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Introspective (Emotional) and Rational (financial) Factors Influencing the Decision of Private Investors, Business Angels (BA), to Invest in Unlisted Companies

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ABSTRACT

This study analyses the emotional and introspective factors, as well as the financial and rational factors, that influence the investment decisions of Business Angels (BA) in unlisted companies. Based on a survey of 76 private investors, two composite indices—a financial approach and an emotional–introspective approach—are constructed, consistent with a dual theoretical operationalisation. Through descriptive, correlational and multivariate analyses, the results show that BAs' investment decisions follow a hybrid architecture: emotional factors are associated with the intensity of risk exposure and investment patience, whilst financial factors shape return expectations and ex ante criteria. No pure investor typologies are identified, but rather gradients of decision-making emphasis, consistent with the literature on behavioural finance and informal venture capital.

Keywords: Business Angels, behavioural finance, informal venture capital, decision-making.

INTRODUCTION

The financing of early-stage start-ups is characterised by high levels of uncertainty, information asymmetry and illiquidity. In this context, Business Angels play a central role as providers of capital, knowledge and networks. Unlike institutional investors, Business Angels make decisions in environments where traditional financial models prove insufficient for predicting outcomes, which opens the door to the integration of emotional, relational and intuitive factors into the decision-making process.

Recent literature has highlighted that the classic dichotomy between financial rationality and emotional subjectivity is limited in explaining the actual behaviour of Business Angels. Instead , various authors propose hybrid approaches in which formal analysis coexists with informed intuition, interpersonal trust and non-financial motivations. This study follows this line of research and aims to empirically analyse how financial and emotional factors interact in business angels' investment decisions.

Proposed Objectives

General Objective

To analyse the emotional and financial factors that influence the decision of private investors, business angels (BAs), to invest in unlisted companies

Specific Objectives

1. To characterise the socio-demographic profile and investment experience of business angels.
2. To describe investment experiences in unlisted companies over recent years, including investment vehicles and the option not to invest.
3. To determine investment motivations and strategies, distinguishing between emotional and financial motivations.
4. To analyse the criteria used in assessing risk and return on investments in unlisted companies, considering the use of quantitative and qualitative methods.
5. To identify the main causes of business failure that influence investors' perception of risk.
6. To evaluate the relationships between emotional and financial variables, considering the association between the percentage of assets allocated to start-ups, the investment time horizon, and the expectations and returns obtained.

THEORETICAL FRAMEWORK

Business Angels and investment under uncertainty

Business Angels are typically defined as private investors who provide equity capital to unlisted companies in their early stages, combining funding with strategic support. The literature highlights that these investors operate in contexts of radical uncertainty, where information is incomplete and outcomes follow highly asymmetric distributions.

Rational–empirical approach

From a rational–empirical perspective, the investment decision is based on the analysis of financial metrics, market growth, business model, risks and exit strategies. Furthermore, signalling—patents, prototypes, co-investors—and the quality of human capital act as indicators of viability.

Emotional–introspective approach

The emotional–introspective approach recognises the role of intuition, relational trust, personal motivation and cognitive biases. In early stages, the perception of a good fit with the entrepreneurial team and a 'good feeling' can be decisive in moving forward with the investment decision.

Research Hypothesis

- **Null hypothesis (H0):** Business Angels do not prioritise emotional/relational criteria over formal financial criteria in the investment decision.
- **Alternative hypothesis (H1):** Business Angels prioritise emotional/relational criteria over formal financial criteria in their investment decisions.

METHODOLOGY

Design and sample

The study adopts a quantitative cross-sectional design based on a survey. The sample consists of 76 business angels who have invested in unlisted companies. They responded to the survey during the last quarter of 2025.

Instrument

The questionnaire is structured around dimensions relating to investor profile, investment experience, investment strategies and criteria, risks and returns, and the relationship with founders. The items are measured primarily using Likert scales.

Operationalisation of variables

The central variable —emotional and financial factors influencing the investment decision— is operationalised using two composite indices:

- **Scale A (Financial approach):** financial and market factors, signalling and human capital, context and structure.
- **Scale B (Emotional–introspective approach):** intuition and cognition, relationship and trust, personal motivation and affective factors.

Analytical techniques
Descriptive statistics, correlational analysis, ANOVA and MANOVA are used to explore relationships between variables and test for differences between investment groups.

Descriptive statistics

Analysis of results by dimension
The following presents a descriptive analysis of the results obtained after administering the questionnaire to respondents, broken down by the established dimensions (investor profile, investment experience, investment motivations and strategies, risks and returns, as well as challenges and disputes). (See Appendix A).

Each dimension has defined elements that have been analysed; these are broken down in **Table 1**, and in each case the frequency tables and percentages of the results are shown.

Table 1. Dimensions established in the questionnaire for private investors in unlisted companies. Year 2026

DIMENSIONS	Nº OF ITEMS
Investor Profile	1 2 3
Investment Experience	4 5
Investment Strategies and Criteria	6 7 8 9 10 11 12 13 14
Risks and Profitability	15 16 17 18
Challenges and Disputes	19 20 21

Source: Author 2026.

Dimension: investor profile

The respondents are predominantly middle-aged or older men (age groups 46–55, 56–65 and over 65), as shown in **Table 2 and Figure 1**, with tax residence mainly in Catalonia, although there are also investors from the rest of Spain and other countries (USA, Andorra, Thailand), as shown in **Table 3 and Figure 2**. **Table 4** and **Figure 3** show that the majority have made at least one investment in unlisted companies in the last three years, many of them in two (2), three (3) or more than three transactions, indicating a profile of relatively experienced business angels (BA).

In the literature, the typical business angel is described as male, with extensive professional experience, high net worth and mixed motivations (financial and non-financial). Mason and Harrison (1994) highlight that these investors also contribute sector-specific knowledge and networks of contacts, which aligns with the frequent use of direct contacts with founders and BA networks as a means of accessing investment opportunities, as observed in your data.

Table 2. Age range of private investors in unlisted companies in Spain. Year 2026

AGE GROUP	FA	%
BETWEEN 35 AND 45 YEARS	9	12
BETWEEN 46 AND 55 YEARS OLD	33	43
BETWEEN 56 AND 65 YEARS OLD	27	36
OVER 65	7	9
TOTAL	**76**	**100**

Source: Author 2026

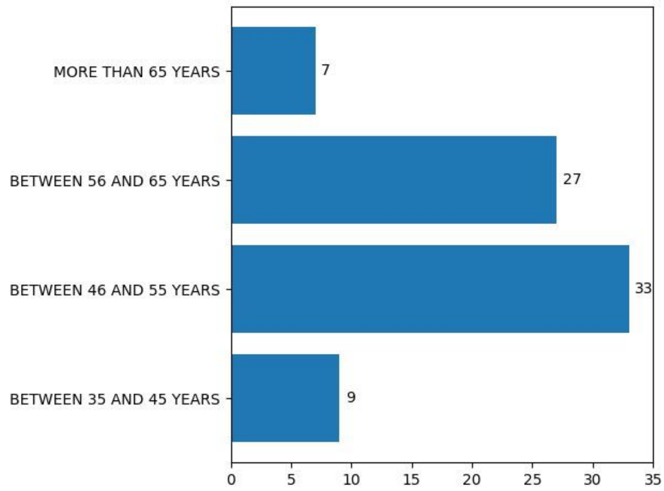

Figure 1. Age group of private investors in unlisted companies in Spain. Year 2026

Table 3. Place of residence of private investors in unlisted companies in Spain. Year 2026

PLACE OF RESIDENCE	FA	%
CATALONIA	69	91
USA	2	3
REST OF SPAIN	3	4
OTHER	2	3
TOTAL	**76**	**100**

Source: Author 2026

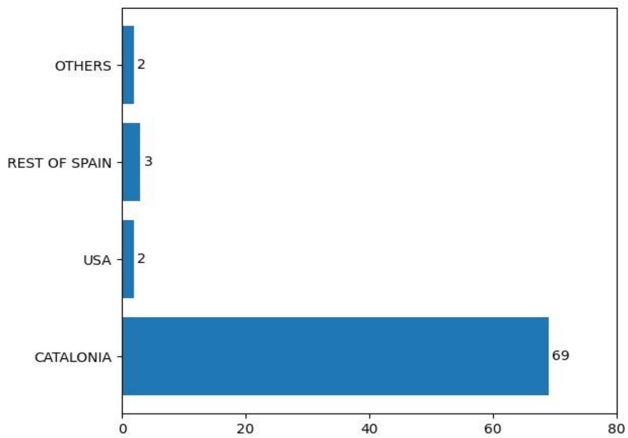

Figure 2. Place of residence of private investors in unlisted companies in Spain. Year 2026
Source: Author 2026

Table 4. Investments made over the last 3 years by private investors in unlisted companies in Spain, by age group. Year 2026

AGE RANGE	YES IN 1	YES IN 2	YES IN 3	YES IN MORE THAN 3	TOTAL	%
BETWEEN 35 AND 45 YEARS	2	1	1	2	6	**8**
BETWEEN 46 AND 55 YEARS	4	7	1	12	24	**32**
BETWEEN 56 AND 65 YEARS	8	3	1	4	16	**21**
MORE THAN 65 YEARS	1	0	1	3	5	**6**
TOTAL	**15**	**11**	**4**	**21**	**51**	
%	**20**	**14**	**5**	**28**	**67**	**67**

Source: Author 2026

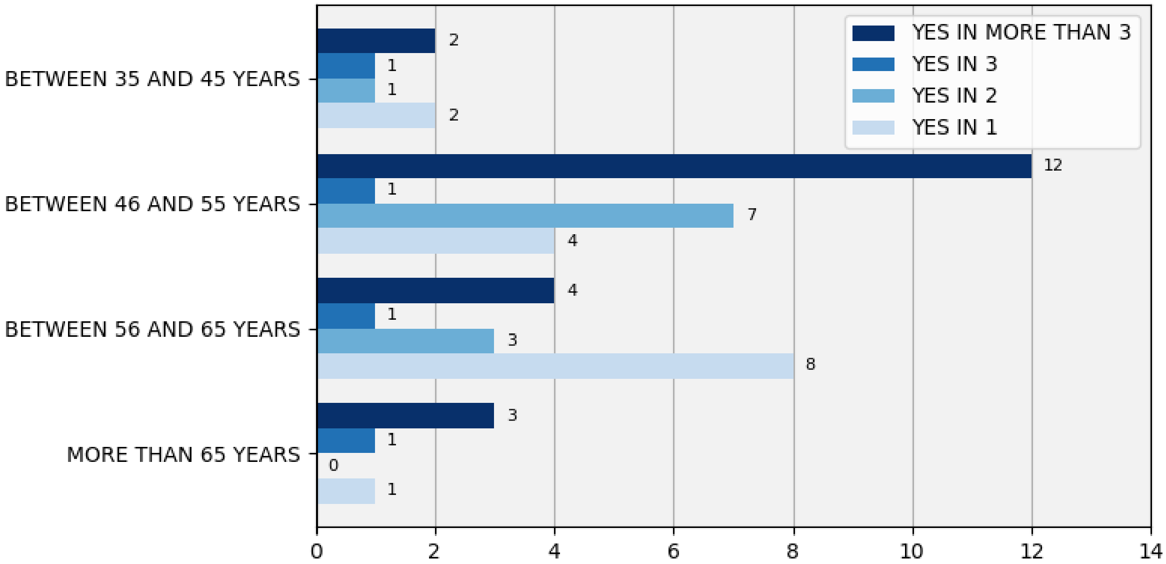

Chart 3. Investments made in the last 3 years by private investors in unlisted companies in Spain, by age group. Year 2026
Source: Author 2026

Tables 2–4 and **Figures 1–3** show a predominance of middle-aged and older investors (79% aged over 45) and a significant level of investment activity over the last three years. This pattern fits almost perfectly with the profile of *business angels* described by Mason and Harrison (1994), who characterise them as middle-aged or older men with extensive professional experience, significant wealth and a background as executives or entrepreneurs, as well as strong ties to local business networks.
There is an informal, regionally based venture capital market, where geographical and social proximity facilitates the identification of opportunities and the management of investments, as documented by Mason and Harrison (1994) for the United Kingdom and observed here in the ecosystem comprising Barcelona and its surrounding area. The fact that the majority have made one or more investments in the last three years suggests a mature *business angel* market, with recurring rather than occasional investors, something the aforementioned authors link to the existence of organised BA networks and a stable supply of projects.

