

Data retrieval from online social media networks for defining business angels' profile

Business
angels' profile

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Abstract

Purpose – Entrepreneurship is the basis of economic development but is somehow limited by the lack of access to financing sources, especially in the crucial moments of start-up early-stage development. For crossing the so-called “valley of death,” start-ups need to access informal finance sources, such as business angels. This study aims at defining the profile of business angels and comparing it with the existing literature.

Design/methodology/approach – A novel methodology for sampling the business angles population has been used, which extracts data from online social media networks. This allows taking a closer look at informal sources of entrepreneurial finance. A total of 500 real business angels, acting worldwide, from the LinkedIn and Crunchbase databases has been retrieved for this study.

Findings – Results point out that younger investors seem to be entering the entrepreneurial informal finance market. They are mainly males between 40 and 50 years of age, with a previous entrepreneurial record, and more highly educated than previously stated. They tend to have studies from Business Administration and Economics, although they prefer to invest in the ICT sector.

Originality/value – Besides the novel data retrieval technique for analyzing the informal sources of finance, the originality of the work lies in updating the archetype for business angels.

Keywords Entrepreneurship, LinkedIn, Entrepreneurial finance, Social media presence, Informal sources of finance, Crunchbase

Paper type Research paper

1. Introduction

In the frame of a capitalist society, there cannot be economic growth without the creation of new companies (Acs and Szerb, 2007; Hisrich *et al.*, 2016). Entrepreneurship has among its advocates people as diverse as economist Milton Friedman (Friedman and Friedman, 1980), Nobel peace prize laureate Muhammad Yunus (Cosic, 2017) and ex-Governor Arnold Schwarzenegger (Alf, 2015), which speaks of the consensus reached about its importance. There are, however, contextual factors that inhibit the foundation of new companies, such as difficulties for financing (Shinnar *et al.*, 2012), lack of respect for private property (Crum and Nelson, 2015) or poor economic development at the country or regional levels (Wong *et al.*, 2005; Aguilera *et al.*, 2018).



Particularly, the access to finance has been stated as crucial for the development of SMEs (Urban and Ratsimanetrimanana, 2019), remaining the bridging of the so-called “valley of death” (time frame of a start-up spanning from the conceptualization of the business until breaking even) as one of the most important challenges for new companies. Besides bootstrapping (entrepreneur’s own resources), the financing sources that can allow overcoming this challenge are the ones labelled as “informal,” namely:

- the triple F (family, friends and fools);
- business angels; and
- crowdfunding.

Out of these, the first is only available for close relatives and friends, and therefore is not properly a market under the classic offer and demand schema (Mason, 2006). Because crowdfunding lies within the domain of the sharing or collaborative economy, it is relatively dependent on the financial market regulations that set on each country or economic region (Fernández-Angulo *et al.*, 2019), as well as on the digitalization of each society.

In this vein, business angels are defined by Argerich and Cruz-Cázares (2017) as:

[. . .] any individual that currently holds an investment made (debt and/or equity) directly with his or her own money in an unquoted company, is neither the entrepreneur nor his or her relatives, and plays an active or passive role in the investee firm.

They can be of the greatest importance for the survival of new companies. Their importance goes beyond the initial financing: the existence of a previous involvement by business angels in the previous stages of the life of the company favors the subsequent appearance of other types of financing such as that provided by groups of venture capital or bank credits (Sørheim, 2003).

However, business angels, who are an essential part of an entrepreneurial ecosystem (Walsh and Winsor, 2019), tend to be more abundant around successful economic poles (big cities, technological hubs, etc.). Therefore, entrepreneurs from rural regions or underdeveloped countries are in disadvantage when compared with those located in urban areas or developed regions (Kasseeah and Tandrayen-Ragoobur, 2016; Urban and Ratsimanetrimanana, 2019), as business angels are more prone to invest:

- in locations they are familiar with (Harrison *et al.*, 2010; Croce *et al.*, 2018); and
- in companies which are closer in terms of social relationships (Liang and Yuan, 2016).

To cope with economic development, more early stage funding is needed, as access to finance has acted as a constraint for the creation and survival of companies in Europe (Bozkaya and Van Pottelsberghe de la Potterie, 2008). In fact, it has been stated that in regions with a weak formal financial ecosystem informal sources also tend to be scarce (Grilli, 2019).

If the activity of business angels is to be fostered besides economic poles that already count with a strong financial ecosystem, the archetype of a business angel should be defined. So far, the existing literature focuses on specific countries or regions (Hindle and Wenban, 1999; Stedler and Peters, 2003; Morrissette, 2007; Ramadani, 2009) and is basically dependent on the use of convenience samples and data bases (Mason and Harrison, 2002; Mason *et al.*, 2016). The objective pursued by the present work is to contribute to the body of knowledge of entrepreneurial finance, shedding light on the representative profile of informal particular investors, commonly termed business angels, with the use of an innovative data retrieval technique, from online social networks.

The remainder of the paper is organized as follows. Section 2 summarizes the literature review conducted, while Section 3 presents the methodology in use and the results obtained. Discussion of results follows in Section 4. Section 5 gathers the conclusions, limitations of the study and recommendations for further research.

2. Theoretical framework

2.1 Financing from informal sources

Traditionally, many companies have started their activity with the own funds of the entrepreneurs plus the external financing provided by the so-called 3 Fs (family, friends and fools). After creating and validating a prototype of the product or service offered, the company will start operating, but it will typically need to undergo a situation with low sales and all the fixed costs of the company, which may derive on cash flow tensions. In fact, three out of four start-ups fail within their first years of life (Blank and Dorf, 2012), generally due to the lack of ability to overcome the unfavorable financial situation derived from poor liquidity. This period has been traditionally termed the “valley of death”, and is characterized by the absence of formal financing sources, that appear later in the company’s life, in case it succeeds in crossing that valley. This is due to the reluctance of credit institutions (banks) to finance business projects, given the high risk inherent in them.

Business angels appear as informal financing sources that could help companies to overcome the difficulties arising on their first years of life, as depicted in Figure 1. They act in start-ups’ life before a new round of financing is opened, where venture capital usually takes the lead. A business angel is an individual who is willing to invest his/her own money, individually, in a start-up, regardless of the risk that such investment entails and, best of all, offering his/her experience to the entrepreneur to help the project have success (Harrison and Mason, 2000). This investment is not computed as a loan or a credit, that is, it is not accounted as a debt, but as equity. Business angels offer their financial support to the

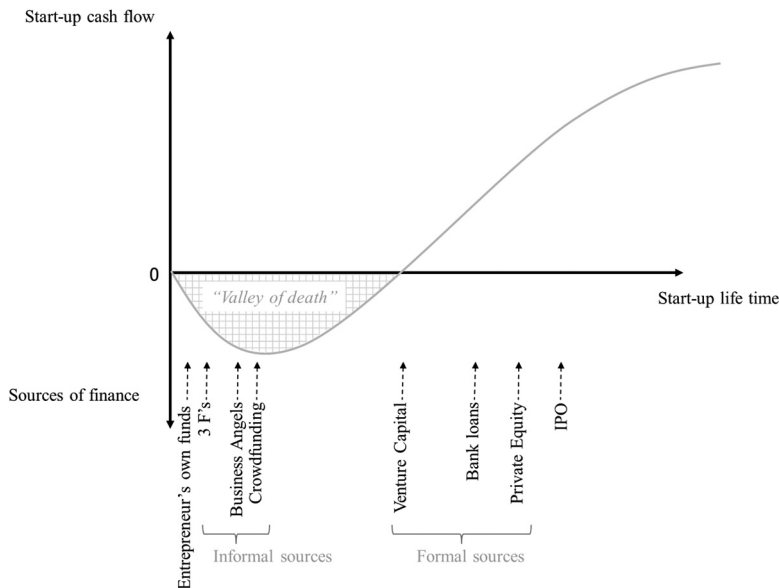


Figure 1.
Sources of finance
along a company's
life

company in exchange for shares (ownership) and active decision-making capacity in business management. They provide financing of vital importance for young companies, being particularly active in financing startups associated with cutting-edge technologies (Kelly and Hay, 2003). This intervention in the managerial decisions of the company constitute one of the most characteristic aspects that define a business angel. In fact, the difference between his actions as investor and manager is diffuse, holding a mentor role as well as being part of the shareholders of the company.

