

DETERMINANTS OF SURVIVAL OF THE HIGH-GROWTH FIRMS

A MULTIDIMENSIONAL APPROACH

SEMINÁRIO EMPREENDEDORISMO E CROWDFUNDING

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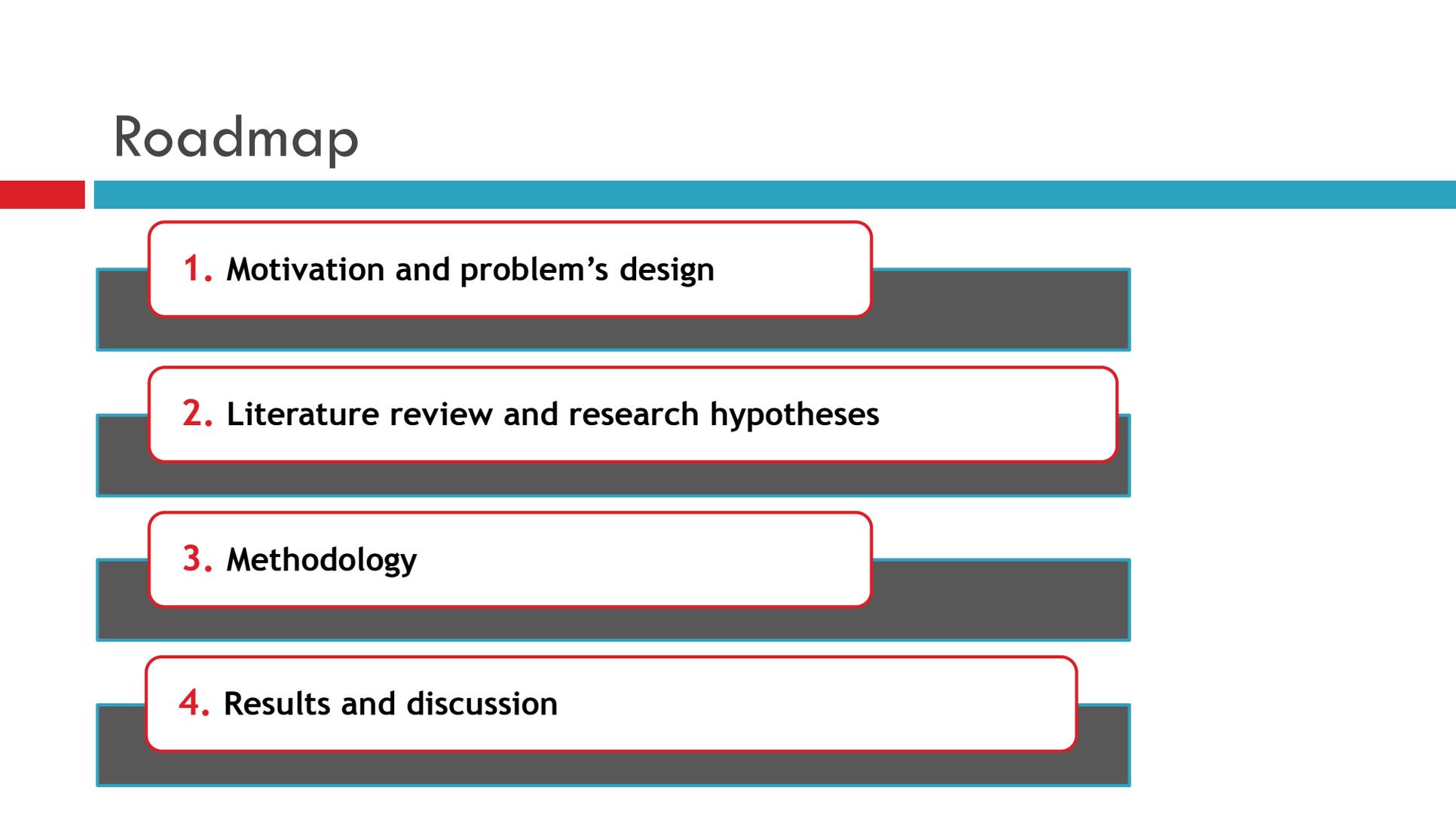
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Roadmap



1. Motivation and problem's design

2. Literature review and research hypotheses

3. Methodology

4. Results and discussion

Motivation
and
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discussion



Entrepreneurship has been shown to be a powerful force driving innovation, productivity, job creation and economic growth



'Gazelle' firms are understood as a key agent in the role model of an entrepreneurial economy based on knowledge