Scope: investment experiences
A significant proportion of investors state that they have invested through limited companies in which they retain a degree of control, although collective investment vehicles are also used and, to a lesser extent, direct investment as individuals (**Table 5 and Figure 4**). It is observed that the average 'reasonable' investment is concentrated between €10,000 and €100,000 per transaction, with some cases exceeding €100,000, as shown in **Table 6** and **Figure 5**, which places the investment amount within the typical range described for European *business angels*.
As regards results, as will be seen later in this analysis (Table 18 and Figure 17), a considerable proportion report that they have 'not yet had any exit', and amongst those who have, the average multiple ranges from 'less than 3' to 'more than 4', with cases of total loss coexisting alongside cases of high returns. The literature highlights precisely this highly asymmetric distribution of returns: a few highly successful investments offset multiple failures, making the portfolio and the 5–10-year horizon critical.

Table 5. Investment vehicle used by private investors in unlisted companies

RESPONSE OPTIONS	FA	%
I have invested as an individual	17	22
I have invested through a collective investment company	4	5
I have used different investment vehicles	12	16
I have used an LLC where I have control	18	24
None	25	33
TOTAL	**76**	**100**

Source: Author 2026.

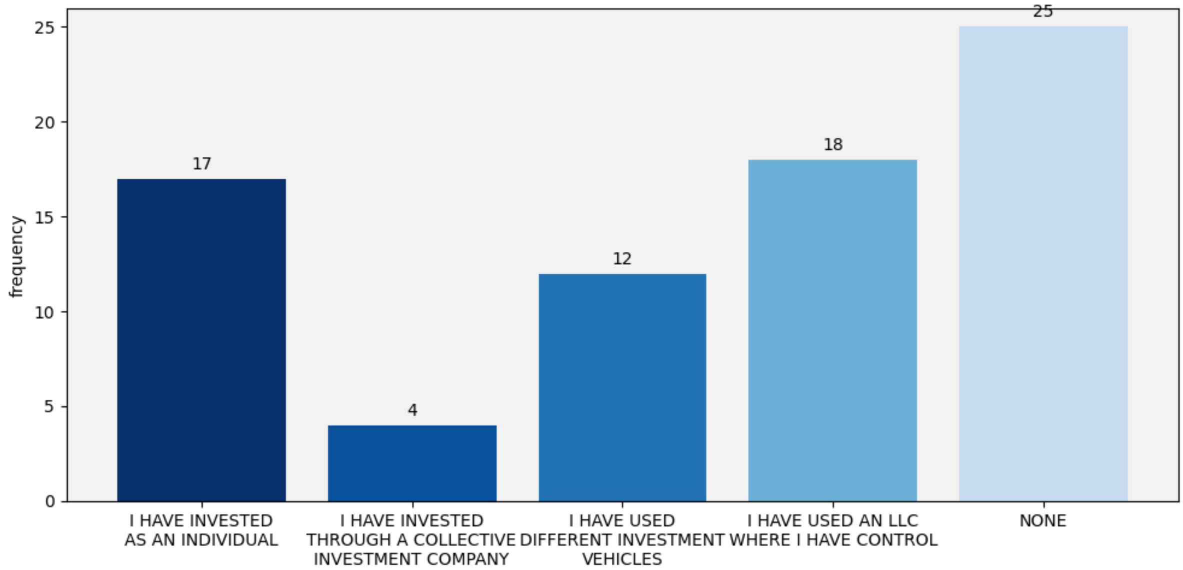

Figure 4. Investment vehicle used by private investors in unlisted companies

Table 6. Investment made by private investors in an unlisted company where they did not hold a majority stake in the capital over the last 3 years

RESPONSE OPTIONS	FA	%
NO	25	33
YES IN 1	15	20
YES IN 2	11	14
YES IN MORE THAN 3	25	33
TOTAL	**76**	**100**

Source: Author 2026.

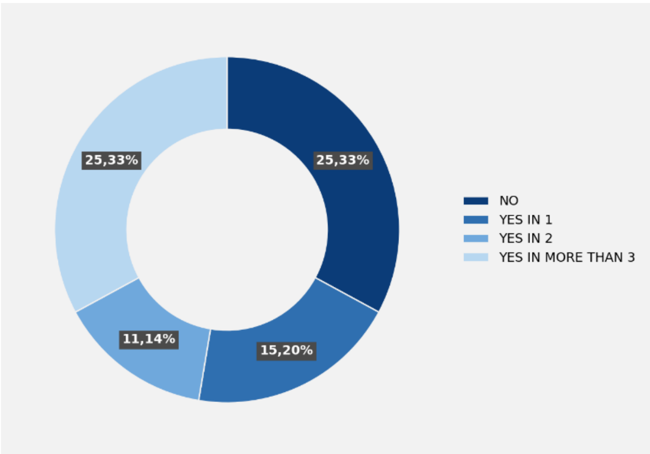

Figure 5. Investment made by private investors in an unlisted company where they did not hold a majority stake in the capital over the last 3 years

Tables 5 and 6 and **Figures 4 and 5** indicate three key features: the predominant use of limited liability companies where the investor retains control as the vehicle; reasonable investment amounts concentrated between €10,000 and €100,000; and a highly asymmetric distribution of returns, with many cases still without an exit and a few with high multiples.

The use of controlled limited companies confirms BA's preference for structures that allow them to preserve influence and tax flexibility, which is consistent with the evidence from Wetzel (1986) and Mason & Harrison (1994) regarding the aversion to losing control in excessively syndicated or intermediated structures. The size of the investments falls within the typical range described in European studies on BA, where the average investment usually ranges between €25,000 and €250,000, placing these investors in an intermediate bracket between informal seed capital and venture capital funds.

The coexistence of many dead-end investments, some with losses and a few with very high returns, reflects the 'power law' distribution that Ries (2011) and other authors associate with startup portfolios: a few 'winners' offset a large number of failures. From a portfolio theory perspective, this reinforces the classic recommendation to business angels to build diversified portfolios with long time horizons (5–10 years) so that the logic of aggregate multiples can materialise.

Dimension: investment motivations and strategies

The results obtained from the investment motivations and strategies dimension allow us to distinguish the emotional dimension from the purely financial one. For example, a portion of the responses shows high levels of agreement with items such as "investing in emerging companies with high growth potential" or "seeking companies with effective and experienced management", combined with high ratings for team experience and the robustness of the business model. With regard to the reasons for not investing, average investment and maintaining investment, an eclectic mix of rational and introspective reasons is observed

In relation to the above, as evidenced in **Tables 7 to 12** and **Figures 6 to 11,** it is essential to distinguish between financial motives (expected returns, exit multiples) and non-financial motives: enjoyment of the process, desire to support entrepreneurs, social impact, opportunity to learn, prestige, etc. In this regard, Mason and Botelho (2016) note that BA investors often state that 'the team' and 'personal fit' with the entrepreneurs carry as much or more weight than financial projections, which aligns with the emphasis in the responses regarding trust in the team, prior experience and the direct relationship with the founders as the primary route to investment.

Table 7. Level of agreement with statements regarding the motivations of private investors in an unlisted company Year 2026

Criteria	6A. Achieve higher profitability compared to other investment alternatives		6B. Participate in the creation and growth of other companies		6C. Diversify an investment portfolio		6D. Sense of impact or contribution to economic and technological development		6E. Participate in company management	
	FA	%	FA	%	FA	%	FA	%	FA	%
Totally Disagree	2	3	0	0	1	1	2	3	11	14
Disagree	2	3	2	3	6	8	7	9	12	16
Neither Agree nor Disagree	11	14	6	8	11	15	8	10	16	21
Agree	19	25	23	30	18	23	25	33	6	8
Totally Agree	17	22	20	26	15	20	9	12	6	8
No Response	25	33	25	33	25	33	25	33	25	33
Total	**76**	**100**	**76**	**100**	**76**	**100**	**76**	**100**	**76**	**100**

Source: Author 2026.

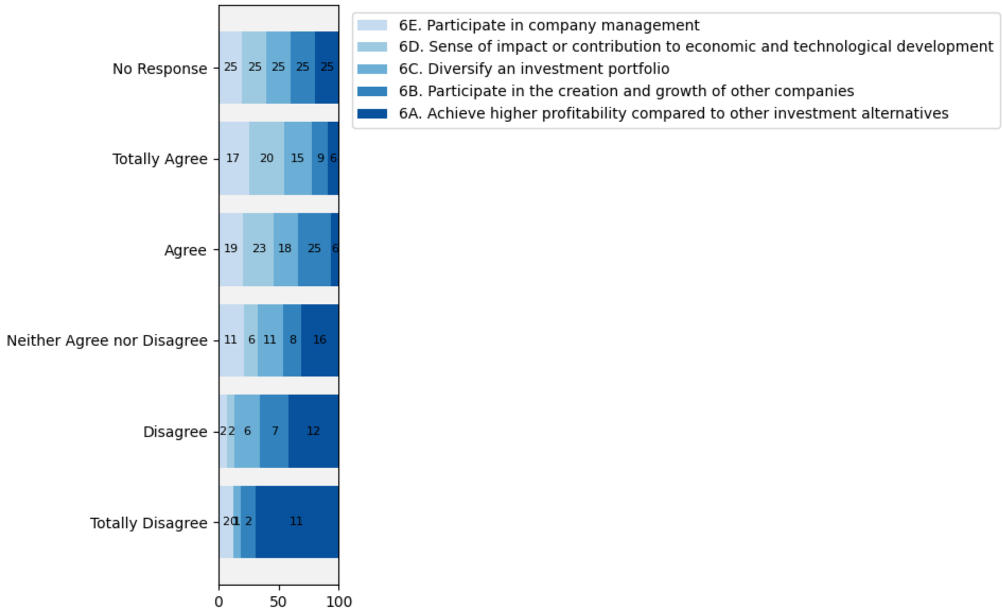

Figure 6. Level of agreement with statements regarding the motivations of private investors in an unlisted company to invest in start-ups. Year 2026

Table 7 and **Figure 6** show high levels of agreement with statements such as investing in start-ups with high growth potential and seeking companies with effective and experienced management, alongside high ratings for the team's experience and the robustness of the business model. This pattern aligns with the accumulated evidence in the business angel literature, where the founding team and the business model consistently emerge as the primary selection criteria, even ahead of detailed financial projections (Mason & Harrison, 1994; Mason & Botelho, 2016). From a theoretical perspective, these results support the idea that BA investment strategies lie at the intersection between a financial logic (the pursuit of growth and attractive multiples) and a relational/emotional logic (confidence in the team's ability to deliver that growth). Mason and Botelho point out that 'personal fit' with the entrepreneurs and the perception that the team is capable of learning and is adaptable carry as much or more weight than the business plan, which is reflected in the data through the centrality attributed to the management team's experience and the business model as key pillars of the selection strategy.

Table 8. Private investors' most decisive reasons for not investing in a start-up. Year 2026

REASONS FOR NOT INVESTING	FA	%
Lack of trust in the founding team	19	25
Unclear or unvalidated business model	3	4
Perceived risk too high compared to potential return	17	22
Lack of transparency or insufficient information during analysis	2	3
Personal reasons	10	13
None	25	33
TOTAL	**76**	**100**

Source: Author 2026.

