepreneurship. Concerning the valuation of the entrepreneur's abilities, creativity is the most relevant criterion for accelerators, while investors are more heedful of the relation between the entrepreneur and the investor, or the skills the entrepreneur develops in the company. Hall and Hofer (1993) considered that demonstrating leadership capacity and track record were relevant to investors. However, they were much less relevant to accelerators.

Given the lack of public information concerning accelerator projects, Spain presents no empirical evidence concerning the application of these criteria to a seed accelerator. This study therefore contributes by filling this gap in literature. Our results show that extent of team consistency and accelerability of ventures are the highest rated variables when assessing business projects, while leadership is the highest rated immediately followed by creativity when assessing founders' entrepreneurial skills. Moreover, we observe that a higher the ranking of the founders' team consistency increases the

likelihood of entering the accelerator stage. Results confirmed that, variables linked to business projects are more important than those linked to founders' entrepreneurial skill when selecting projects to move on to the accelerator stage.

Our findings may be useful for entrepreneurs presenting business projects to accelerators, accelerator managers and local authorities taking part in, or developing, accelerators. Entrepreneurs must count on an experienced, multidisciplinary and consistent team, and the team's venture must display a minimum viability during the acceleration stage. It also proves useful to know that leadership and creativity are the highest rated entrepreneurial abilities, among those expected to be developed, to ensure the venture will move on to the acceleration stage. The implication for the accelerator manager and local authority focuses on supporting the methodology concerning the extent of team consistency and accelerability in the initial stage to attempt to increase the number of projects enhancing these two variables. This would, in turn, ultimately increase the quality of the project.

Our work opens the path to future lines of research. However, our sample is limited because it simply focuses on one business project accelerator program, VIAVIGO. Further research could use a multi-case analysis and enlarge the database to build upon our work and contribute to a higher outcome consistency. Once the business projects are accelerated and the investors' day is over, further research should analyse subsequent stages of the business projects.

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