Being financed on the early stages of the company's life by business angels favors the subsequent appearance of other types of financing such as that provided by venture capital or credits from other institutions (Sorheim, 2003, 2005), although recent results suggest that the process works better when companies funded belong to the same entrepreneurial ecosystem (Croce *et al.*, 2018). Business angels form the main financing and investment pathway for entrepreneurs because they cover the capitalization needs precisely at the time of life of the company in which no other of the existing types of investors are willing to take the investment risk (Kelly and Hay, 2003). Companies in which founders have a low entrepreneurial orientation, tend to prefer accessing to finance through formal financial sources, that is, with debt (Vaznyte and Andries, 2019). For the start-up survival rates it is crucial the way in which the company access to formal financial sources (Cole and Sokolyk, 2018).

2.2 Demographic characteristics of business angels

Business angels are the most prevalent form of private equity investor (Lindsay, 2004). They preferably choose to invest in startups that carry out their economic activity in a radius of reasonable proximity to their place of residence, and in companies with which there is a pre-existing relationship (Robinson and Cottrell, 2007). There are several studies that have shaped what is known as the typical image of a business angel. This image recalls individuals who are considerable wealthy and predominantly middle-aged men with some experience in entrepreneurship (Kelly and Hay, 2003).

In terms of age, Hindle and Wenban (1999) find, from an Australian sample, that business angels tend to act as investors when they are between 30 and 35 years of age. For the Singaporean sample gathered by Wong and Ho (2007), the most frequent age reported is 30 years old, while the Finnish sample from Maula *et al.* (2005) and the German from Stedler and Peters (2003) point towards older investors, in their 40s decade. The literature reviews on this topic conducted by Morrisette (2007) and Ramadani (2009) provide a higher age range in the former (between 36 and 55 years of age), while the latter depicts an older sample (46-55 years of age).

More consensus appears to be regarding the gender of a typical business angel, with results pointing out to a great majority of men. Male percentages in available samples rank over 90 per cent, as for instance in Hindle and Wenban (1999) (95 per cent), Stedler and Peters (2003) (95 per cent), Morrisette (2007) (91 per cent), Ramadani (2009) (97 per cent), being the only discordance found in Wong and Ho (2007), who state a 78 per cent of male.

A business angel is typically an educated individual. Previous studies state the percentages of investors who attended college in 67 per cent in Hindle and Wenban (1999), 70 per cent in Morrisette (2007) and 75 per cent in Ramadani (2009). Formal education is an important source of human capital, due to its contribution to the development of skills. But skills can also be acquired from different sources, such as from professional experience. As discussed in the following, skills appear to play a determinant role in becoming a successful business angel.

In spite of the clear image that the demographic factors reveal when defining the profile of a business angel, some studies find no causality between these factors and the fact of becoming a business angel. For instance, the results from a Finnish sample provided by [Maula et al. \(2005\)](#) point out that age, income and education do not act as determinants to become a business angel. Contrarily, gender does play an important role. Skills are important, but as mentioned, they can be acquired both by education or professional experience. According to the results of [Wong and Ho \(2007\)](#) for a Singaporean sample, neither demographic factors nor wealth are found to be determinant for becoming a business angel. However, previous experiences and existing skills prove to be of importance. This last result coincides with the findings of [Li et al. \(2014\)](#) for a Chinese sample, while the influence of managerial experience is not supported to be a determinant factor.

2.3 Economic characteristics of business angels

As previously stated, skills seem to play an important role in becoming a business angel ([Maula et al., 2005](#); [Wong and Ho, 2007](#); [Li et al., 2014](#)). The development of skills, as part of an investor's human capital, is dependent on both the education received and the professional experience acquired, and from these, in particular those arising from previous entrepreneurial ventures. In fact, business angels have been found to act in an entrepreneurial manner, with proactiveness, innovativeness and risk taking, which speaks of a high entrepreneurial orientation ([Lindsay, 2004](#); [Alshanty and Emeagwali, 2019](#)).

In spite of forming a type of informal investors, the *modus operandi* of business angels moves away from the general impression of an unsophisticated method in the search and monitoring of the investment. The leadership skills and the entrepreneurial experience of these investors, help them in identifying viable investment opportunities, partly due to the extensive networking network they have ([Erikson and Sørheim, 2005](#)).

Another key aspect in their behavior is the high involvement they assume in the development of the business, involving themselves in consulting, representation, meetings and financial reports. During this period of time, they are involved in operational and development decision making, with the aforementioned tasks, being a differential and basic factor in the development and growth of the startup in its first years of life ([Erikson and Sørheim, 2005](#)). In terms of the existing entrepreneurial record of business angels, most researchers agree on a majority of informal investors with a previous entrepreneurial record. For instance, [Kelly and Hay \(2003\)](#) and [Morrissette \(2007\)](#) suggest 75 per cent of business angels who have created their own ventures, while [Ramadani \(2009\)](#) goes up to 78 per cent.

A large percentage of business angels make one or two investments throughout their life. Nonetheless, there is also a group who make multiple investments ([Mason and Harrison, 2002](#)), being the typical case those that invest in between one and five different companies ([Stedler and Peters, 2003](#)). [Lindsay \(2004\)](#) also points out to an 80 per cent of the business angels sample having conducted over five investments, while [Kelly and Hay \(2003\)](#) support a higher level of activity, with up to eight investments. Regarding the time before withdrawing from the investment in the company, it has been found between 3 and 8 years after the beginning of the investment ([Teker and Teker, 2016](#)).

Investment economic figures are not so commonly mentioned throughout the literature, and when mentioned, a big scatter in the figures can be noted. [Kelly and Hay \(2003\)](#) call for the typical UK investor deal to be around £100,000, while [Wong and Ho \(2007\)](#) speak of a much lower range, from \$5,000 to \$20,000. [Stedler and Peters \(2003\)](#) claim for much higher magnitudes, in the range of €500,000. According to [Hindle and Wenban \(1999\)](#), two groups of business angels can be distinguished according to the amounts invested: the "seraphim",

which invest amounts between \$200,000 and \$500,000; and the “cherubs,” with a greater preference to undertake investments that involve amounts between \$20,000 and \$50,000.