Figure 7. Private investors' most decisive reasons for not investing in a start-up. Year 2026

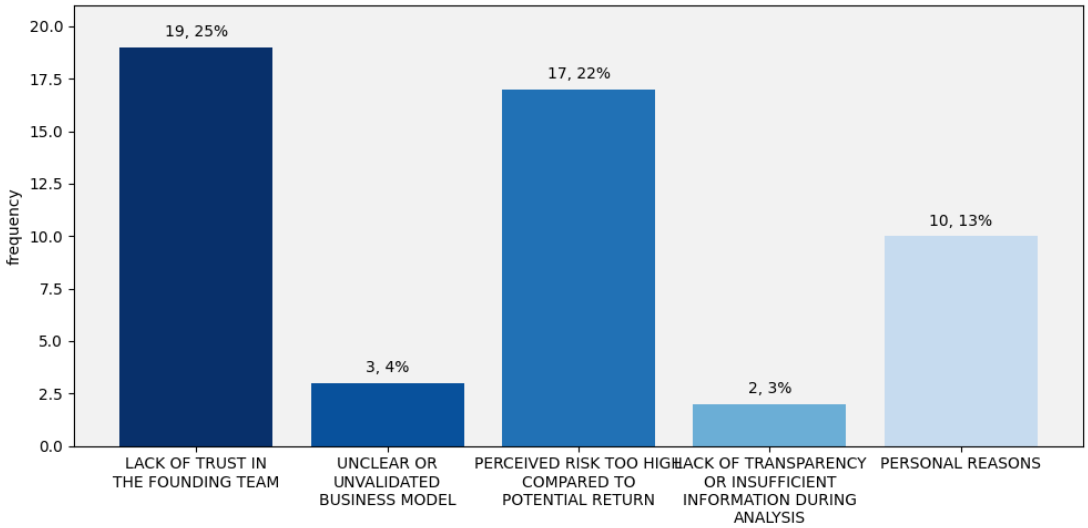

Table 9. Average investment considered reasonable by private investors for investing in an unlisted company. Year 2026

AVERAGE INVESTMENT	FA	%
Less than €10,000	6	8
Between €10,000 and €50,000	35	46
Between €50,001 and €100,000	12	16
More than €100,000	4	5
No Response	19	25
TOTAL	**76**	**100**

Source: Author 2026.

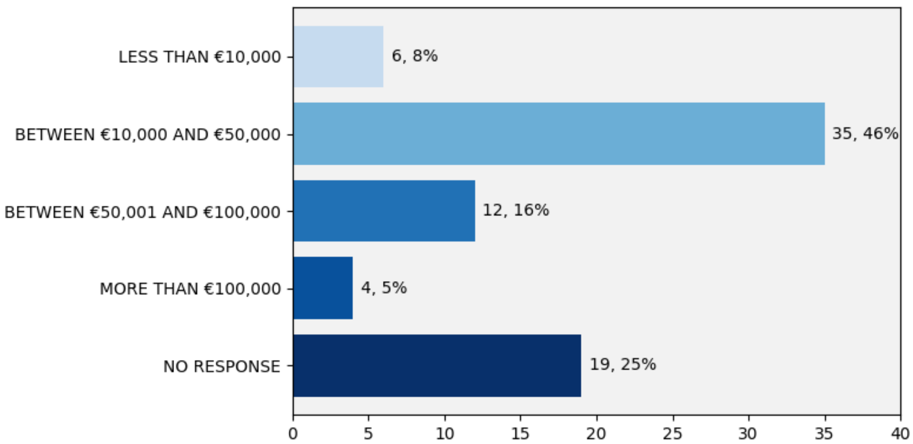

Figure 8. Average investment considered reasonable by private investors for investing in an unlisted company. Year 2026
Source: Author 2026.

Table 10. Expected holding period for the investment, as reported by private investors in unlisted companies. Year 2026

INVESTMENT HOLDING PERIOD	FA	%
Less than 1 year	0	0
Between 1 and 3 years	13	17
Between 3 and 5 years	21	28
More than 5 years	18	24
No Response	24	31
TOTAL	76	100

Source: Author 2026.

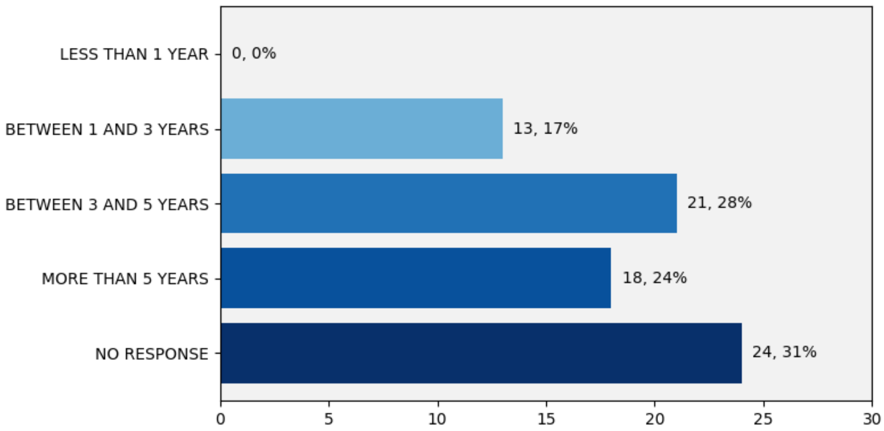

Figure 9. Expected investment holding period, by private investors in unlisted companies. Year 2026
Source: Author 2026.

Table 11. Level of agreement regarding the criteria used when analysing the opportunity to invest in a start-up. Year 2026

Criteria	10A. The deck or company presentation		10B. Recent financial information: balance sheet and income statement		10C. The interview with the founding team		10D. The interview or opinions of experts you know		10E. Other members of the Cap Table (other investors in the company)	
	FA	**%**	**FA**	**%**	**FA**	**%**	**FA**	**%**	**FA**	**%**
Totally Disagree	0	0	0	0	0	0	1	1	1	1
Disagree	7	9	8	11	1	1	3	4	3	4
Neither Agree nor Disagree	12	17	11	14	1	1	10	13	12	16
Agree	24	32	21	28	14	19	31	41	25	33
Totally Agree	7	9	11	14	35	46	6	8	10	13
No Response	25	33	25	33	25	33	25	33	25	33
Total	**76**	**100**	**76**	**100**	**76**	**100**	**76**	**100**	**76**	**100**

Source: Author 2026.

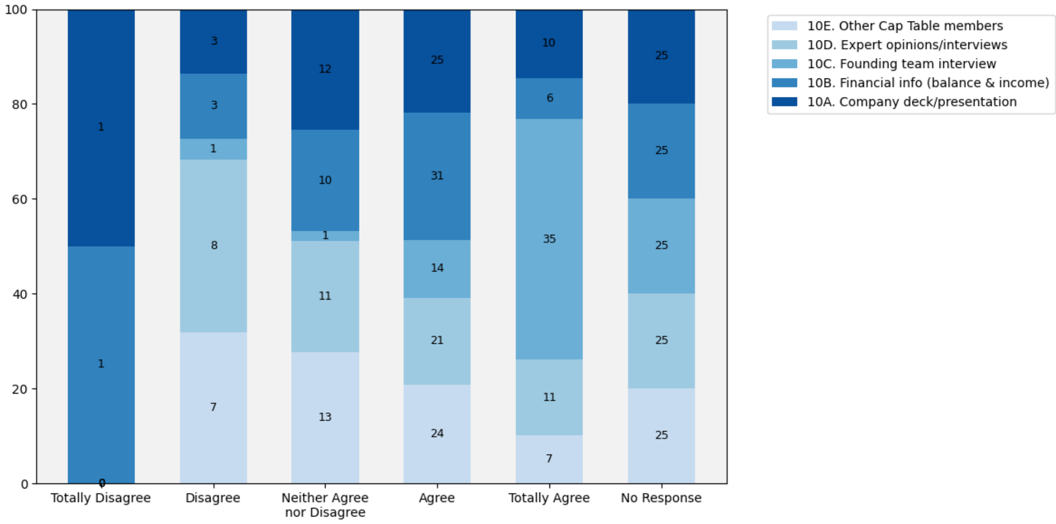

Figure 10. Level of agreement regarding the criteria used when analysing the opportunity to invest in a start-up. Year 2026

Table 11 and **Figure 10** show the degree of agreement with various criteria when analysing an investment opportunity, including the importance attached to the presentation *deck*, recent financial information, the interview with the founding team, expert opinions and the profile of other investors on *the cap table*. Although the specific values for each item are not reproduced here, the structure of the questionnaire and the results discussed suggest a clear hierarchy: firstly, direct interaction with the founding team (interview, perception of skills and trust); secondly, financial and business information (balance sheets, income statements, traction); and thirdly, social signals such as the presence of other reputable investors or expert opinions.
This hierarchy mirrors the sequential screening framework described by Mason and Botelho (2016): contact with the team and the resulting 'feeling' act as an initial filter, on the basis of which a decision is made as to whether it is worth delving deeper into the documentary and financial analysis. The importance placed on who else is on the cap table and on recommendations from other investors is consistent with the literature on "quality signals" in informal venture capital markets, where co-investment with reputable players reduces information asymmetry and perceived risk (Landström, 2000).

Table 12. Investment strategies in unlisted companies. Year 2026

INVESTMENT STRATEGY	FA	%
Investing in emerging companies with high growth potential	34	45
Looking for companies with a solid base of recurring customers (e.g., SaaS)	9	12
Looking for companies with effective and experienced management	14	18
Looking for companies that distribute dividends	0	0
No Response	19	25
TOTAL	76	100

Source: Author 2026.

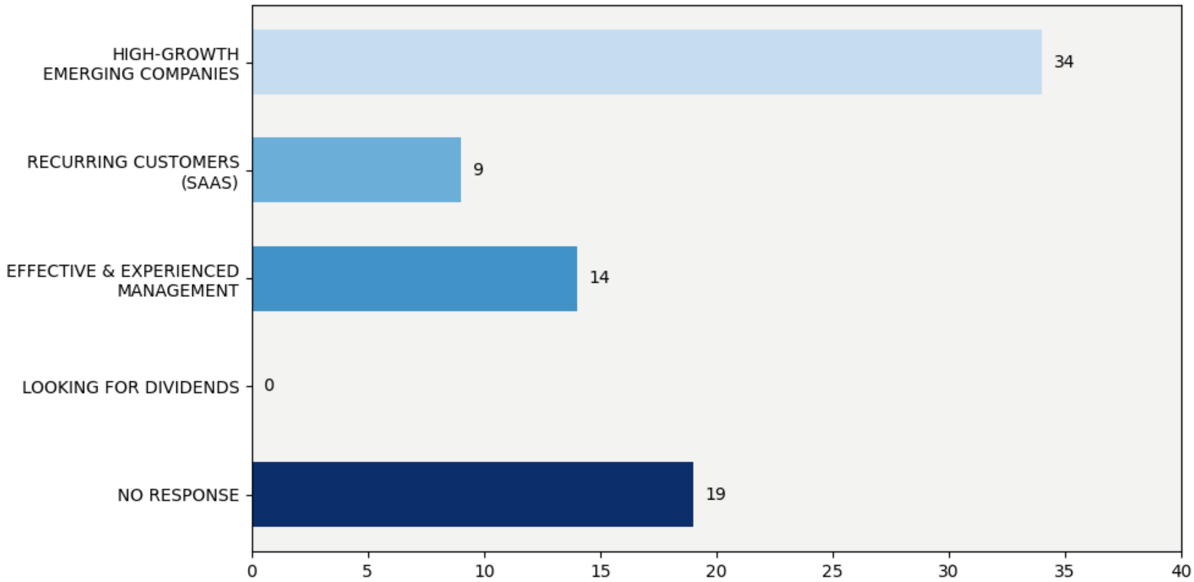

Figure 11. Investment strategies in unlisted companies. Year 2026

It is important to emphasise that **Tables 7–12** and **Charts 6–11** show a high degree of agreement on factors such as: supporting companies with significant growth potential; seeking out teams with effective management; valuing the team's experience and the robustness of the business model; and strategies focused on start-ups and companies with repeat customers. This combination places the investor between a financial rationale (profitability, exit multiples) and a non-financial rationale (enjoyment, impact, personal affinity).

In this regard, Mason and Botelho (2016) emphasise that the team and personal fit with the founders often carry as much or more weight than financial projections in the decision to invest**.** The results are consistent with this pattern: trust in the team, prior experience and access through direct contact with the founders emerge as central elements of the strategy, reinforcing the idea that relational capital and the subjective perception of the team's quality act as decisive filters.

This balance between financial and emotional motivations also aligns with the behavioural finance literature, which highlights that investment decisions in contexts of high uncertainty rely heavily on heuristics, trust and affinity, rather than on strictly rational models of expected utility maximisation. Thus, the profile identified can be described as that of a 'hybrid investor', who pursues financial returns but places substantial weight on factors such as purpose, learning and the connection with the entrepreneurs.

Table 13. Factors considered by private investors when making a decision

Criteria	12A. Experience of the management team		12B. Strength of the business model		12C. Market growth outlook		12D. Quick exit (sale)	
	FA	%	FA	%	FA	%	FA	%
Totally Disagree	0	0	0	0	0	0	4	5
Disagree	1	1	0	0	0	0	12	16
Neither Agree nor Disagree	5	7	4	5	6	8	20	26
Agree	29	38	28	37	23	30	11	15
Totally Agree	16	21	19	25	22	29	4	5
No Response	25	33	25	33	25	33	25	33
Total	**76**	**100**	**76**	**100**	**76**	**100**	**76**	**100**

Source: Author 2026.