Understanding what drives the successful sustained growth of such high-growth firms and predicting the determinants that can most affect their performance and survival in order to prevent exit over many years is therefore critical for fostering endogenous growth

Motivation

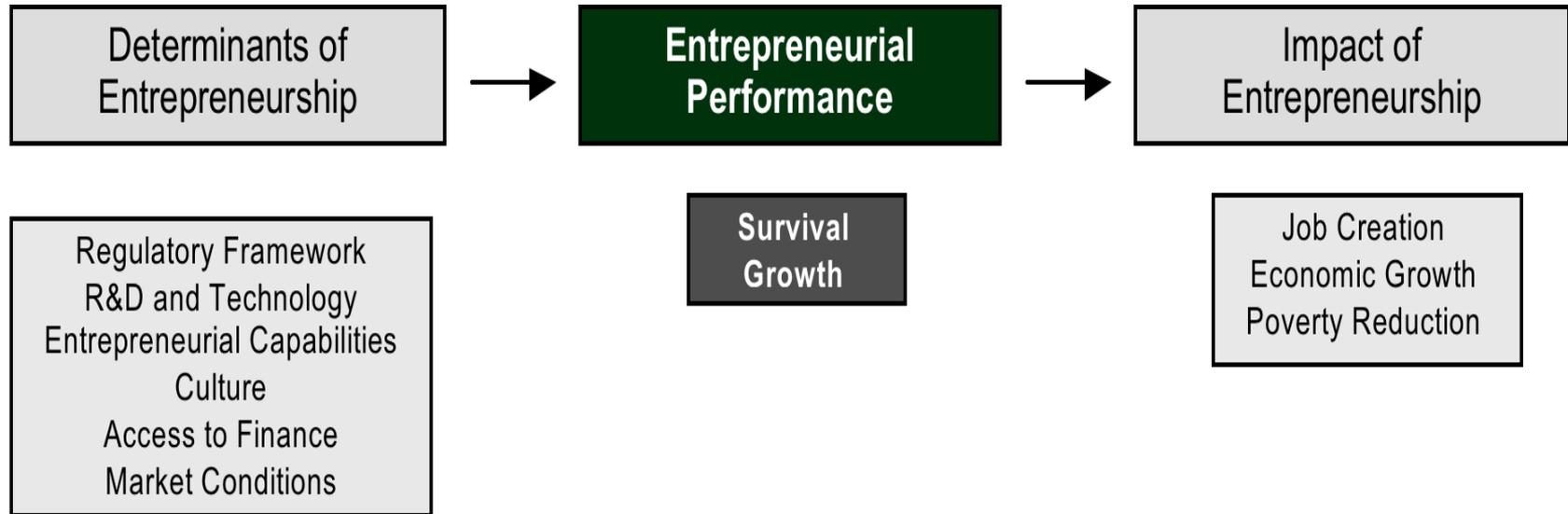
Start-ups: A taxonomy (Hisrich & Peter, 1995)

- Life style firms:
 - ▣ privately owned and support owners
 - ▣ modest growth
 - ▣ Typically micro business
- A foundation company
 - ▣ Centered on intramural or open research and development (R&D) activities
 - ▣ Creates new industry or changes entire sector
- A high potential venture
 - ▣ Rapid growth
 - ▣ Innovative products/services in a large market
 - ▣ Large investments

Indicators of entrepreneurial performance

Indicator	Definition
Employer enterprise births	The proportion of all firms that are new enterprises in a given year It includes only firms with employees
Employer enterprise deaths	The proportion of all firms with employees that cease operation in a given year It includes only firms with employees
Survival rates for employer enterprises	The proportion of firms existing in year y which had not died within each of the first 5 years It includes only firms with employees in year y
High growth firm rates based on employment or sales growth	The proportion of firms with average annual growth in either employees or in sales greater than 20% a year, over a three-year period It includes only firms with ten or more employees at the beginning of the 3 year period
“Gazelle” rates based on employment or sales growth	‘Gazelles’ are the subset of high growth enterprises born 5 years or less before the end of the growth observation period

Our focus is on entrepreneurial performance



Mice, Elephants and Gazelles (Birch, 1988)

□ Mice

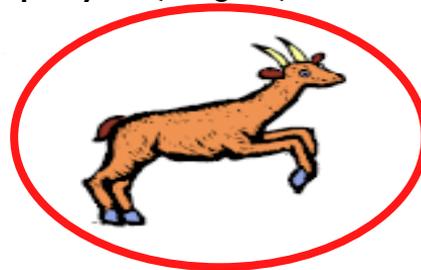
- Small, vulnerable, hardworking, little market influence power, quick to change direction if needed, very few aspire to grow, maintain their profitability