The sectors in which business angels preferably make their investments are all those related to ICT (Stedler and Peters, 2003). In particular, in digital commerce, Big Data treatment and software development, as well as in scientific and research disciplines. In the case of those investors with a more extensive network of contacts at the level of higher education institutions, they tend to undertake operations in the science, engineering and multimedia entertainment sectors (Stedler and Peters, 2003). In fact, business angels use this extensive network of contacts to collect and corroborate a large flow of data about the various business opportunities presented to them, which network is their main source of information (Erikson and Sørheim, 2005). Likewise, Fairchild (2011) states that business angels use their personal relationship with entrepreneurs as a competitive advantage over venture capital funds or other financing institutions. These agents build a relationship of trust, empathy and proximity with the entrepreneurs of the societies where they are going to invest, which allows them to carry out their investment and management tasks more effectively. A similar discourse is held by Robinson and Cottrell (2007), who suggest that business angels preferably choose to invest in sectors in which they have knowledge and those whose assets are of the tangible type.

In spite of the previous results, Sørheim (2003) suggests that informal investors find investment opportunities mainly through personal or business contact networks, being those found in this way the ones that later achieve a better result. In this vein, these investors do not make their choice limiting to those industries or sectors where they are experienced.

3. Methodology and results

3.1 Methodology

Seminal research in the field of business angels has highlighted the inherent difficulties in identifying samples, as this type of informal investors are usually not listed in any directory and are prone to remain anonymous (Erikson and Sørheim, 2005). This usually leads researchers to the use of samples of convenience, which may not be representative of the actual population, and can be source of potential bias (Mason and Harrison, 2002). Besides, entrepreneurship research has been criticized for relying on convenience data bases, which makes the topics under study to be chosen not for their relevance, but for their availability. The use of data bases distance researchers from their units of analysis: entrepreneurs, funders and companies (Mason *et al.*, 2016).

In the present study, we look into entrepreneurial finance with the focus on informal investors. To that end, a review of the scientific literature has been conducted, followed by a data retrieval procedure from online social network on business angel investors worldwide. The rationale behind the use of social networks lies in the fact that they are recognized as supportive factor for entrepreneurial new ventures (Bratkovič Kregar *et al.*, 2019). Researchers start looking into social media networks as a reliable methodology to shed light into investors' behavior (Liang and Yuan, 2016), the use of social media for fundraising (Yang and Berger, 2017) and to predict new venture survival rates (Antretter *et al.*, 2018), to cite a few.

A sample of 500 business angels has been taken from their respective profiles on the LinkedIn and Crunchbase platforms, as of December 2014. LinkedIn is the most important professional online social network, while Crunchbase has been cited as the principal data base used by the venture capital industry for assets and start-ups information (Dalle *et al.*, 2017).

All the data obtained has been processed to create a complete and systematized database that allows having all demographic and economic items (age, gender, educational facts, professional experience, current working status, number of investments) for further analyses and establishing an archetype for these investors.

3.2 Descriptive analyses

A data set of 500 business angels has been gathered, which are active worldwide and present in the LinkedIn and/or Crunchbase data bases. The main demographic characteristics of our sample are: average age (available only for 63 out of 500 profiles) of 40.06 years old, only 8 per cent of female investors (39 individuals), located 69 per cent in North America (348), 19 per cent in Europe (98), 3 per cent in Asia (17), 1.8 per cent in Australia (9), 1.4 per cent in South America (7), 0.4 per cent in Africa (2) and being 3.8 per cent not available (19). In terms of education, 35 per cent have studies belonging to the branch of social sciences (174), 20 per cent to sciences (99), 15 per cent to engineering (75), 9 per cent arts (43) while remaining 22 per cent is not available (109).

In the following subsections, the rest of the data is presented, compared and discussed with previous results on business angels' research, when available, from demographic and economic perspectives.

3.3 Findings in terms of demographic characteristics

Previous studies (Hindle and Wenban, 1999; Morrissette, 2007; Ramadani, 2009) have provided demographics and economic facts from business angels, although they are based on convenience samples taken from a specific location. In the following, the results obtained through data mining are compared with these previous findings, whenever the homogeneity of the data allows for it, in terms of demographic characteristics. The age of our sample (which has been obtained as a discrete measure) has been grouped within age ranges to facilitate its comparison (Figures 2 and 3).

When compared with the data obtained by Hindle and Wenban (1999) it can be seen that both studies show business angels' age concentrated in the range from 30 years of age until 50 years of age. However, our results point towards a younger sample, with 13 per cent of investors being younger than 30, and only 13 per cent over 50, while Hindle and Wenban's study depicted a lower presence of young investors than today. A similar pattern can be identified when compared with the studies from Morrissette (2007) and Ramadani (2009): the

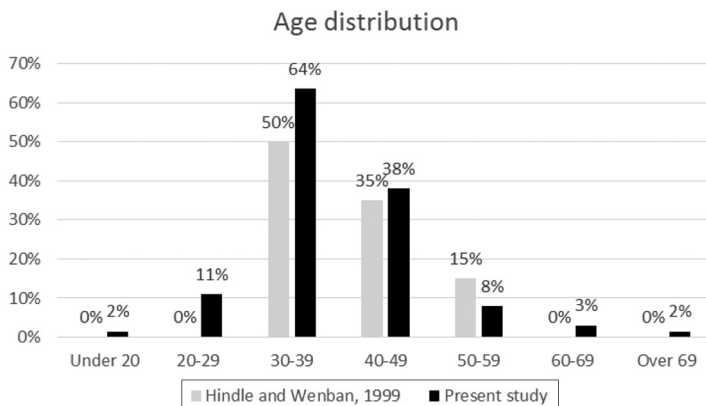


Figure 2. Age distribution and comparison with previous results (I)

most highly populated age band is 36-45 years of age in our sample, while in Ramadani it bends clearly to the next decade (46-55), and being almost balanced in the results provided by Morrissette for both decades.

Regarding the gender distribution (Figure 4), our study coincides with previous results in business angels being predominantly male, with men exceeding in all cases the 90 per cent of the sample. This is consistent with the scientific literature summarized in the theoretical framework section, and shows a huge imbalance in terms of gender equality for the investors' field.

As highlighted in the theoretical framework, skills is one of the crucial factors for individuals that become successful business angels. For this reason, we have looked into the specific studies conducted by the investors. First, the ratio between investors with no studies over those who attended university is presented in Figure 5, and compared with previous results, in which a growing trend over time for educated investors can be seen.

When the study level is further disaggregated (Figure 6) and compared with the available data, master level studies within business angels (accounting for Master of Arts, Master of Science and MBAs) seem to have been growing as well in the past years,

Figure 3.
Age distribution and comparison with previous results (II)