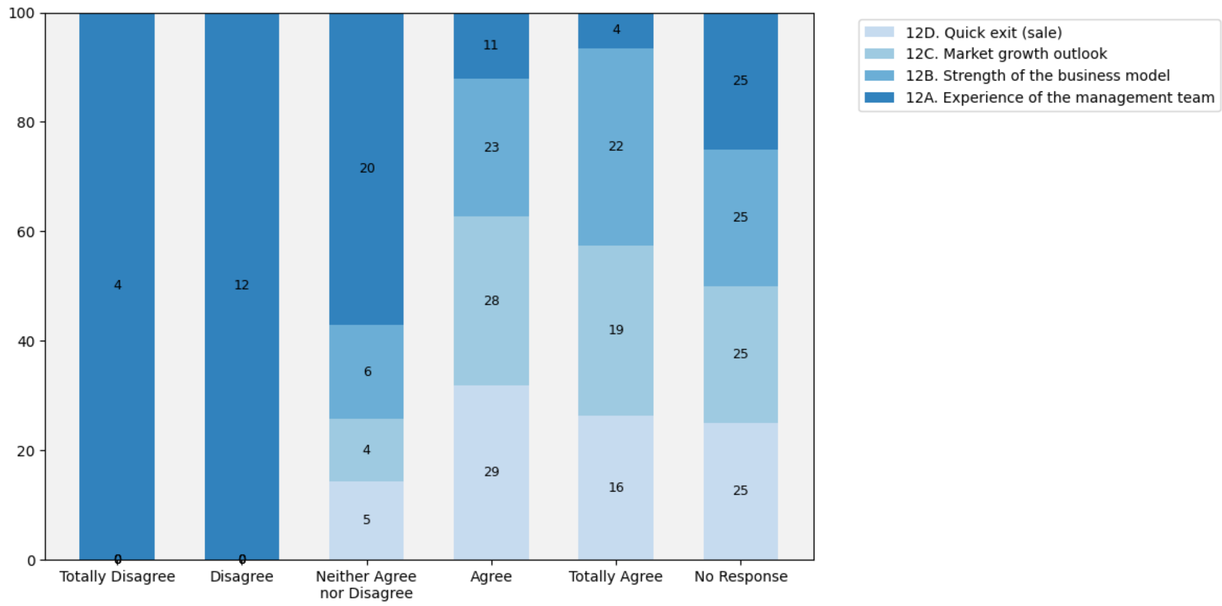

Figure 12. Factors considered by private investors when making a decision

Table 14. Private investors' access to the latest investment opportunity, Year 2026

ACCESS TO INVESTMENT	FA	%
Through a Business Angels network (BA)	3	4
Through an intermediary agent	6	8
Through direct contact with the founders	38	50
Through recommendation from another investor	8	11
Other	2	2
No Response	19	25
TOTAL	76	100

Source: Author 2026.

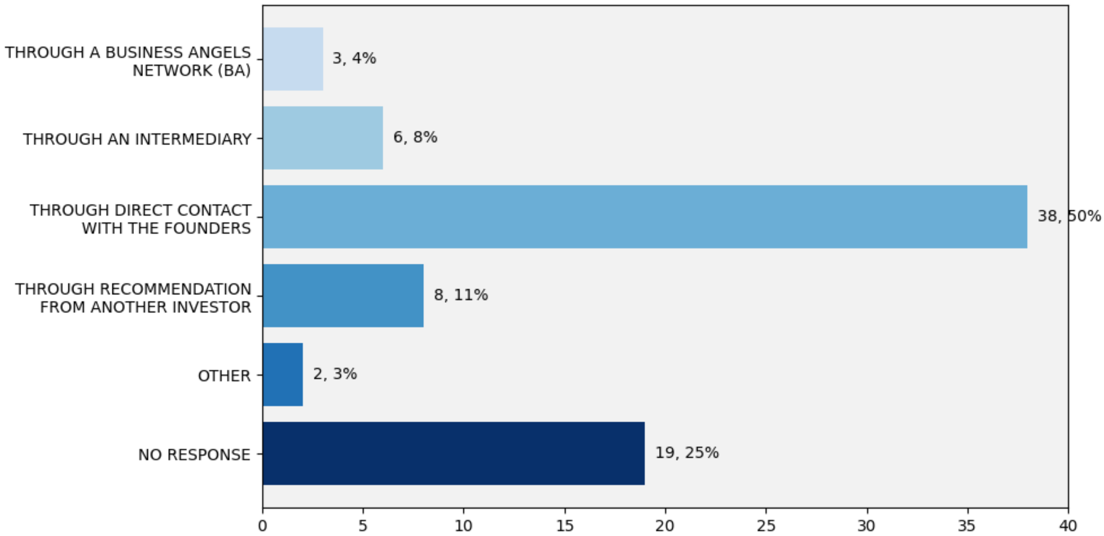

Figure 13. Private investors' access to the latest investment opportunity, Year 2026

Finally, **Table 13** and **Figure 12** summarise the factors that investors consider most relevant when making their final decision (team experience, soundness of the business model, growth prospects, exit strategy), whilst **Table 14** and **Figure 13** show that access to the latest investment opportunities is primarily gained through *business angel* networks, direct contacts with founders and recommendations from other investors.
This predominance of interpersonal channels confirms the centrality of social capital in investment strategies, as emphasised by Mason & Harrison (1994) when describing the informal venture capital market as a 'network market' rather than an anonymous market. Furthermore, the weight given to factors such as team experience and market growth in the final decision reinforces the interpretation of Landström (2000) and the behavioural literature: the investor combines objective information with subjective judgements regarding that particular team's ability to capitalise on opportunities in that specific market.

Dimension: risk and return assessment

Block 15 reveals a combination of evaluation methods, where many investors frequently use detailed analysis of financial data, but also state that they frequently or very frequently rely on intuition and prior experience. This coexistence of formal analysis and personal heuristics is typical of the behaviour described as that of a 'sophisticated intuitive investor'; figures are analysed, but the final decision relies heavily on subjective judgement.

On the other hand, regarding returns, many of the investors surveyed consider a multiple of between 2 and 4 acceptable over a 5-year period, and report having achieved multiples of between 2 and 4 on average, although with significant variations between cases. Empirical studies on European *business angels* place target return expectations over 5–7-year horizons with multiples of 2–3 as the minimum threshold to compensate for the high risk and illiquidity of these investments.

Table 15. Frequency with which private investors use certain methods to assess investment risk. Year 2026

Frequency	Thorough analysis of financial data		Recommendations from financial analysts and consultants		Intuition and prior experience	
	FA	%	FA	%	FA	%
Never	3	4	4	5	0	0
Rarely	4	5	10	13	3	4
Sometimes	15	20	16	21	4	5
Frequently	21	27	14	19	26	34
Always	8	11	7	9	18	24
No Response	25	33	25	33	25	33
Total	**76**	**100**	**76**	**100**	**76**	**100**

Source: Author 2026.

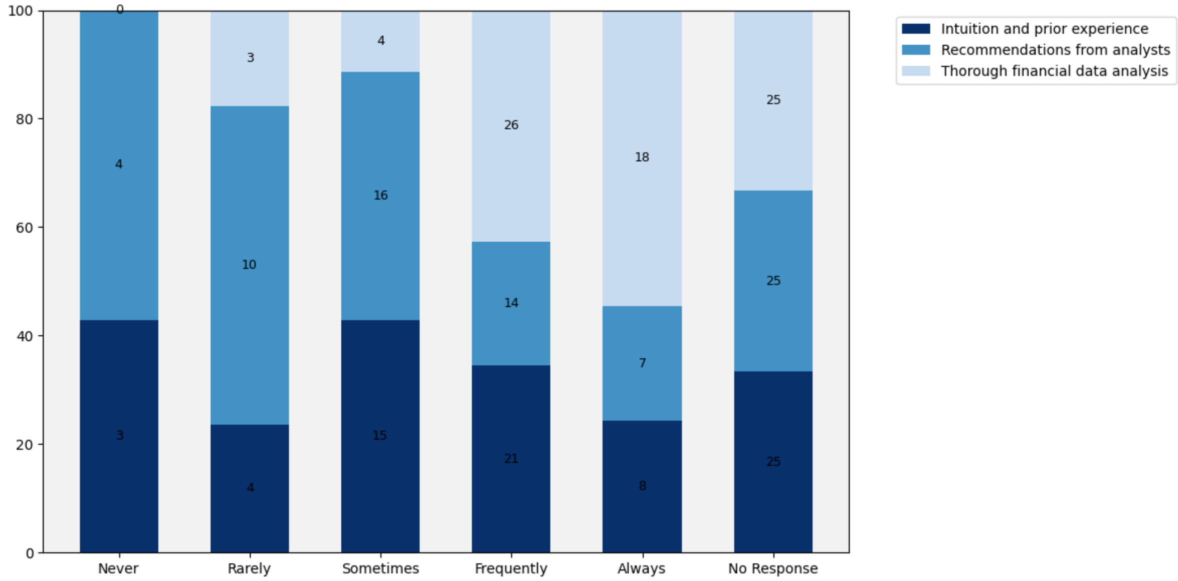

Figure 14. Frequency with which private investors use certain methods to assess the risk of an investment. Year 2026

Table 16. Percentage of movable assets allocated to start-ups by private investors. Year 2026

NET WORTH	FA	%
Less than 5%	21	28
Between 5% and 10%	23	30
Between 11% and 20%	7	9
More than 20%	6	8
No Response	19	25
TOTAL	**76**	**100**

Source: Author 2026.

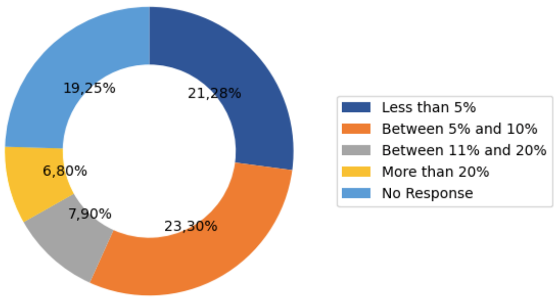

Figure 15. Percentage of liquid assets allocated to start-ups by private investors. Year 2026
Source: Author 2026.

Table 17. Acceptable return on a 5-year investment by private investors. Year 2026

RETURN	FA	%
A multiple between 2 and 3	25	33
A multiple between 3 and 4	24	32
A multiple greater than 4	8	10
No Response	19	25
TOTAL	**76**	**100**

Source: Author 2026.

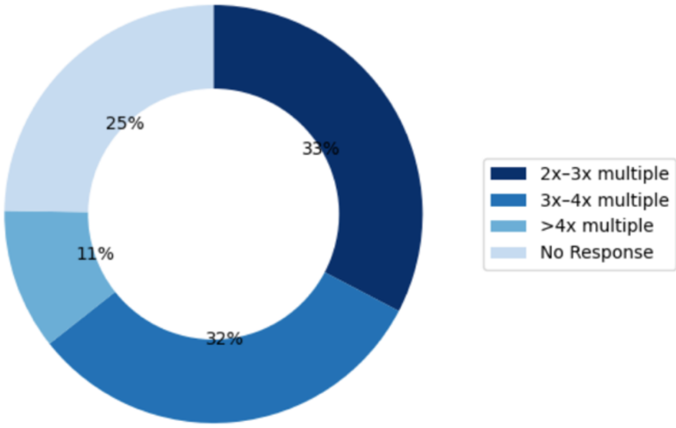

Figure 16. Acceptable return on a 5-year investment by private investors. Year 2026
Source: Author 2026

Table 18. Average return obtained by private investors on investments in unlisted companies. Year 2026

AVERAGE RETURN	FA	%
I have not had any exits yet	20	27
The overall outcome has been losses	8	10
The average exit has been a multiple of less than 3x	15	20
The average exit has been a multiple greater than 3x	10	13
I don't know	4	5
No Response	19	25
TOTAL	**76**	**100**

Source: Author 2026.