□ Elephants

- Large, command respect, cannot change direction quickly, can influence the market place and conditions, likely to be contracting in size

□ Gazelles

- Growth oriented with above average profitability, seek growth rather than control, ultimately become large employers, agile, **'at least 20% growth a year for 4 years'**



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G vs. NG

- Analysis of the decisions of the 'gazelle' vs. 'non-gazelle' firms regarding two strategic options, namely to stay in or to exit the market

Founder

- A branch of the literature remains little explored, that of how the founders of gazelle firms decide to exit and which exit strategies they adopt

USA
Start-ups

- Estimating the predicted survival rates in a sample of 4928 USA start-ups created in 2004 and tracked by the Kauffman Foundation Survey (KFS) in the subsequent six years

Problem

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Research objectives



Generic
objective

To analyse the determinants of survival of the high-growth firms



Specific
objectives

To assess the role played by:

(i) The growth status of 'gazelle' vs. 'non-gazelle' firms, regarding two strategic options, namely to stay in or to exit the market

(ii) The founder/owner attributes and firm characteristics, concerning the same two previously referred strategic options

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The educational background of the entrepreneur has to do essentially with the entrepreneurial education followed by the firm owner, and if he has a deeper understanding of firm processes, this will affect the decisions and strategies developed to exit.

According to DeTienne & Cardon (2008), the set of decisions made by high-tech firms depend upon several personal traits of the founders, namely their intentions, motivations and educational background.

Motivation is an important factor in the decision to start a venture and also to exit from it (DeTienne, 2010).

Halldin (2012) also advocates that employees' characteristics determine firms' survival rates, especially regarding their educational backgrounds.

H₁

Educated founders are expected to make firms survive for longer.

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Several scholars defend a positive and significant relationship between the entrepreneur's previous entrepreneurial experience and the survival rate, this decreasing the probability of exiting and increasing the chances of success (Taylor, 1999; Ucbasaran *et al.*, 2003; Politis, 2005).

Repeat entrepreneurs are more likely to have more personal financial resources to invest or re-invest, greater access to external finance and are more able to create new businesses with higher growth potential (Colombo & Grilli, 2005).

The exit process can also work as an entrepreneurial learning process reflecting the concept of entrepreneurial engagement. This concept relates to a process including diverse levels of engagement, such as intentions to establish a firm or start-up activity (Grilo & Thurik, 2005, 2008).

H₂

Experienced founders are expected to make firms survive for longer.

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For Wagner (2003), Schutjens & Stam (2006), Stam *et al.* (2008) and Amaral *et al.* (2011), education, age and gender are significant determinant factors explaining exit and subsequent reengagement in the entrepreneurial process, with highly educated, young males being those most likely to reengage in entrepreneurial activity after a previous exit.

Grilli (2011) analysed the relationship between the human capital of the founder and the exit process in a context of intense negative industry-specific crisis, pointing out that entrepreneurs with a substantial amount of prior work experience may pursue an exit strategy.

Hessels *et al.* (2011) point to a significant relationship between entrepreneurial exit and subsequent recognition of new opportunities, acquiring additional skills and increased potential with the intention to get involved in a new venture.

H₃ H₄

Older founders are expected to make firms survive for longer.

Male founders are expected to make firms survive for longer.

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Taking as reference the Birch *et al.* (1995)'s concept, a 'Gazelle' is an entrepreneurial unit that achieves a minimum of 20% sales growth each year over a time interval.

For Ahmad (2006), the OECD defines 'Gazelle' as a young (less than five years old), high-growth firm, which is characterized by an average employment growth rate above 20 percent per year, over a three-year period and with 10 or more employees at the start of the period.

Acs *et al.* (2008) argue that new establishments of firms with 20 to 499 employees or new firms of this size show a positive effect on job creation, which increases after one year, reaching a maximum after five years before decreasing again. 'Gazelle' firms tend to increase their productivity levels rapidly after entry due to their size and specific characteristics. These firms are able to challenge existing firms and foster competition with other established firms.

H₅

'Gazelle' firms are expected to survive longer than 'non-gazelle' firms.

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The possession of a large patent portfolio increases the value of liquidity when exiting via an initial public offering (IPO), especially in the case of the biotechnology industry (Stuart *et al.*, 1999; Baum *et al.*, 2000; Gulati & Higgins, 2003).