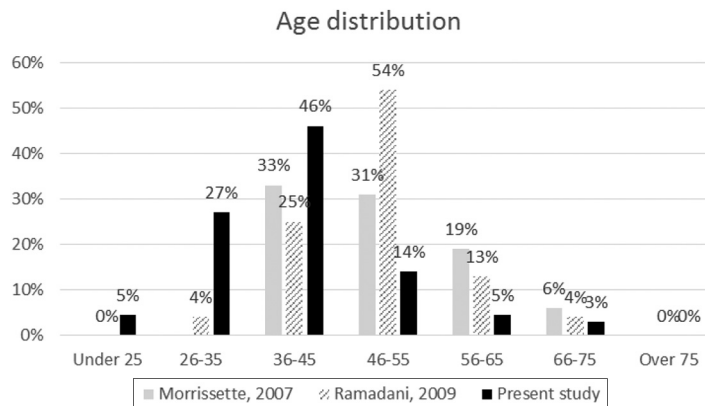
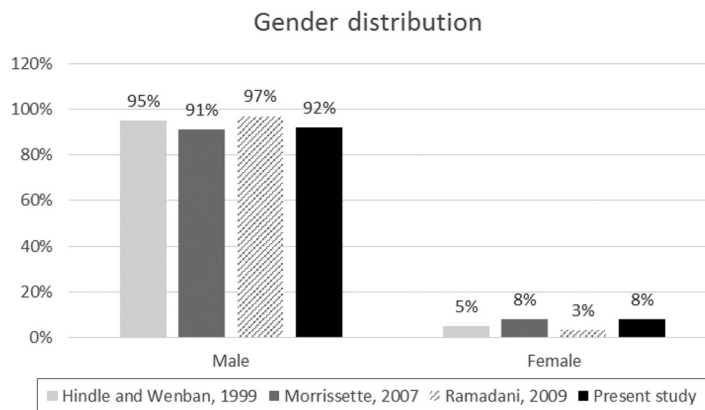


Figure 4.
Gender distribution and comparison with previous results



amounting to a 50 per cent of the sample. Noticeably, also a 5 per cent of investors with PhD studies can be found among the sample.

One of the biggest advantages of not using available data bases but looking into real investors' profile extracted from online social networks is to be able to report precisely the educational background of the investors, as summarized in Figure 7. A preponderance of the studies of social sciences (36 per cent) is observed, due to the importance of business administration and management studies for the role of business angels. Nevertheless, studies belonging to the branches of science and engineering, when considered together, amount the same value of those from social sciences. This speaks, on the one hand, of investors with technical background, which presumably are more interested in funding new technology-based firms, and on the other hand, resembles the statistical distributions of higher education degrees in OECD countries (OECD, 2019).

Among the investors who attended college for social sciences studies, 73 per cent of them were enrolled in economics, business administration and finance, which amounts to 173 individuals, almost 35 per cent of the total sample of 500 (Figure 8). This result highlights that many business angels have acquired knowledge in business management along their education, in addition to the experience acquired during their professional career, as will be detailed later on.

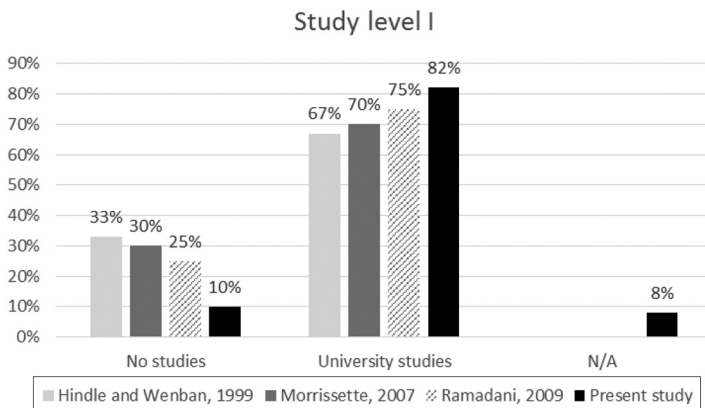


Figure 5. Educational level and comparison with previous results

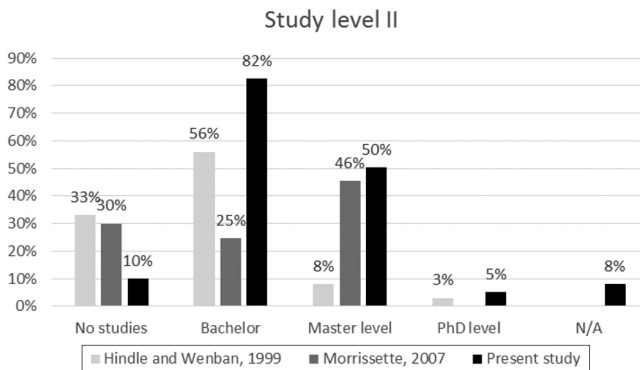


Figure 6. Disaggregated educational level and comparison with previous results

In terms of engineering education, three studies (electrical, mechanical and industrial engineering) account for more than half of the engineers in the sample. As for the branch of sciences, more than half of them belong to computer science. This can be explained by its usefulness in the field of ICT, which, as mentioned, is a sector that attracts business angels' attention. Lastly, Bachelor of Arts shows a fairly equitable distribution between the different studies, without any of them standing out among the others.

As shown in Figure 6, half of the sample has continued education with a master degree, from which a big share (59 per cent, see Figure 9) is specialized in the different branches of business administration, which supports the previous finding of informal investors with education on the field. It should also be highlighted that there is a large number of masters

Figure 7.
Field of knowledge of business angels at bachelor level

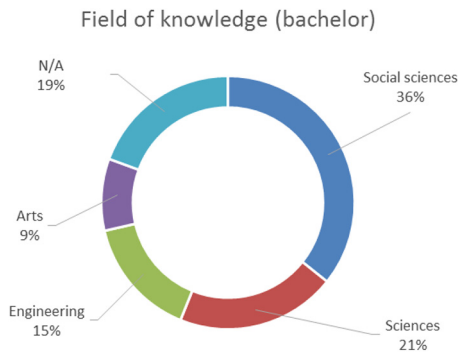
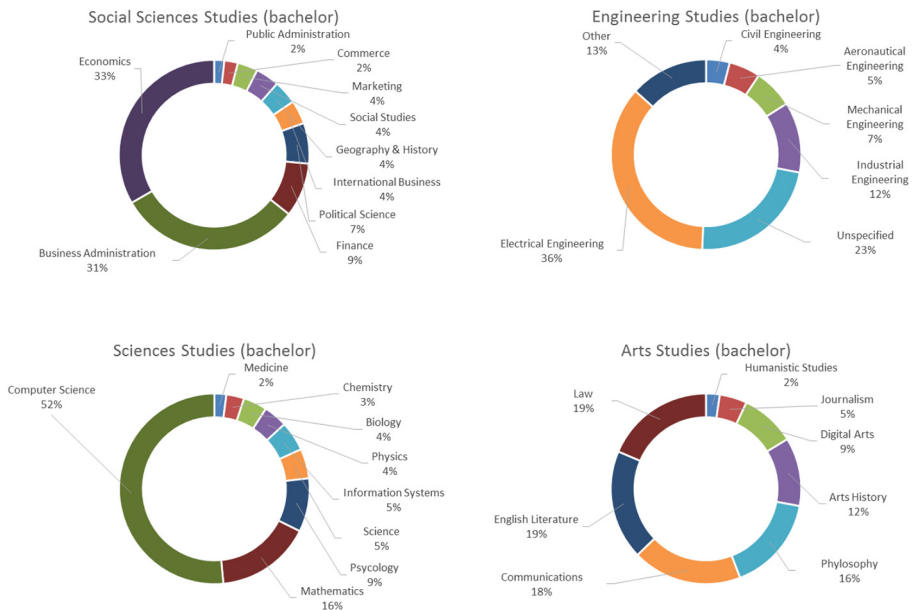


Figure 8.
Detailed studies from business angels per field of knowledge at bachelor level



related to engineering and law, and lastly, to computer science, in line with the high number of undergraduate studies in that discipline.