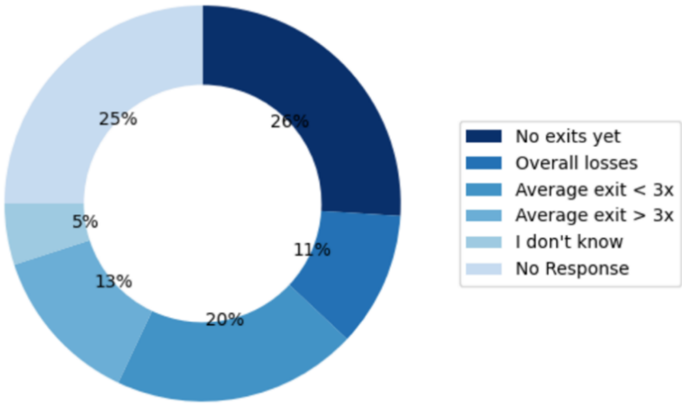

Figure 17. Average return obtained by private investors on investments in unlisted companies. Year 2026

Table 15 and **Figure 14** show that investors frequently combine a thorough analysis of financial data with the regular use of intuition and prior experience**,** whilst recommendations from analysts and consultants play a complementary role. This pattern fits with the concept of the 'sophisticated intuitive investor' that Landström (2000) uses to describe BA: decisions are neither purely intuitive nor purely analytical, but rather a synthesis in which figures are integrated into mental frameworks built up over years of experience.

As for returns, **Tables 16–18** and **Figures 15–17** indicate that an acceptable five-year multiple typically lies between 2 and 4, and that reported average returns are concentrated precisely within that range, with extreme cases of losses or higher multiples. These levels are consistent with the target return thresholds that empirical studies on European business angels place at around multiples of 2–3 over 5–7-year horizons**,** necessary to compensate for the risk, illiquidity and opportunity costs of this asset class.

Overall, this dimension suggests that Catalan *business angels* operate with a realistic view of the risk-return trade-off, expect ambitious but not disproportionate multiples, and accept long time horizons, which places them closer to the profile of a 'patient investor' than that of a short-term speculator.

Dimension: relationship with founders and shareholder agreements

When asked to rank the causes of failure, the most common categories include inadequate management, corporate or inter-founder disputes, a market that is too small or non-existent, margins that are too narrow, and inappropriate investment sizing. It is significant that most of these causes are qualitative/management-related (team, conflicts, strategy) rather than purely financial or accounting-related, which reinforces the view that perceived risk is associated with the human factor and market fit. (See **Table 19** and **Figure 18**).

In line with this, studies by Ries (2011) suggest that most start-ups fail due to a lack of product-market fit, weak teams and internal conflicts, rather than a mere lack of capital or ; experienced *business angels* tend to learn this and increasingly prioritise team quality and governance.

The results obtained, and shown in **Tables 20–21** and **Figures 19–20,** also reveal a relatively widespread use of shareholders' agreements and the existence of some litigation over the last 36 months, suggesting that investors protect themselves legally but still face conflicts—a factor that influences the perception of emotional risk and the demand for trust and alignment of interests.

Table 19. Most common causes of business failure, according to the assessment of private investors in unlisted companies in Spain. Year 2026

MOST COMMON CAUSES OF FAILURE	FREQUENCY	%
Poor management	25	33
Shareholder or founder conflicts	9	12
Market too small or non-existent	9	12
Inadequate investment sizing	4	5
Margins too small	3	4
No Response	26	34
TOTAL	**76**	**100**

Source: Author 2026.

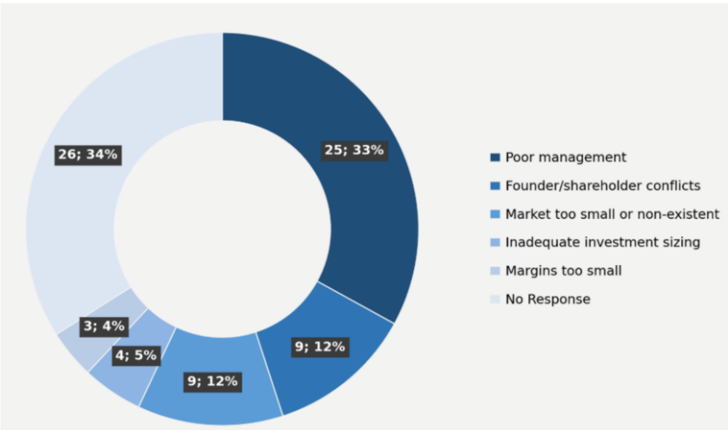

Figure 18. Most common causes of business failure, according to the assessment of private investors in unlisted companies in Spain. Year 2026
Source: Author 2026.

Table 20. Use of shareholders' agreements in investments by private investors in unlisted companies in Spain. Year 2026

USE OF SHAREHOLDERS' AGREEMENT	FA	%
No	6	8
Yes, new or modified	19	25
Yes, adhesion to an existing one	26	34
No response	25	33
TOTAL	**76**	**100**

Source: Author 2026.

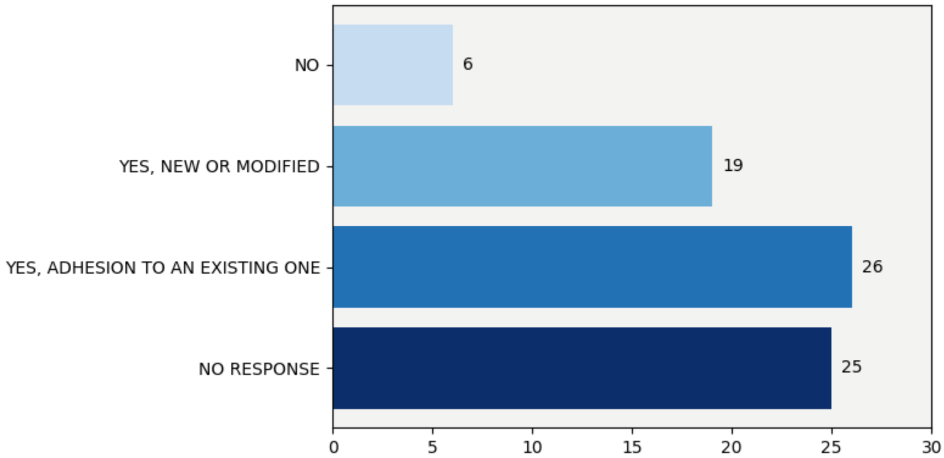

Figure 19. Use of Shareholders' Agreements in investments by private investors in unlisted companies. Year 2026
Source: Author 2026.

Table 21. Litigation brought by private investors against partners or directors in the last 36 months

RESPONSE OPTIONS	FA	%
Yes	7	9
No	44	58
No Response	25	33
TOTAL	**76**	**100**

Source: Author 2026.

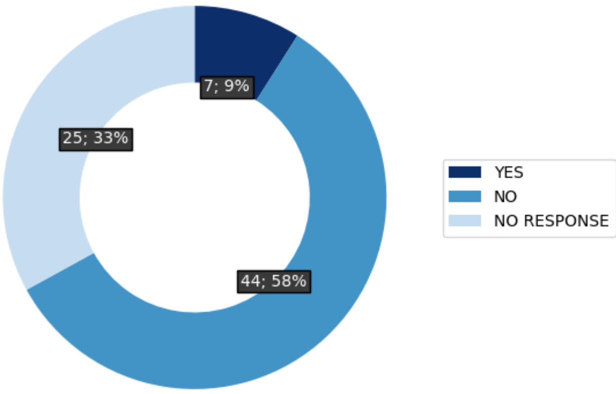

Figure 20. Litigation brought by private investors against partners or directors in the last 36 months
Source: Author 2026.

Table 19 and **Figure 18** show that the most common causes of failure identified by investors are poor management**,** corporate disputes among founders**,** an overly small market**,** insufficient margins and an inappropriate investment size. It is striking that the most frequently cited causes are of a qualitative-management nature (team, conflicts, strategy), rather than purely accounting or financial.

This pattern aligns with analyses such as that by CB Insights (2023), which consistently identifies a lack of product-market fit, a weak founding team and internal conflicts as the main causes of startup closures, ahead of a mere lack of capital. Similarly, approaches such as that of Ries (2011) emphasise that failure often stems from a poor understanding of the market and poor team dynamics, which experienced business angels learn to factor into their risk assessment.

Tables 20 and 21 and **Figures 19 and 20** reflect, on the one hand, a fairly widespread use of shareholders' agreements and, on the other, the existence of a not inconsiderable percentage of litigation over the last 36 months. This suggests a growing degree of professionalisation in the management of the investor-entrepreneur relationship**,** consistent with the recommendations of the literature on corporate governance in start-ups, which proposes clear clauses on rights, exits and conflict resolution to reduce the negative emotional component of perceived risk.

Inferential analysis

Results by Dimension

In order to properly understand the analysis of results based on inferential statistics, it is important to provide a comprehensive academic context regarding the role of angel investors and venture capital in the global entrepreneurial ecosystem. Research explores how psychological factors, such as the founder's passion and the investor's intuition, have a decisive influence on 'financial decision-making'.
Various sources of funding are examined, ranging from equity crowdfunding to government grants, highlighting the importance of legitimacy signals such as patents and prior experience. The studies also address critical barriers, including gender biases, geographical disparities and the impact of economic crises such as the COVID-19 pandemic. Furthermore, the role of incubators and angel networks in professionalising support for start-ups at different stages of growth is highlighted. Finally, the authors suggest that the success of these investments depends on a combination of formal analysis and a strong relationship of trust between entrepreneurs and investors. (See **Figure 1**).

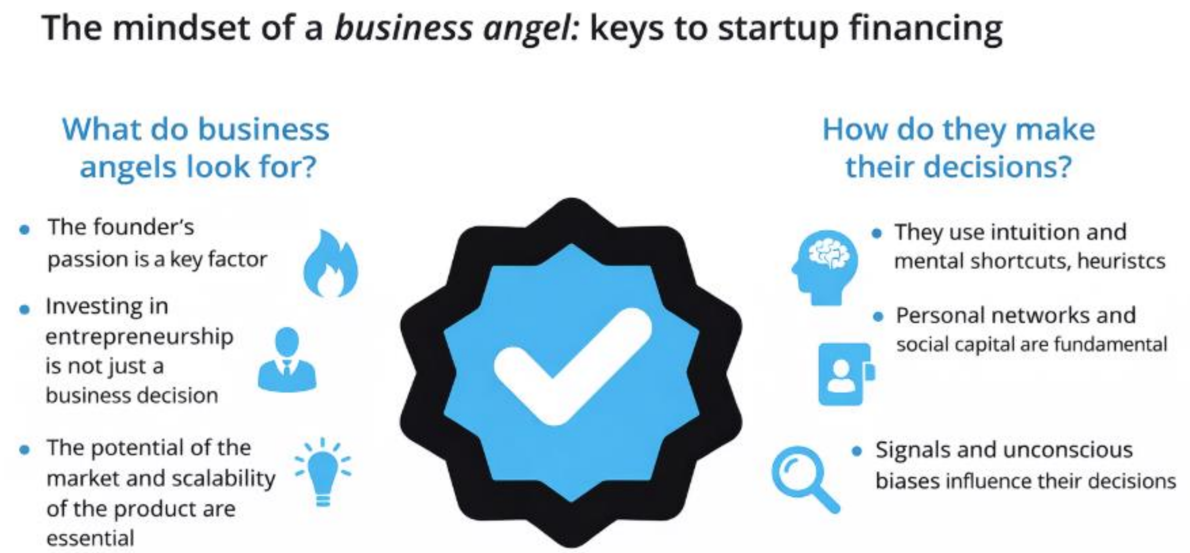

Figure 1. The Mind of the Business Angel: Keys to Start-up Financing.
Source: Author 2026

The sources provide a robust theoretical and empirical basis for identifying the variables that influence decision-making. In these early stages of investment, characterised by extreme uncertainty, investors do not use purely rational models, but rather combine formal analysis with intuition and emotional reactions. Below are the dimensions established in the questionnaire based on two central approaches: the rational and empirical epistemological approach (financial/market); and the introspective approach (emotional/intuitive).

Rational and Empirical Epistemological Dimension
According to Nguyen (2019), from this perspective, the BA's decision is based on observable information: growth metrics, business model, market risk, exit strategy, signalling (patents, prototypes) and team quality, which serve as indicators of viability and potential return. These factors reflect the logic of evidence-based financing, where the investor applies structured analysis, *due diligence* and risk-return criteria to decide on their equity stake. It is important to note that the items considered in this approach focus on objective data, market metrics and tangible signs of viability.