According to Hsu (2004), Hochberg *et al.* (2007) and Hallen (2008), each patent application filed by new firms increases the attraction of initial funding from prominent venture capitalists.

In the vision of Hsu & Ziedonis (2013), the entrepreneurial process can also be influenced by the intangible assets owned by the entrepreneur. In this sense, patents enable the entrepreneur to acquire financial resources over the different stages of the firm's lifecycle, including the exit stage.

H₆ H₇ H₈

Patenting firms are expected to survive longer than non-patenting firms.
Firms that register and deal with copyrights are expected to survive longer than others.
Firms that register and deal with trademarks are expected to survive longer than others.

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Agarwal & Gort (2002) consider that both firm and industry characteristics, including knowledge stock and age, are vital to limit the chances of firm exit. Furthermore, age is also a determinant factor of firm survival.

Manjón-Antolín & Arauzo-Carod (2008) also consider that age is important in determining firms' successful survival, concluding that new firms face higher risks of failure than older ones.

Medrano (2012) analyses the importance of innovation and age in firm survival, using information on high-quality patents in laser source technology and patents owned in co-authorship with university inventors. The same author concludes that high-quality patents (measured by the number of forward citations) show a positive and significant relationship with firm survival.

H₉

Older firms are expected to survive longer than younger firms.

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Dunne *et al.* (1989), Audretsch & Mahmood (1994), Mata & Portugal (1994), Mitchell (1994), Haverman (1995), Sharma & Kesner (1996) defend that large firms tend to have higher survival rates than their smaller counterparts, due to the efficient scale needed to operate, increased access to funds, increased capacity to diversify and differentiate the managerial ability.

Another perspective was defended by Montgomery (1994), which pointed out that at the time diversification increases, firm profitability and expansion decreases. In addition, firms with more specialized diversification tended to expand more than firms with wider diversification strategies (Montgomery & Wernerfelt, 1988).

Montgomery & Hariharan (1991) argued that fast growing firms with extant resource bases dedicated to marketing and R&D were more likely to pursue diversified expansion and tended to penetrate more efficient and demanding markets compatible with their own capability profiles.

H₁₀

Large, diversified firms are expected to survive longer than small firms.

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Santarelli & Piergiovanni (1995) argued that the effect of exit in business service firms is strongly dependent on the demand for non-standardized and non-industry-specific services, in particular in manufacturing.

Bojnc & Xavier (2007), in a study about Slovenian manufacturing firms, concluded that the most significant determinants of firm exit, in manufacturing firms, are the firm's export orientation, capital intensity, innovation expenditure, firm profitability and the growth of the sector's real sales. These determinants reduce exit, while others, such as private ownership and lower firm cost efficiency increase it.

Carree *et al.* (2011), in a study of twelve different sectors in Italian provinces over eleven years, claimed that exit rate is determined by entry in the previous year in the same sector, previous exit having a different effect on manufacturing firms and service firms.

H₁₁

Manufacturing firms are expected to survive longer than non-manufacturing firms.