To conclude with the educational aspect, the fields in which investors have undergone the highest level of university studies (PhD) have been sought after (Figure 10). Only 27 investors out of the complete sample of 500 have completed doctoral studies (Figure 6), which amounts 5 per cent of the sample. In terms of the distribution in the different branches of knowledge of these PhD studies, only 15 per cent are related to business administration and economics, which was the leading field in bachelor and master studies. Contrarily, there is a majority of studies in computer science and engineering, which in turn, was the second highest in master studies.

3.4 Findings in terms of economic characteristics

Once the demographic aspects of business angels have been analyzed, we shall move on towards the analysis of economic aspects, such as the professional career of angel investors, their previous entrepreneurial experience (if any) and their behavior referring to the investments they make.

In terms of the professional experience of the investors in the sample, the biggest group is in the range of 10 to 30 years of accumulated work experience, the most numerous section

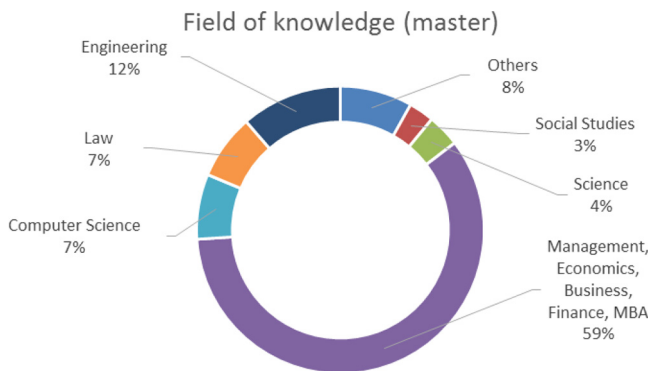


Figure 9. Field of knowledge of business angels at master level

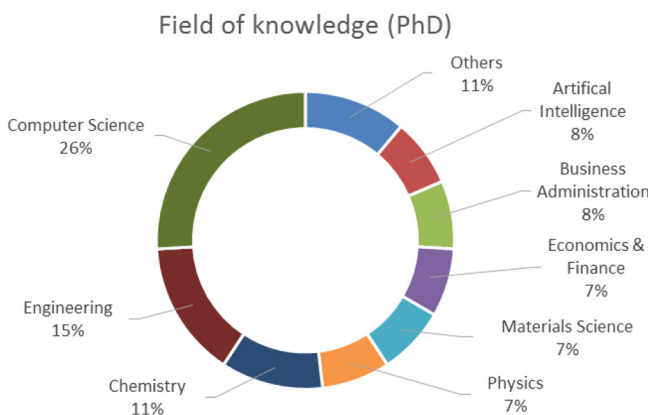


Figure 10. Field of knowledge of business angels at PhD level

being from 15 to 20 years of experience, amounting almost one third of the sample (Figure 11). These results pinpoint that the role of business angel require a process of acquiring knowledge and skills exercising a professional activity, as well as developing a professional network, before beginning the investment activity. In fact, the share of business angels that has barely not professional experience is only of 4 per cent of the complete sample. Noticeably, 13 per cent of the sample exceeds 30 years of professional experience, which is aligned with the results for age distribution (Figure 4), with also 13 per cent of the sample being older than 50 years old.

As depicted in Figure 12, most of business angels in the sample (exceeding 70 per cent) have previous entrepreneurial experience. When compared with existing data, it can be seen how our data coincide almost completely with previous studies (Morrisette, 2007; Ramadani, 2009).

Out of this 71 per cent of the sample that has a previous entrepreneurial record, 52 per cent of the total sample has created just one, as depicted in Figure 13. Regarding the number of investments made by investors in the sample, 63 per cent have conducted only one, while 8 per cent have undergone over 5 investments. Another aspect of the study is the date in which investors in the sample joined the financial market, by means of doing their first investment.

Figure 11.
Years of professional experience of business angels in the sample

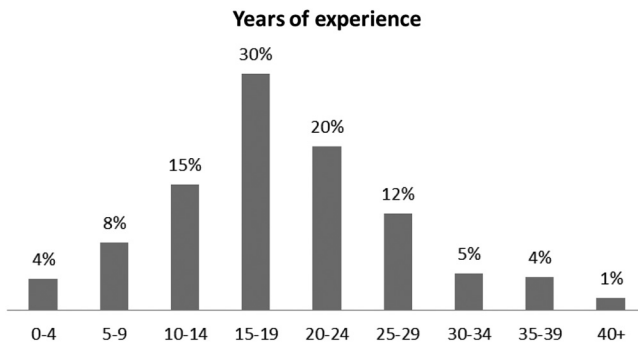
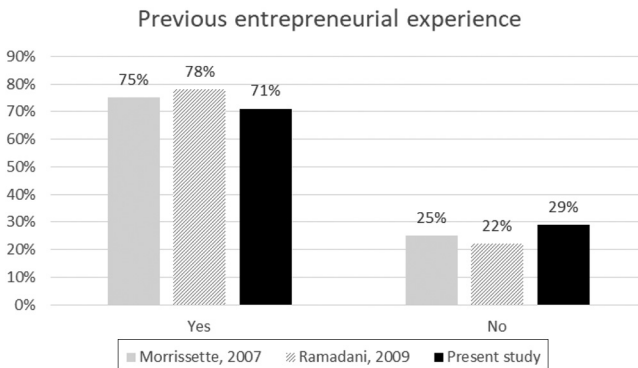


Figure 12.
Previous entrepreneurial experience of business angels in the sample



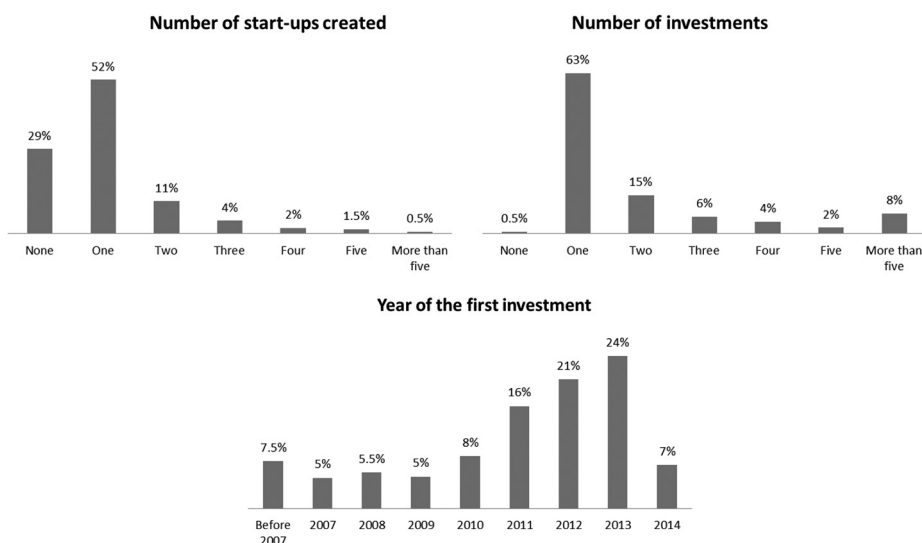


Figure 13. Number of start-ups created; number of investments undergone by business angels; date of the first investment

As can be seen, there is a clear upward trend in angel investment entries in start-ups. It is necessary to highlight at this point that, as previously explained, the data was collected until December 2014. The reduction seen in year 2014 can be attributed to the fact that the investors did not update their records in the data bases in use.