Financial and Market Factors:

- Revenue growth: Considered by many investors to be the most important criterion.
- Profitability and business model: Assessment of financial sustainability and revenue structure.
- Market and execution risk: Concerns regarding market size, competition and the ability to bring the product to market.
- Exit Strategy: Although sometimes overlooked in the initial selection, the prospect of a liquidity event (IPO or acquisition) is a primary objective.

Signalling and Human Capital:

- Intellectual Property and Patents: These serve as signals of 'potential for appropriation' and technological viability.
- Prototypes: The existence of a functional product reduces the perception of technological risk.
- Management team track record: Quality, academic background and previous experience (entrepreneurial or managerial) of the founder and their team.

Contextual and Structural Factors:

- Founder's equity stake: BAs typically require the entrepreneur to have a significant financial commitment to the start-up.
- Co-investment and Networks: Membership of a Business Angels Network (BAN) facilitates due diligence, reduces risks and improves the flow of operations.
- Previous funding: Previous backing from other investors or grants acts as a seal of quality.

Introspective Dimension (Emotional and Intuitive)

This approach recognises that, under conditions of 'unknowable' uncertainty, intuition often takes precedence over formal analysis. In early stages and under extreme uncertainty, Niftyhontas (2024) shows that business angels do not follow purely rational models, but rather combine formal analysis with intuition, a 'good feeling' and emotional reactions towards the entrepreneur and the project. Emotions (enthusiasm, fear of missing out, personal affinity), the founder's perceived passion, relational trust, and biases or local preference decisively influence the final decision to invest or not.

Intuition and Cognition:

- Good feeling: An emotion-cognition dynamic where the investor combines their experience with intuition to predict extraordinary success.
- Decision heuristics: Use of simplified rules such as 'elimination by aspects' to reject projects that present immediate critical flaws.

Affective and Personality Factors:

- Entrepreneur's passion: Perceived passion (both for the product and for the act of entrepreneurship) generates positive emotional reactions in the investor and increases the intention to invest.
- Enthusiasm and tenacity: Motivational cues communicated during the presentation.
- Openness to feedback: Investors view it positively when the entrepreneur is receptive to advice and mentoring.

Relationship and Trust:

- Mutual trust: The entrepreneur's behaviour can build, damage or break trust, which is decisive in securing an offer.
- Investor-entrepreneur fit: The perception that both can work as 'co-entrepreneurs' or 'co-creators'.
- Similarity and Homophily: A tendency to invest in people with similar profiles, values or genders.

Personal Biases and Motivations:

- Local bias: A preference for investing in companies located geographically close by to facilitate supervision and personal interaction.
- Altruism and Vocation: Non-financial motivations such as the desire to contribute to society, help the community or satisfy a need for personal achievement.

In the context of investing in unlisted companies, *business angels'* decision-making takes the form of a hybrid process in which well-founded financial judgements and subjective assessments of an emotional and intuitive nature converge inseparably.

Regarding angel investment and venture capital, Nguyen (2019) asserts that, under conditions of high uncertainty and information asymmetry, these investors combine a rational analysis of economic indicators with introspective assessments based on intuition, interpersonal trust and the emotional reactions evoked by the entrepreneurial team.

In this research, the emotional and financial factors influencing the decision of private investors, *business angels* (BA), to invest in the capital of unlisted companies are understood as the integrated set of criteria and judgements that guide the assessment of the investment opportunity, articulating two main approaches: (a) a Rational and Empirical Epistemological Dimension, underpinned by observable data and objective metrics, and (b) an

Introspective Dimension (emotional and intuitive), supported by subjective processes of interpretation, understanding, intuition and socio-affective evaluation of the project and its promoters.

From the rational and empirical epistemological dimension, financial factors encompass consideration of revenue growth, expected profitability, market and execution risk, as well as the clarity of the business model and the provision for exit mechanisms (e.g. IPO or acquisition). These elements are complemented by indicators of legitimacy and quality, such as the existence of intellectual property, functional prototypes, the track record of the management team, previous experience, and the participation of other investors or co-investment networks , which act as certifiers of the company's economic and technological viability. From this perspective, the BA applies a formal analytical approach, assessing the risk–return ratio based on verifiable quantitative and qualitative information, consistent with the assumptions of bounded rationality and evaluation based on available evidence.

For its part, the introspective dimension (emotional and intuitive) recognises that, in the early stages of business development, the investor is not limited to a strictly financial calculation, but rather draws upon cognitive and affective frameworks that shape what is often described as a 'good feeling' or informed hunch. This area includes intuition derived from prior experience, the use of decision-making heuristics (for example, the early elimination of projects upon the detection of critical flaws), as well as the influence of emotions and personality traits of both the BA and the entrepreneur, notably the perceived passion for the project, enthusiasm, tenacity and openness to feedback.

Likewise, the quality of the relationship and the level of trust between the investor and the entrepreneurial team are considered decisive, as the decision to invest often involves establishing a bond of co-entrepreneurship and strategic support over time. Factors such as the perceived 'fit' between the investor's expectations and the entrepreneur's vision, similarity in values, backgrounds or working styles (homophily), together with personal biases and motivations (preference for geographically close investments, altruistic motivations or a desire to contribute to the community, need for achievement and prestige), act as filters that can enhance or inhibit the intention to invest, even when financial indicators are favourable.

In summary, the variable "emotional and financial factors influencing the decision of private investors, business angels (BA), to invest in the capital of unlisted companies" is defined by Arroyo-Revilla et al. (2025) as the integrated set of rational and subjective criteria that guide business angels' (BA) judgement regarding the advisability of investing in unlisted companies, combining, on the one hand, the assessment of financial and market variables (revenue growth, expected profitability, risk, signals of legitimacy and transaction structure) and, on the other, introspective processes of an emotional and intuitive nature (intuition, passions, trust, biases and personal motivations) that shape the perception of opportunity and risk in contexts of high uncertainty.

The variable, as shown in **Table 22**, is viewed from an operational perspective as the combination of: (1) financial, market, signalling and transaction structure criteria, which inform a rational judgement regarding the viability and potential return on investment of ; and (2) introspective processes of an emotional and intuitive nature, mediated by experience, trust, the perception of the entrepreneur's passion and commitment, and the BA's personal biases and motivations, which shape the subjective perception of opportunity and risk under conditions of high uncertainty. This conception allows us to capture the true complexity of business angels' decision-making, moving beyond purely economic models and explicitly incorporating the socio-emotional dimension of the investment process.

Table 22. Operationalisation of the variable

Variable	Conceptual definition	Operational definition	Dimensions	Indicators	Items
Emotional and financial factors influencing the decision of private investors, business angels (BA), to invest in the capital of unlisted companies	The integrated set of rational and subjective criteria that guide business angels' (BA) judgement regarding the advisability of investing in unlisted companies, combining, on the one hand, the assessment of financial and market variables (revenue growth, expected profitability, risk, signals of legitimacy and	The combination of: (1) financial, market, signalling and transaction structure criteria, which inform a rational judgement regarding the viability and potential return on investment; and (2) introspective processes of an emotional and intuitive nature, mediated by	Investor profile	Age group Place of residence	**1** **2** **3**
			Investment experience	Investment vehicle	4 5
			Rational and empirical epistemological dimension	Financial and market factors	6A 10B 12C 12D
				Signalling and human capital factors	10C 10D 10E 12A

	transaction structure) and, on the other, introspective processes of an emotional and intuitive nature (intuition, passions, trust, biases and personal motivations) that shape the perception of opportunity and risk in contexts of high uncertainty.	experience, trust, the perception of the entrepreneur's passion and commitment, and the BA's personal biases and motivations, which shape the subjective perception of opportunity and risk under conditions of high uncertainty.		Contextual and structural factors	11 13 12B
			Introspective dimension (emotional and intuitive)	Intuition and cognition	7 15C
				Affective and personality factors	10A
				Relationship and trust	6B 6C
				Personal biases and motivation	6D 6E
			Risks and profitability	Assessing risks Net worth Return on investment	15A 15B 16 17 18
			Challenges and litigation	Business failure Shareholder agreements	19 20 21

This section presents the results of the *correlational analyses* based on the responses given in the questionnaire administered to Business Angels (BA) who invest in unlisted companies. For the calculation of the financial index and the emotional index, the dimensions and indicators shown in Table 23 were considered. From the sum of the results obtained for each item within the corresponding dimension, the total values for the *Rational and Empirical epistemological dimension* (Scale A) and the *Introspective (Emotional and Intuitive) dimension* (Scale B) were derived, which enabled the relationship between the variables to be determined.

Table 23. Rational-Empirical Epistemological Dimension and the Introspective (Emotional and Intuitive) Dimension and their indicators

DIMENSIONS	INDICATORS			
Rational and Empirical Epistemological SCALE A	Financial and market factors. (FFM)	Signalling and human capital factors (SHCF).	Context and structure factors (CSF).	
Introspective (Emotional and Intuitive) SCALE B	Intuition and cognition. (IC).	Affective and personality factors. (FAP).	Relationship and trust. (RC).	Personal biases and motivation (PBM).

Source: Author 2026.

Table 24. Descriptive statistics for the finance scale variable and its respective dimensions

Descriptive Statistics

	Mean	Standard Deviation	N
EFinances	41.14	3.929	51
Financial	14.90	2.326	51
Signaling	16.53	1.604	51
Context	9.71	1.331	51

Table 24 presents the descriptive statistics for the finance scale variable and its respective dimensions: the mean and standard deviation based on N=51.

Table 25. Correlations between the values of the finance scale and its respective dimensions

Correlations		EFinances	Financial	Signaling	Context
Pearson Correlation	EFinances	1.000	0.809	0.727	0.662
	Financial	0.809	1.000	0.309	0.268
	Signaling	0.727	0.309	1.000	0.402
	Context	0.662	0.268	0.402	1.000
Sig. (one-tailed)	EFinances	.	0.000	0.000	0.000
	Financial	0.000	.	0.014	0.028
	Signaling	0.000	0.014	.	0.002
	Context	0.000	0.028	0.002	.
N	EFinances	51	51	51	51
	Financial	51	51	51	51
	Signaling	51	51	51	51
	Context	51	51	51	51

Table 25 shows the correlations between the finance scale and its respective dimensions. The total scores on the finance scale correlate positively and moderately to strongly with the financial dimension ($r = 0.80$, $p < 0.05$). The signalling and human capital dimension has an $r = 0.72$, p-value < 0.05. And with the context and structure dimension, 0.66, p-value < 0.05.

The financial dimension correlates positively and weakly with the signalling and human capital dimensions, with an $r = 0.30$, p-value $0.014 < 0.05$. And with the context and structure dimension, it has an $r = 0.26$, with a p-value < 0.05.

The signalling and human capital dimension exhibits a moderate correlation, $r = 0.40$, with the context and structure dimension, with a p-value of $0.02 < 0.05$.

Table 26. Descriptive statistics for the emotional scale

Descriptive Statistics

	Mean	Standard Deviation	N
Eemotional	23.73	3.858	51
Intuition	5.82	2.161	51
Affective	3.61	0.896	51
Trust	7.98	1.516	51
Interpersonal	6.31	1.794	51

Table 26 presents the descriptive statistics for the emotional scale and its respective dimensions: mean and standard deviation based on $N = 51$.

Table 27. Correlations between the values of the emotional scale and its respective dimensions

Correlations		Emotional	Intuition	Affective	Trust	Interpersonal
Pearson Correlation	Eemotional	1.000	0.695	0.298	0.720	0.556
	Intuition	0.695	1.000	0.036	0.322	-0.001
	Affective	0.298	0.036	1.000	0.141	-0.021
	Trust	0.720	0.322	0.141	1.000	0.245
	Interpersonal	0.556	-0.001	-0.021	0.245	1.000
Sig. (one-tailed)	Eemotional	.	0.000	0.017	0.000	0.000
	Intuition	0.000	.	0.401	0.011	0.497
	Affective	0.017	0.401	.	0.161	0.441
	Trust	0.000	0.011	0.161	.	0.042
	Interpersonal	0.000	0.497	0.441	0.042	.
N	Eemotional	51	51	51	51	51
	Intuition	51	51	51	51	51
	Affective	51	51	51	51	51
	Trust	51	51	51	51	51

Correlations	Emotional	Intuition	Affective	Trust	Interpersonal
Interpersonal	51	51	51	51	51

In Table 27, which shows the correlations between the emotional scale and its respective dimensions, it can be seen that the emotional scale correlates positively and significantly with its constituent dimensions, at a moderate to low level. Thus, the relationship between the intuition dimension and the emotional scale shows an $r = 0.69$ with a p-value < 0.05; the affective dimension has a low correlation of $r = 0.29$ with a p-value < 0.05. Meanwhile, the trust relationships dimension shows an $r = 0.72$, indicating a positive and significant relationship with a p-value < 0.05. And with personal motivation, it reflects an $r = 0.55$ with a significant p-value < 0.05.