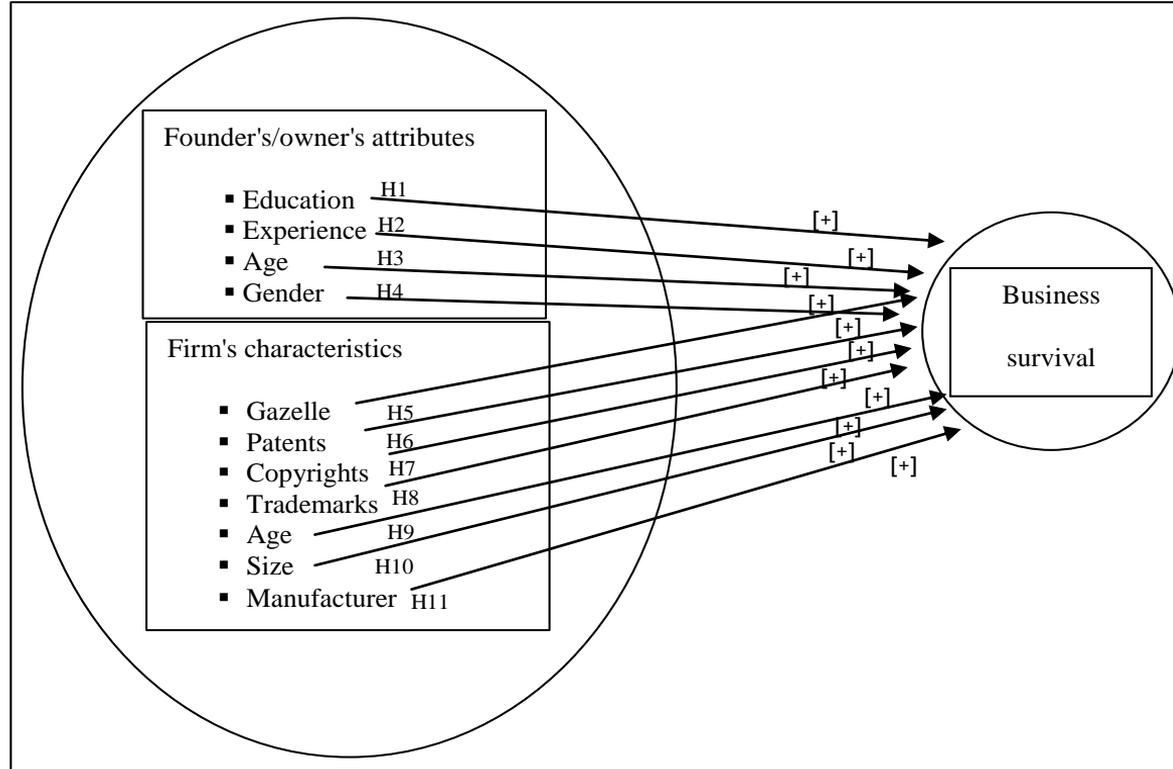
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*Conceptual model:
Determinants of business survival
and exit decision*



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Type of approach

Quantitative approach

Secondary data

Kauffman Firm Survey release 6.0.

Population

Start-ups located in the USA

Sampling procedure

Non probabilistic convenience sample

Sample's dimension

29,585 observations, we have 535 censored cases (firms that did not survive)

Fieldwork

From March 2014 until June 2014

Data analysis and estimation

Cox proportional hazard estimations

Software

STATA 13.0



Technical details of the research

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Variables	Hazard ratios [Probability]
Founder's/Owner's attributes	
Founder's educational background	1.384** [0.014]
Founder's experience	1.014*** [0.001]
Founder's age	0.843*** [0.004]
Founder's male gender	0.918** [0.016]
Firm's characteristics	
Gazelle firms	0.404** [0.044]
Firm's patents	0.998*** [0.006]
Firm's copyrights	0.998*** [0.001]
Firm's trademarks	1.008** [0.006]
Firm age	0.527*** [0.005]
Firm size	1.069*** [0.003]
Manufacturing firm	0.883** [0.015]

***significant at 1%, **significant at 5%, *significant at 10%

Survival model:
Dependent variable - exit of Gazelle firms

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Founder's/Owner's attributes

Founder's age and male gender found support, hazard ratios being under one, determining survival positively, and thus we cannot reject H3 and H4.

For the founder's educational background and founder's experience, we reject H1 and H2, due to the fact that their hazard ratios are above one, not being beneficial for survival and therefore relevant for firm exit.

Founder/Owner
+
Firm

Entrepreneurial
Performance

Survival
or
Exit

Firm's Characteristics

A set of variables denote a significant impact on hazard ratios, namely 'Gazelle' status, firm's patents, firm's copyrights, firm's age and firm's manufacturing status. Therefore, we cannot reject H5, H6, H7, H9 and H11.

For the variables of firm's trademarks and firm's size, we reject hypotheses H8 and H10, since they are not beneficial for survival, being predictors of exit.

Summing up



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IMPLICATIONS

Managers of high-growth firms need to understand what drives the sustainable growth of such type of firms; and to predict the determinants that can most affect their performance and survival, in order to prevent exit over a longer time period.

Policy makers should strengthen work experience and educational background of entrepreneurs; develop strategies to enhance firm's innovation portfolio and incentive programmes dedicated to the reinforcement of high-growth entrepreneurship, especially in manufacturing; support for global entrepreneurs to lead ventures funded on joint-ventures, M&A or consortia of high-growth firms for establishing new global trademarks.



GUIDELINES FOR FUTURE RESEARCH

Analysis of other determinant factors concerning the technological structure or entrepreneurial innovation capacity of high-growth firms engaged in both manufacturing and service activities.

Assessment of the role played by diversity of technological capabilities, credit constraints, inward foreign direct investment, venture capital, or equity-based crowdfunding, for ensuring survival, success and exit patterns of high tech vs. non-high tech fast-growing start-ups.



Many thanks for your attention

Q&A

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