Finally, the economic sectors in which the business angels have invested are presented in [Figure 14](#). There is no particular sector that stands out among the rest. However, those sectors that benefit from a greater amount of investments (higher than 5 per cent of the sample) are related to the new technologies of information and digital media, such as apps, internet, social media, e-commerce, mobile and software. Contrarily, more traditional economic sectors (such as automotive, tourism, education and finance) do not see their weight reflected in terms of production in the amount of investments made by business angels.

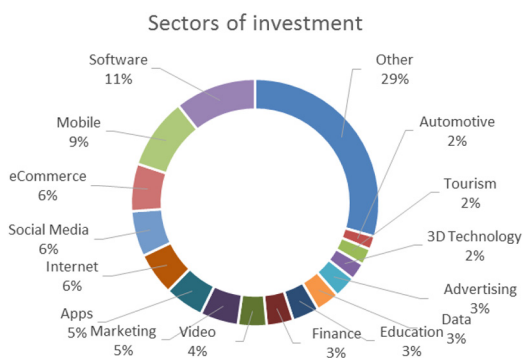


Figure 14. Sectors of investment of the business angels in the sample

4. Discussion

Recent research endeavors prove that data retrieval from online social networks can be valuable when analyzing different aspects from entrepreneurship (Antretter *et al.*, 2018), including those related to fundraising (Liang and Yuan, 2016; Yang and Berger, 2017). We have drawn data from the LinkedIn and Crunchbase databases, looking into demographic and economic factors.

In terms of the age in the business angel sample, our data suggest that younger investors appear to be acting as an informal source of finance. Our data pinpoints that the profile depicted by Morrisette (2007) “[...] demographics of a “typical” business angel are: [...] around age 50 [...]” or Stedler and Peters (2003) “[...] the “typical” German business angel [...] is aged between 40 and 55 [...]” needs to be revisited, as it appears to be closer to age 40 than 50.

Contrarily, the results obtained for the gender distribution is very aligned with previous results, in which women remain well below 10 per cent of the sample. This imbalance has been explained by other authors (Ramadani, 2009) as a result of the lower number of women who have held executive positions throughout their professional careers, as well as the lower number of female entrepreneurs compared to the number of male entrepreneurs. These two characteristics, as previously mentioned in the theoretical framework, are key factors for an individual to become a business angel, so that a causal relationship between gender disparity in senior management positions and the small number of existing female business angels can be established.

Regarding the educational background of the investors, our sample is the one with the highest percentage of highly educated individuals, with 82 per cent of the investors having attended college. Investors who at least have a bachelor degree appear to grow steadily from the older results (Hindle and Wenban, 1999) to the date. In this vein, in terms of educational level, the profile depicted by Morrisette (2007) “[...] demographics of a “typical” business angel are: [...] college educated [...]” seem to be accurate nowadays, but the precision of the growing population with master and PhD studies should also be highlighted.

Among the fields of knowledge in which business angels have been educated, social sciences (and in particular, business administration, economics and finance) stand out both at college and master level. This is, presumably, one of the sources of skills for fruitful investor activity, which has been found as crucial by other authors (Maula *et al.*, 2005; Wong and Ho, 2007; Li *et al.*, 2014), and is aligned with existing results of successful entrepreneurs, for which education in managerial sciences has proven crucial (Camisón-Haba *et al.*, 2019). The prevalence of economics and business administration is considerably higher than that corresponding to the general population (OECD, 2019) which seems to confirm the causal relationship between extensive knowledge in business administration and economics and the likelihood of becoming a business angel. Contrarily, PhD in this field of knowledge is relatively uncommon in the sample. This allows for concluding that PhD studies is not a determining factor for becoming a business angels, as the mentioned percentage among this group of investors resembles the levels of the general population (OECD, 2019).

Skills cannot only be acquired through education, but also through action. From our results, it can be derived that business angels have predominantly been entrepreneurs in the past. That is, becoming a business angel requires a process of acquiring knowledge and skills exercising a professional activity, which is to be learnt in a hands-on way (Caseiro and Coelho, 2019), as well as developing a professional network, before beginning the investment activity.

As highlighted in the theoretical framework, the professional career of an individual is a differentiating factor when it comes to becoming an angel investor. The work experience

seems to be fundamental in two ways. First, it allows acquiring the necessary skills, knowledge and experience in administration, management, leadership and entrepreneurship to perform the duties of business angels effectively. Second, it can be the source of the funding provided for undertaking the investments.

Besides the professional experience, previous entrepreneurial involvement has also been found as crucial for becoming a business angel (Maula *et al.*, 2005; Wong and Ho, 2007; Li *et al.*, 2014). Entrepreneurial experience allows investors to be able to select in a more efficient way the investments they make, in addition to providing them with the possibility of carrying out the advisory work to the entrepreneurs benefiting from their financing in a better manner. This corroborates the idea that having participated actively in the entrepreneurial ecosystem facilitates the switch in role from entrepreneur to investor, by the means of providing angel investors with an important and differential experience that benefits their investment tasks.

However, only a minority of investors (around a fifth of the total) can be considered a serial entrepreneur (those with more than one venture created). That is to say, the experience acquired during the process of creating a company seems to be enough to become later a business angel. The fact that the most repeated number of startups created is one, could be explained by successful founders' exits from the ventures, which allows them to act as investors. This result pinpoints that serial investors, defined as those that make numerous investments and for which these are probably their main source of income, as well as their main occupation, are not that common.

When it comes to analyze the years in which the investments were made, it is noteworthy that they increase as the years go by. This general growth of informal sources of finance may mean that a greater attention is being paid by public institutions to this type of informal financing relationships, promoting legislation that favors and provides greater legal security to them, as well as greater knowledge and dissemination of these activities in the different business levels and investment circles.

Lastly, the prevalence of technological sectors as the ones more prone to receive funding from informal investors, confirms what has been pointed out in the theoretical framework by previous studies: business angels prefer to invest in companies belonging to the well-known science, technology, engineering and mathematics sectors.

5. Conclusions, limitations and avenues for further research

The present work contributes to the body of literature of entrepreneurial finance, by means of deepening in the demographic and economic profiles of business angels. Business angels are informal investors that can help new ventures to overcome the so-called "valley of death", which is the characteristic situation that start-ups suffer during their first years of life, in which low income and high expenses bring cash flow tensions that can ultimately lead to start-up failure (Blank and Dorf, 2012). The importance of new technology-based firms in economic development has been highlighted by the academic community in the past decades (Acs and Szerb, 2007; Hisrich *et al.*, 2016), as well as the relevance that access to informal sources of finance has to start-ups survival. These both facts call for a deeper understanding of business angels profile.

Although there is extant literature in business angels demographic and economic factors, other authors have usually relied on convenience samples limited to one single country or data bases which make research decisions prioritize availability over relevance, distancing entrepreneurship researchers from their units of analysis (Mason and Harrison, 2002; Mason *et al.*, 2016). For this reason, in the present study the authors put a new methodology in use in this field: the data retrieval from online social networking platforms such as LinkedIn and

Crunchbase. A total sample of 500 profiles of real business angels active worldwide has been extracted and analyzed.

From these analyses, an archetype of these informal investors has been crafted. Based on our findings, a business angel is male and middle-aged, in the decade of his 40s, who has attended college and graduated with business administration or economics studies, and occasionally complements his education with a master in the same field. He becomes an investor when he has accumulated professional experience for over 15 years, and has often had one entrepreneurial venture of his own. He most commonly does only one investment, which he prefers to do in the ICT sector.