Let us now examine each sub-dimension of the emotional scale: The intuition dimension correlates positively and moderately with the emotional scale. However, the correlation between the affective dimension and intuition is very low at 0.036 and not significant, with a p-value of 0.05. Meanwhile, the intuition-trust relationships dimension shows an $r = 0.32$, indicating a low but significant correlation, with a p-value < 0.05. Furthermore, when examining the intuition dimension in relation to personal motivation, an insignificant $r = -0.001$ is observed.

As for the affective dimension, it is observed to correlate positively and significantly with the emotional scale; however, it does not correlate with the dimensions of intuition, trust relationships and personal motivation, given that the r values are low and non-significant.

The trust relationships dimension correlates positively and significantly with the emotional scale, intuition and personal motivation; however, it does not correlate with the affective dimension, as the $r = 0.14$ is not significant, with a p-value > 0.05.

The personal motivation dimension correlates positively with the emotional scale and with trust relationships; however, it does not correlate with the intuition and affective dimensions.

Multivariate analysis

The multivariate analysis used as the basis for this inferential study has various applications in management and research, ranging from creating profiles of groups of individuals and determining levels of satisfaction, to processing and analysing satisfaction surveys (political, economic), including public opinion surveys, for which perception scales are usually employed, and identifying comparable cities to address similar (social and economic) policies.

In line with the above, the purpose of multivariate analysis is to facilitate the joint study of multiple variables (qualitative and quantitative), seeking to obtain useful information to support decision-making; to this end, the number of variables is reduced and large datasets are synthesised, aiming for better interpretation and, consequently, a deeper understanding of the phenomenon under study.

Multivariate Analysis: its usefulness

Multivariate analysis techniques, which include *discriminant analysis*, enable the description, explanation and, on occasion, prediction of business and financial behaviour through the joint and simultaneous examination of a series of characteristics and indicators directly or indirectly related to the economic and financial situation of the company/start-up/BA (Azofra, 1995), for each individual or element studied. In this regard, the studies reported by Altman (1968), Meyer and Howard (1970), Altman et al. (1977), Gudmundsson (1977) and Pastena and Ruland (1986) in this field are considered classic.

In particular, multivariate analysis techniques make it possible to establish relationships and operational laws, investigate latent structures, and test various ways of organising the raw data into known and easily usable structures. Furthermore, the extensive databases required by the models of modern corporate finance theory make the use of multivariate techniques essential when handling and interpreting such a volume of information, especially when analysing the behaviour of different groups of companies or entities, whether individually or associated in networks or syndicates (Azofra, 1995).

In short, it can be said that the use of multivariate methods and techniques in the field of financial analysis serves a threefold purpose, according to Aguiar and Fernández (1988): a) to summarise the information in order to facilitate its handling and interpretation; b) to identify patterns of behaviour which, whilst not directly deducible from the values of the variables, are implicit in the relationships established internally between them; and finally c) to address complex problems characterised by the interrelation of the variables analysed, the resolution of which requires simultaneous processing of all available information. As regards the case under consideration in this study, the technique employed is *discriminant analysis* as a means of classifying certain entities in relation to others.

According to Hair et al. (1999), *discriminant analysis* is a multivariate analysis technique in which, based on a set of elements belonging to different pre-established groups, the aim is to analyse information relating to a series of independent variables with a dual explanatory and predictive purpose. The membership of the elements under study to one group or another is introduced into the analysis via a qualitative variable that takes as many values as there are existing groups. The initially available information is synthesised into discriminant functions, which are simply linear combinations of the discriminant or classifying variables. The aim is for the values of this function to differ as much as possible from one group to another and to be very similar for the elements within the same group. Once the discriminant function has been defined, a criterion must be established for classifying new elements.

Indicator results

At this point, it should be noted that the empirical analysis was carried out using the IBM SPSS Statistics v.20.0.0 statistical package. As with any statistical technique, *discriminant analysis* requires, at least from a theoretical perspective, that a number of initial conditions be met. Thus, the variables used (discriminant variables) should satisfy the following properties: multivariate normality; equality of variance-covariance matrices across groups; and absence of multicollinearity.

To provide an overview of the analysis carried out, it can be stated that the multivariate results indicate that financial and emotional factors do discriminate between *Business Angel* profiles according to their average investment level, but the differences between specific groups are subtle and do not always reach statistical significance in pair-wise comparisons. Therefore, the basic assumptions of MANOVA are met, which indicate the following: the Box M statistic is not significant, meaning that the covariance matrices are homogeneous across groups. The test for homogeneity of variances is also not significant, which permits the comparison of means using ANOVA. The multivariate statistics (Pillai, Wilks, Hotelling, Roy) show a significant overall effect of the average investment groups on the dependent variables: Financial Approach (rational/empirical) and Emotional Approach (introspective/intuitive), implying that the financial-emotional profile of the BA is associated with their level of investment.

Table 28. Number of subjects per group for the average investment group variable

Within-Subjects Factors		Value Label	N
GIM	1	High	16
	2	Medium	30
	3	Low	5

Source: Author 2026.

Table 29. Descriptive statistics for the variables E Finance and E Emotional in the Average Investment Groups (AIG)

Descriptive Statistics	GIM	Mean	Standard Deviation	N
EFinances	High	41.38	5.175	16
	Medium	41.10	3.325	30
	Low	40.60	3.435	5
	Total	41.14	3.929	51
Eemotional	High	24.56	3.741	16
	Medium	23.60	3.529	30
	Low	21.80	5.975	5
	Total	**23.73**	**3.858**	**51**

Source: Author 2026

Table 30. Chi-square test of equality of covariance matrices [a]

M de Box	7,443
F	1,085
df1	6
df1	959,396
Sig.	0.370

Source: Author 2026

The Box test shown in Table 30 indicates that the null hypothesis is not rejected; this hypothesis states that the observed covariance matrices of the dependent variable are equal across all groups. Consequently, the null hypothesis that the covariance matrices of the dependent variables are equal across groups is accepted.

Table 31. Multivariate tests

Multivariate Tests[a] Effect		**Value**	**F**	**Hypothesis df**	**Error df**	**Sig.**
GIM	Pillai's Trace	1.022	16.709	6.000	96.000	0.000
	Wilks' Lambda	0.008	160.265[b]	6.000	94.000	0.000
	Hotelling's Trace	121.371	930.513	6.000	92.000	0.000
	Roy's Largest Root	121.341	1941.448[c]	3.000	48.000	0.000

a. Design: GIM
b. Exact statistic
c. The statistic is an upper bound on F that yields a lower bound on the significance level
Source: Author 2026

The interpretation of Pillai, Wilks, Hotelling and Roy in SPSS (MANOVA) is based on the significance level ($p<0.05$) to reject the equality of means between groups. If the p-value is low, at least one group differs in the dependent variables. Wilks' Lambda (close to 0) and Pillai's Trace (high value) are the most robust criteria.

- Wilks' Lambda: This is the most commonly used. It ranges from 0 to 1. Values closer to 0 indicate greater significance and contribution to the model, suggesting that the null hypothesis of equal means should be rejected.
- Pillai's Trace: This is considered the most robust criterion in the face of violations of assumptions (such as the homogeneity of covariance matrices). Higher values indicate a greater contribution of the effects to the model.
- Hotelling's Trace: The sum of the eigenvalues. Higher values indicate greater significance.
- Roy's Largest Root: Focuses on the first discriminant function. It is the most powerful if the data strictly satisfy the assumptions.

Table 32. Test for homogeneity of variance

Levene's Test of Equality of Error Variances[a]	F	df1	df2	Sig.
EFinances	1.608	2	48	0.211
Eemotional	1.047	2	48	0.359

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
a. Design: GIM
Source: Author 2026

The test for homogeneity of variance shown in Table 32, with a p-value > 0.05, allows us to assume that the null hypothesis of homogeneity of variance is not rejected. The groups are homogeneous in terms of their error variances, which is why they can be compared.

Table 33. ANOVA for the E.Finance and E.Emotional variables in the medium investment groups

Tests of Between-Subjects Effects		**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Source	**Dependent Variable**					
Model	EFinanzas	86308.350[a]	3	28769.450	1794.236	0.000
	Emotional	28738.063[b]	3	9579.354	644.047	0.000
GIM	EFinanzas	86308.350	3	28769.450	1794.236	0.000
	Emotional	28738.063	3	9579.354	644.047	0.000
Error	EFinanzas	769.650	48	16.034		
	Emotional	713.938	48	14.874		
Total	EFinanzas	87078.000	51			

Tests of Between-Subjects Effects	Type III Sum of Squares	df	Mean Square	F	Sig.
Emotional	29452.000	51			

a. $R^2 = 0.991$ (Adjusted $R^2 = 0.991$)
b. $R^2 = 0.976$ (Adjusted $R^2 = 0.974$)

Source: Author 2026

Table 33 shows that, when each scale is considered separately, there are statistically significant differences between the medium-investment groups on the financial scale and on the emotional scale (F with $p < 0.05$). Theoretically, this supports the idea that the relative 'weight' of the rational-empirical epistemological approach (finance, market, signalling, structure) and the introspective emotional-intuitive approach (subjectivity, affections, trust, motivations) varies according to the volume of capital that Business Angels commit.

Based on the preceding arguments, it is assumed that investment levels are not random with respect to these dimensions: certain patterns of financial and emotional valuation tend to cluster within specific investment ranges, which is consistent with the literature describing more 'analytical' BA profiles as opposed to more 'intuitive' ones. Therefore, a group with a higher mean on the financial scale could correspond to Business Angels making larger investments, driven by an explicit pursuit of profitability, risk control and the quality of signalling (patents, co-investors, the team's track record). The above allows us to infer that these two dimensions (Financial and Emotional) are not only well defined theoretically, but also show significant differences between the average investment groups; in other words, your typology of Business Angels by investment level is statistically reflected in their financial and emotional scores.

That being the case, as shown in Table 33, there are statistically significant differences between the average investment groups regarding the financial scale and the emotional scale, with F-values and p-values of significance that are < 0.05.

Table 34. Mean values, standard error and confidence intervals for the average investment groups and the independent variables E.Finance and E.Emotional.

Dependent Variable	GIM	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
EFinances	High	41.375	1.001	39.362	43.388
	Medium	41.100	0.731	39.630	42.570
	Low	40.600	1.791	36.999	44.201
Eemotional	High	24.563	0.964	22.624	26.501
	Medium	23.600	0.704	22.184	25.016
	Low	21.800	1.725	18.332	25.268

Source: Author 2026

Table 34 presents the means, standard errors and confidence intervals for each investment group on both scales, enabling us to characterise the profile of each group. It shows which groups exhibit higher mean values on *the financial* and/or *emotional scales*, and whether or not the confidence intervals overlap, providing a visual indication of the practical magnitude of the differences.

From a theoretical perspective, this information allows us to characterise the types of BA: for example, groups with high scores on both scales may represent 'hybrid' investors who combine thorough *due diligence* with a strong emphasis on intuition and personal relationships; groups with a relatively higher score on the emotional dimension may reflect BAs that emphasise the fit with the entrepreneur, trust and personal motivation as much as, or more than, market indicators.

Table 35. Post hoc tests of multiple comparisons between the average investment groups and the E.Finance and E.Emotional variables.

Multiple Comparisons (LSD)						**95% Confidence Interval**	
Dependent Variable	**(I) GIM**	**(J) GIM**	**Mean Difference (I–J)**	**Std. Error**	**Sig.**	**Lower Bound**	**Upper Bound**
EFinances	High	Medium	0.27	1.240	0.825	-2.22	2.77
		Low	0.77	2.052	0.707	-3.35	4.90
	Medium	High	-0.27	1.240	0.825	-2.77	2.22
		Low	0.50	1.934	0.797	-3.39	4.39
	Low	High	-0.77	2.052	0.707	-4.90	3.35
		Medium	-0.50	1.934	0.797	-4.39	3.39
Emotional	High	Medium	0.96	1.194	0.424	-1.44	3.36
		Low	2.76	1.976	0.169	-1.21	6.74
	Medium	High	-0.96	1.194	0.424	-3.36	1.44
		Low	1.80	1.863	0.339	-1.95	5.55
	Low	High	-2.76	1.976	0.169	-6.74	1.21
		Medium	-1.80	1.863	0.339	-5.55	1.95

Comparaciones múltiples

DMS

						Intervalo de confianza al 95%	
Variable dependiente	(I) GIM	(J) GIM	Diferencia de medias (I-J)	Error estándar	Sig.	Límite inferior	Límite superior
EFinanzas	alto	medio	,27	1,240	,825	-2,22	2,77
		bajo	,77	2,052	,707	-3,35	4,90
	medio	alto	-,27	1,240	,825	-2,77	2,22
		bajo	,50	1,934	,797	-3,39	4,39
	bajo	alto	-,77	2,052	,707	-4,90	3,35
		medio	-,50	1,934	,797	-4,39	3,39
Eemocional	alto	medio	,96	1,194	,424	-1,44	3,36
		bajo	2,76	1,976	,169	-1,21	6,74
	medio	alto	-,96	1,194	,424	-3,36	1,44
		bajo	1,80	1,863	,339	-1,95	5,55
	bajo	alto	-2,76	1,976	,169	-6,74	1,21
		medio	-1,80	1,863	,339	-5,55	1,95

Se basa en las medias observadas.
El término de error es la media cuadrática(Error) = 14,874.

Source: Author 2026

When considering the findings in Table 35, despite the overall significance of the model and the ANOVAs, the *post hoc* comparisons do not show statistically significant differences between pairs of groups on the *financial* and *emotional approach* scales. Methodologically, this indicates that the overall effect exists (the groups are not identical), but the differences between each pair of groups, once Type I error has been corrected for multiple comparisons, do not reach the conventional threshold of significance.

Theoretically, this suggests that BA profiles according to investment level are distinguished more by smooth gradients than by sharp breaks: the groups tend to overlap in their financial and emotional patterns, in line with the conception of *the business angel* as a hybrid decision-maker who almost always combines financial rationality and intuition, albeit in slightly different proportions. This could even vary depending on whether the decision stage is prior to, concurrent with, or subsequent to investment in unlisted companies. Therefore, as observed in Table 35, there are no statistical differences between the medium-investment groups with regard to the Financial Dimension and the Emotional Dimension.

Main results (summary)

Table 5. Summary of key empirical results

Dimension analysed	Main finding	Interpretation
Investor profile (N=76)	Predominance of middle-aged and senior BA	Mature and experienced ecosystem
Financial index (N=51)	High mean and moderate dispersion	Widespread use of rational analysis
Emotional index (N=51)	High mean, particularly in terms of trust	Centrality of the investor–entrepreneur relationship
Emotion ↔ % equity	Significant positive correlation	Emotion explains risk exposure
Finance ↔ expected return	Significant positive correlation	Finance shapes ex ante expectations
Actual return	No significant correlations	Stochastic nature of the result

Source: own work.

MANOVA analysis: meaning and interpretation

MANOVA (Multivariate Analysis of Variance) is a statistical technique that allows us to analyse whether different groups differ **by simultaneously considering several dependent variables**. Unlike classical ANOVA, which analyses one variable at a time, MANOVA examines joint patterns.
In this study, MANOVA addresses the following question:
Do Business Angels who make different levels of average investment differ in the combined pattern of financial and emotional factors that guide their decision?
The dependent variables are the **financial index** and the **emotional index**, and the grouping variable is the **average investment level**.

MANOVA indices: what they are and what they indicate
MANOVA provides several alternative statistics that answer the same question from different mathematical angles. The convergence of results reinforces the robustness of the analysis.
Pillai trace
- This is the most conservative and robust statistic.
- It measures the proportion of joint variance explained by group membership.
- In this study (coefficient = 0.27; $p < 0.05$), the results indicate that a significant proportion of the combined variation in finance and emotions is associated with the level of investment.

Wilks' lambda
- Measures the degree of overlap between groups.
- Values close to 1 indicate similarity; values close to 0 indicate difference.
- The value obtained (0.73; $p < 0.05$) suggests overlap, but not equivalence, between decision-making profiles.

Hotelling's trace
- Summarises the cumulative magnitude of multivariate differences.
- The significant result confirms the existence of an overall effect.

Roy's principal root
- Identifies the dimension where the separation between groups is greatest.
- A significant value indicates that there is at least one combination of financial and emotional factors where the groups differ clearly.

Taken together, the four statistics confirm a **significant**, though not extreme, **multivariate effect**, consistent with the existence of gradients rather than pure typologies.

METHODOLOGICAL AND EMPIRICAL CONCLUSIONS

From a methodological perspective, the study demonstrates the usefulness of combining descriptive statistics with inferential and multivariate analyses to capture the true complexity of decision-making in contexts of high uncertainty. The distinction between a broad descriptive sample (N=76) and a smaller analytical subsample (N=51) is not a weakness, but a strength, as it allows:

- Characterise the Business Angels ecosystem comprehensively.
- To delve analytically into the decision-making patterns of cases with complete information.

Responses excluded from the inferential analysis provide valuable information on the general profile and heterogeneity of the group, but their exclusion prevents biases arising from missing values in composite scales. The 51 cases analysed in depth represent the most consistent investors in terms of response and allow for the identification of structural relationships between variables.

From an empirical perspective, the results confirm that the investment decision of Business Angels is a **hybrid process**, where:

- Financial factors shape return expectations and ex ante evaluation criteria.
- Emotional and relational factors explain risk tolerance, capital exposure and investment patience.
- Neither of the two dimensions, on its own, explains the results obtained, which reinforces the view of investment in start-ups as a phenomenon that is not fully predictable.

The MANOVA supports this interpretation by showing significant differences between investment groups, without rigid segmentations, suggesting the existence of gradual decision-making styles.

Conclusions in light of the results

The average investment by Business Angels is significantly related to the combined configuration of financial and emotional factors, empirically confirming the dual nature (rational-empirical and introspective emotional-intuitive) of their decision-making process. However, the differences between investment groups are not sufficiently marked, in terms of specific means, to clearly distinguish discrete BA profiles based on the scales applied; rather, a continuum of positions is observed where all groups combine, to some extent, financial analysis and emotional judgement.

The multivariate model is significant, but the *post hoc* differences are not; this reflects an overlap of profiles rather than extreme typologies; in fact, the results show gradients in the use of financial and emotional criteria depending on the level of investment, which may be linked to trajectories of experience, risk tolerance or motivations (economic vs. altruistic) highlighted in recent literature. This reinforces the idea that, although the overall effect exists, the groups do not form radically distinct 'pure types', but rather there are overlaps; that is, they are variations of the same hybrid financial-emotional pattern, which fits well with the conceptual definition of the variable and with the behavioural finance literature on BA.

The results are consistent with previous research suggesting that, under high uncertainty and information asymmetry, retail investors integrate indicators of growth, risk, signalling and transaction structure with intuition, relational trust, passions and personal motivations to decide whether to 'invest or not to invest'. The robustness of the internal correlations within the *financial* and *emotional* scales and the overall significance of the MANOVA suggest that the conceptual model (two broad dimensions articulated across several sub-dimensions) is suitable for capturing the complexity of investment decision-making in unlisted companies.

Recommendations

For practice and policy:

Design training and support programmes for entrepreneurs that simultaneously address the financial preparation of the project (business model, metrics, signalling) and the building of trust, a passionate narrative and a relational fit with the BA, as both sets of factors are relevant to the decision to invest.

Suggest to business angel networks and public agencies that they segment far less by rigid profiles (purely financial vs. purely emotional) and more by investment ranges and combinations of motivations, taking advantage of the fact that the results indicate a range of intermediate decision-making styles.

Based on the quantitative results obtained, it is recommended that complementary or subsequent qualitative research be conducted, based on in-depth interviews and focused testimonies with BAs who invest in unlisted companies, in order to explore the perceptions, meanings and significance they attribute to financial factors (growth, profitability, risk, signalling, transaction structure) from a rational/empirical epistemological perspective, and to emotional and intuitive factors (subjectivity, intuition, trust, passions, personal motivations) from the introspective/experiential cognitive- n approach that shapes the framework of their decision to invest in the capital of these companies/start-ups. This approach would allow for a deeper understanding of the hybrid decision-making logic identified in the multivariate analysis and refine the operationalisation of the variable(s) 'introspective/emotional and rational/financial factors', incorporating nuances that are difficult to capture using standardised scales.

Limitations of the research

Firstly, the study is based on a cross-sectional design and data collected at a single point in time, which allows us to identify associations between emotional and financial factors and business angels' (BAs) investment in the capital of unlisted companies, but does not enable us to establish causal relationships or track the evolution of decision-making criteria over time. This limitation suggests that the results should be interpreted as a 'snapshot' of BAs' decision-making patterns in the context analysed, rather than as dynamic trajectories of change.

Secondly, the information used comes from a standardised questionnaire, constructed on the basis of the distinction between the *rational and empirical epistemological dimension* and the *introspective, emotional and intuitive dimension*, using Likert-type scales and a predefined operationalisation of financial and emotional factors. Although this approach provides a robust framework for multivariate analysis, it restricts the spontaneous expression of the subjective meanings that investors attribute to their decisions, potentially leaving out relevant nuances of day-to-day investment experience.

Thirdly, the sample is limited to *business angels* investing in unlisted companies, which is a strength for gaining an in-depth understanding of this specific ecosystem, but limits the generalisation of the results to other geographical or institutional contexts. Differences in the development of the private equity market, co-investment networks, regulation or entrepreneurial culture may give rise to distinct patterns in the combination of financial and emotional factors.

Finally, whilst the multivariate analysis confirms a significant overall effect of average investment groups on the financial and emotional dimensions, multiple comparisons between groups do not always show statistically significant differences across all possible combinations. This result suggests that the identified investor profiles lie on a continuum, with overlaps between groups and without completely clear- r distinct segmentations, which must be taken into account when interpreting the typology of *business angels* derived from the study.

Future research

A promising first line of research involves developing complementary qualitative studies, based on in-depth interviews and/or focus groups with *business angels* at different investment levels. This type of approach would allow us to explore how investors narratively construct the relationship between financial metrics (growth, profitability, risk, signalling, deal structure) and emotional and intuitive processes (*good feeling*, trust, affinity with the entrepreneurial team, personal motivations), providing a richer understanding of the hybrid decision-making logic evidenced in the quantitative analysis.

Secondly, it would be appropriate to carry out sequential or longitudinal mixed-methods designs that collect data in several waves, for example, by following investors across different deals or investment cycles. This would make it possible to analyse whether the relative weight of financial and emotional factors remains stable or varies according to the project phase, the BA's accumulated experience or changes in the economic environment, as well as to examine the impact of these factors on the actual investment outcomes (exits, failures, returns obtained).

Another relevant line of work is the comparison between ecosystems, in which the study could be replicated in other Spanish or European regions with different levels of maturity in the *business angel* market, thereby allowing us to assess to what extent the interplay of emotional and financial factors observed is specific to this context or reflects more general patterns. This type of comparative analysis could also incorporate institutional variables (public support policies, fiscal frameworks, co-investment networks) that help explain possible divergences.

Finally, future research could delve deeper into specific sub-dimensions of the 'emotional and financial factors' variable, such as relational trust, homophily and local bias, as well as risk assessment or non-financial motivations (altruism, contribution to the ecosystem, pursuit of prestige), examining their interaction through more complex structural models or discrete choice experiments.

Taken together, these lines of inquiry would enable progress towards a deeper and more dynamic understanding of decision-making in informal venture capital, systematically integrating contributions from economics, psychology and behavioural finance. The study provides empirical evidence that business angels' investment decisions are shaped by an integrated process of financial rationality and emotional–introspective judgement. No pure investor profiles are identified, but rather variable combinations of both approaches. These findings contribute to the literature on behavioural finance and informal venture capital, and have implications for entrepreneurs, business angel networks and support policies.

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