The results obtained have allowed identifying some trends in the evolution of the business angel archetype. To begin with, it appears that younger investors begin to join the financial market as funders of new ventures. However, women participation seems to remain low. In terms of education level, our results point out to an increase in highly educated individuals in joining the informal financial market. Lastly, the rate of business angels that have previously been entrepreneurs remains constant over the years.

The principal limitation is that the aim of establishing an archetype valid worldwide allows for an uneven nationalities distribution across the sample, in which North American investors account for almost 70 per cent of our sample.

As recommendations for further research, we believe there is need of new gender studies that shed light on the reasons for the low female participation as business angels. It would be of interest to see if this low participation can be found all across the informal finance market, or if it is specific of the business angel role. Secondly, the link between business angels and participants as funders in crowdfunding platforms should be sought after, with special focus on the swift from one investor type to the other. Lastly, specific country studies can be developed with the data mining technique described in this paper, which can lead to interesting comparison of profiles between countries.

References

- Acs, Z.J. and Szerb, L. (2007), "Entrepreneurship, economic growth and public policy", *Small Business Economics*, Vol. 28 Nos 2/3, pp. 109-122, doi: [10.1007/s11187-006-9012-3](https://doi.org/10.1007/s11187-006-9012-3).
- Aguilera, J.F., Morales Alonso, G., Núñez Guerrero, Y. and Rodríguez Monroy, C. (2018), "Individualism, inequalities and entrepreneurial aspirations: revisiting results with GEM data", in *12th International Conference on Industrial Engineering and Industrial Management XXII Congreso de Ingeniería de Organización, Girona, Spain*, pp. 1-9.
- Alf, K. (2015), "What Arnold Schwarzenegger can teach us about entrepreneurship", Medium, available at: https://medium.com/@kathi_alf/what-arnold-schwarzenegger-can-teach-us-about-entrepreneurship-f05f0bc89004 (accessed 26 September 2019).
- Alshanty, A.M. and Emeagwali, O.L. (2019), "Market-sensing capability, knowledge creation and innovation: the moderating role of entrepreneurial-orientation", *Journal of Innovation and Knowledge*, Vol. 4 No. 3, pp. 171-178, doi: [10.1016/j.jik.2019.02.002](https://doi.org/10.1016/j.jik.2019.02.002).
- Antretter, T., Blohm, I., Grichnik, D. and Wincent, J. (2018), "Predicting new venture survival: a twitter-based machine learning approach to measuring online legitimacy", *Journal of Business Venturing Insights*, Vol. 11, p. 109, doi: [10.1016/j.jbvi.2018.e00109](https://doi.org/10.1016/j.jbvi.2018.e00109).
- Argerich, J. and Cruz-Cázares, C. (2017), "Definition, sampling and results in business angels' research: toward a consensus", *Management Decision*, Vol. 55 No. 2, pp. 310-330, doi: [10.1108/MD-07-2016-0487](https://doi.org/10.1108/MD-07-2016-0487).
- Blank, S. and Dorf, B. (2012), *The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company*, K&S Ranch.

- Bozkaya, A. and Van Pottelsberghe de la Potterie, B. (2008), "Who funds technology-based small firms? Evidence from Belgium", *Economics of Innovation and New Technology*, Vol. 17 Nos 1/2, pp. 97-122.
- Bratkovič Kregar, T., Antončič, B. and Ruzzier, M. (2019), "Linking a multidimensional construct of networking self-efficacy to firm growth", *Economic Research-Ekonomska Istraživanja*, Vol. 32 No. 1, pp. 17-32, doi: [10.1080/1331677X.2018.1545594](https://doi.org/10.1080/1331677X.2018.1545594).
- Camisón-Haba, S., Clemente-Almendros, J.A. and Gonzalez-Cruz, T. (2019), "How technology-based firms become also highly innovative firms? The role of knowledge, technological and managerial capabilities, and entrepreneurs' background", *Journal of Innovation and Knowledge*, Vol. 4 No. 3, pp. 162-170, doi: [10.1016/J.JIK.2018.12.001](https://doi.org/10.1016/J.JIK.2018.12.001).
- Caseiro, N. and Coelho, A. (2019), "The influence of business intelligence capacity, network learning and innovativeness on startups performance", *Journal of Innovation and Knowledge*, Vol. 4 No. 3, pp. 139-145, doi: [10.1016/J.JIK.2018.03.009](https://doi.org/10.1016/J.JIK.2018.03.009).
- Cole, R.A. and Sokolyk, T. (2018), "Debt financing, survival, and growth of start-up firms", *Journal of Corporate Finance*, Vol. 50, pp. 609-625, doi: [10.1016/j.jcorpfin.2017.10.013](https://doi.org/10.1016/j.jcorpfin.2017.10.013).
- Cosic, M. (2017), "We are all entrepreneurs: Muhammad Yunus on changing the world, one microloan at a time", *The Guardian*, available at: www.theguardian.com/sustainable-business/2017/mar/29/we-are-all-entrepreneurs-muhammad-yunus-on-changing-the-world-one-microloan-at-a-time
- Croce, A., Guerini, M. and Ughetto, E. (2018), "Angel financing and the performance of high-tech start-ups", *Journal of Small Business Management*, Vol. 56 No. 2, pp. 208-228, doi: [10.1111/jsbm.12250](https://doi.org/10.1111/jsbm.12250).
- Crum, M. and Nelson, T.E. (2015), "Stabilizing institutions for new venture investment decisions", *Journal of Enterprising Communities: People and Places in the Global Economy*, Vol. 9 No. 4, pp. 344-360, doi: [10.1108/JEC-05-2013-0014](https://doi.org/10.1108/JEC-05-2013-0014).
- Dalle, J.-M., den Besten, M. and Menon, C. (2017), "Using crunchbase for economic and managerial research", *OECD Science, Technology and Industry Working Papers 2017/08*, OECD Publishing.
- Erikson, T. and Sørheim, R. (2005), "Technology angels and other informal investors", *Technovation*, Vol. 25, pp. 489-496, doi: [10.1016/j.technovation.2003.09.007](https://doi.org/10.1016/j.technovation.2003.09.007).
- Fairchild, R. (2011), "An entrepreneur's choice of venture capitalist or angel- financing: a behavioral game-theoretic approach", *Journal of Business Venturing*, Vol. 26 No. 3, pp. 359-374, doi: [10.1016/j.jbusvent.2009.09.003](https://doi.org/10.1016/j.jbusvent.2009.09.003).
- Fernández-Angulo, J.M., Morales-Alonso, G., Núñez, Y. and Hidalgo, A. (2019), "Lending a hand by lending a loan: financing firms with social goals through crowdfunding platforms", *Proceedings of the 13th International Conference on Industrial Engineering and Industrial Management, Gijón, Spain*.
- Friedman, M. and Friedman, R. (1980), *Free to Choose: A Personal Statement*, Harcourt.
- Grilli, L. (2019), "There must be an angel? Local financial markets, business angels and the financing of innovative start-ups", *Regional Studies*, Vol. 53 No. 5, pp. 620-629, doi: [10.1080/00343404.2018.1479524](https://doi.org/10.1080/00343404.2018.1479524).
- Harrison, R.T. and Mason, C.M. (2000), "Venture capital market complementarities: the links between business angels and venture capital funds in the United Kingdom", *Venture Capital*, Vol. 2 No. 3, pp. 223-242.
- Harrison, R., Mason, C. and Robson, P. (2010), "Determinants of long-distance investing by business angels in the UK", *Entrepreneurship and Regional Development*, Vol. 22 No. 2, pp. 113-137, doi: [10.1080/08985620802545928](https://doi.org/10.1080/08985620802545928).
- Hindle, K. and Wenban, R. (1999), "Australia's informal venture capitalists: an exploratory profile", *Venture Capital*, Vol. 1 No. 2, pp. 169-186.
- Hisrich, R.D., Peters, M.P. and Shepherd, D.A. (2016), *Entrepreneurship*, Mac-Graw Hill.

- Kasseeah, H. and Tandrayen-Ragoobur, V. (2016), "Ex-garment female workers: a new entrepreneurial community in Mauritius", *Journal of Enterprising Communities: People and Places in the Global Economy*, Vol. 10 No. 1, pp. 33-52, doi: [10.1108/JEC-08-2015-0042](https://doi.org/10.1108/JEC-08-2015-0042).
- Kelly, P. and Hay, M. (2003), "Business angel contracts: the influence of context", *Venture Capital*, Vol. 5 No. 4, pp. 287-312, doi: [10.1080/1369106032000141940](https://doi.org/10.1080/1369106032000141940).
- Li, Y., Ling, L., Wu, J. and Li, P. (2014), "Who is more likely to become business angels? Evidence of business angels and potential business angels from China", *Journal of Entrepreneurship in Emerging Economies*, Vol. 6 No. 1, pp. 4-20, doi: [10.1108/JEEE-06-2013-0017](https://doi.org/10.1108/JEEE-06-2013-0017).
- Liang, Y.E. and Yuan, S.D. (2016), "Predicting investor funding behavior using crunchbase social network features", *Internet Research*, Vol. 26 No. 1, pp. 1066-2243, doi: [10.1108/IntR-09-2014-0231](https://doi.org/10.1108/IntR-09-2014-0231).
- Lindsay, N.J. (2004), "Do business angels have an entrepreneurial orientation?", *Venture Capital*, Vol. 6 Nos 2/3, pp. 197-210, doi: [10.1080/13691060420001675983](https://doi.org/10.1080/13691060420001675983).
- Mason, C.M. (2006), "Informal sources of venture finance", in Parker, S. (Ed.), *The Life Cycle of Entrepreneurial Ventures. International Handbook Series on Entrepreneurship*, Springer, Boston, MA.
- Mason, C.M. and Harrison, R.T. (2002), "Barriers to investment in the informal venture Capital sector 1", *Entrepreneurship and Regional Development*, Vol. 14, pp. 271-288.
- Mason, C., Botelho, T. and Harrison, R. (2016), "The transformation of the business angel market: empirical evidence and research implications", *Venture Capital*, Vol. 18 No. 4, pp. 321-344, doi: [10.1080/13691066.2016.1229470](https://doi.org/10.1080/13691066.2016.1229470).
- Maula, M., Autio, E. and Arenius, P. (2005), "What drives micro-angel investments?", *Small Business Economics*, Vol. 25 No. 5, pp. 459-475, doi: [10.1007/s11187-004-2278-4](https://doi.org/10.1007/s11187-004-2278-4).
- Morrisette, G. (2007), "A profile of angel investors", *The Journal of Private Equity*, Vol. 10 No. 3, pp. 52-66.
- OECD (2019), *Education at a Glance 2019*, OECD Indicators, Paris.
- Ramadani, V. (2009), "Business angels: who they really are", *Strategic Change*, Vol. 18 Nos 7/8, pp. 249-258, doi: [10.1002/jsc.852](https://doi.org/10.1002/jsc.852).
- Robinson, M.J. and Cottrell, T.J. (2007), "Investment patterns of informal investors in the Alberta private equity market", *Journal of Small Business Management*, Vol. 45 No. 1, pp. 47-67.
- Shinnar, R.S., Giacomini, O. and Janssen, F. (2012), "Entrepreneurial perceptions and intentions: the role of gender and culture", *Entrepreneurship Theory and Practice*, Vol. 36 No. 3, pp. 465-493, doi: [10.1111/j.1540-6520.2012.00509.x](https://doi.org/10.1111/j.1540-6520.2012.00509.x).
- Sørheim, R. (2003), "The pre-investment behaviour of business angels: a social capital approach", *Venture Capital*, Vol. 5 No. 4, pp. 337-364, doi: [10.1080/1369106032000152443](https://doi.org/10.1080/1369106032000152443).
- Sørheim, R. (2005), "Business angels as facilitators for further finance: an exploratory study", *Journal of Small Business and Enterprise Development*, Vol. 12 No. 2, pp. 178-191, doi: [10.1108/14626000510594593](https://doi.org/10.1108/14626000510594593).
- Stedler, H.R. and Peters, H.H. (2003), "Business angels in Germany: an empirical study", *Venture Capital*, Vol. 5 No. 3, pp. 269-276, doi: [10.1080/1369106032000126596](https://doi.org/10.1080/1369106032000126596).
- Teker, S. and Teker, D. (2016), "Venture capital and business angels: Turkish case", *Procedia – Social and Behavioral Sciences*, Vol. 235, pp. 630-637, doi: [10.1016/j.sbspro.2016.11.041](https://doi.org/10.1016/j.sbspro.2016.11.041).
- Urban, B. and Ratsimanetrimanana, F. (2019), "Access to finance and entrepreneurial intention. An empirical study of Madagascan rural areas", *Journal of Enterprising Communities: People and Places in the Global Economy*, Vol. 13 No. 4, pp. 455-471, doi: [10.1108/JEC-12-2018-0106](https://doi.org/10.1108/JEC-12-2018-0106).
- Vaznyte, E. and Andries, P. (2019), "Entrepreneurial orientation and start-ups' external financing", *Journal of Business Venturing*, Vol. 34 No. 3, pp. 439-458, doi: [10.1016/j.jbusvent.2019.01.006](https://doi.org/10.1016/j.jbusvent.2019.01.006).
- Walsh, J. and Winsor, B. (2019), "Socio-cultural barriers to developing a regional entrepreneurial ecosystem", *Journal of Enterprising Communities: People and Places in the Global Economy*, Vol. 13 No. 3, pp. 263-282, doi: [10.1108/JEC-11-2018-0088](https://doi.org/10.1108/JEC-11-2018-0088).

-
- Wong, P.K. and Ho, Y.P. (2007), "Characteristics and determinants of informal investment in Singapore", *Venture Capital*, Vol. 9 No. 1, pp. 43-70, doi: [10.1080/13691060600996772](https://doi.org/10.1080/13691060600996772).
- Wong, P.K., Ho, Y.P. and Autio, E. (2005), "Entrepreneurship, innovation and economic growth: evidence from GEM data", *Small Business Economics*, Vol. 24 No. 3, pp. 335-350, doi: [10.1007/s11187-005-2000-1](https://doi.org/10.1007/s11187-005-2000-1).
- Yang, S. and Berger, R. (2017), "Relation between start-ups' online social media presence and fundraising", *Journal of Science and Technology Policy Management*, Vol. 8 No. 2, pp. 161-180.

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