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**STARTUPS' INVESTMENT ONTOLOGY: THE ENTREPRENEUR  
AND INVESTOR PERSPECTIVES.**

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Dissertation

Master's in Innovation and Technological Entrepreneurship

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## **Abstract**

Entrepreneurs and Investors need each other to accomplish their goals and build a remarkable achievement, that is, a Startup's success.

This research aimed at creating a model that aligns entrepreneur and investor perspectives, which puts together in a single place the main concepts of business funding via venture capital during a Startup's journey.

The Design Science Approach, with its balance between Relevance and Rigor, was the methodology applied. For its application, the Startups' Investment Ontology (SAPIENT) was developed with the building and validation of artifacts, namely, ten Sub-Ontologies and the Competence Questions. A multi-cultural group comprised of twenty-eight professionals (Entrepreneurs, Venture Capitalists, and Business Angels) from three continents evaluated, refined, and validated the model.

The Attribute Agreement Analysis, applied in the validation phase, indicated an overall approval of 95% for SAPIENT. The validation for whether the Ontology answers the Competence Questions received a general acceptance of 99%. In addition, comments from the interviewees and the Focus Group's participants are encouraging. Thus, the researcher believes there is robust evidence to claim a very successful model's evaluation.

As academic contributions, this study proposes a model that can be used to teach innovation and entrepreneurship. In addition, this work is the first to compile end-to-end validated information related to this subject. Finally, as managerial contributions, this study provides valuable information to the decision-making process related to funding via venture capital to entrepreneurs and investors.

**Keywords:** Venture Capital, Business Angel, Equity Investor, Entrepreneurship, Startup Funding

## **Resumo**

Empreendedores e Investidores precisam um do outro para atingir seus objetivos e construir uma conquista notável, ou seja, o sucesso de uma Startup.

Esta pesquisa visa criar um modelo que alinhe as perspectivas de Empreendedores e Investidores, que reúne em um único lugar os principais conceitos de financiamento empresarial via capital de risco, durante a jornada de uma Startup.

A abordagem de Design Science com seu equilíbrio entre Relevância e Rigor foi a metodologia aplicada. Para sua aplicação foi desenvolvida a Ontologia de Investimento em Startups (SAPIENT) com a construção e validação de artefactos, nomeadamente, dez Sub-Ontologias e as Questões de Competência. Um grupo multicultural, composto de vinte e oito profissionais (Empreendedores, Capitalistas de Risco e Investidores Anjo) de três continentes avaliou, refinou e validou o modelo.

A Análise de Attribute Agreement, aplicada na fase de validação, indicou uma aprovação geral de 95% para a SAPIENT. A validação para saber se as Perguntas de Competência são respondidas pela Ontologia recebeu uma aprovação geral de 99%. Além disso, os comentários dos entrevistados e dos participantes do Grupo de Foco são encorajadores. Assim, o pesquisador acredita que há provas sólidas para reivindicar uma avaliação muito bem-sucedida do modelo.

Como contribuições acadêmicas, este estudo constrói um modelo estrutural que pode ser útil no ensino da inovação e do empreendedorismo. Este trabalho é o primeiro a compilar informações validadas de ponta a ponta relacionadas a este assunto. Como contribuições gerenciais, este estudo fornece informações valiosas para o processo de tomada de decisões relacionadas ao financiamento via capital de risco, para Empreendedores e Investidores.

**Palavras-chave:** Capital de Risco, Investidor Anjo, Investidor de Equity, Empreendedorismo, Investimento em Startups

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## Abbreviations

### List of abbreviations (alphabetical order)

AGM	Angel Group Member
BA	Business Angel
CQ	Competence Question
E	Entrepreneur
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
EI	Entrepreneur & Investor
ESOP	Employee Stock Ownership Plan
EU 27	Political and economic union of 27 member states that are located primarily in Europe
I	Investor
IP	Intellectual Property
IA	Independent Business Angel Investor
ID	Interviewee Identification
IPO	Initial Public Offering
M&A	Merger & Acquisitions
MIETE	Master in Innovation and Technological Entrepreneurship
MOU	Memorandum of Understanding
MVP	Minimum Viable Product
n/a	Not Applicable
NFR	Non-Functional Requirements
ORSD	Ontology Requirements Specification Document
P	Participant
PEP	Politically Exposed Persons
RQ	Research Question
SAPIENT	Startups' Investment Ontology
SO	Sub-Ontology
UK	The United Kingdom

UML	Unified Modelling Language
USA	The United States of America
VC	Venture Capitalist Investor

# **1 Introduction**

## **1.1 Motivation**

Evidence shows that startups are the new business language in the world. Beyond borders and cultures, wherever one can go, it is possible to talk about this entrepreneurship category. According to recent research (Startup Genome, 2020), more than 80 startup ecosystems worldwide generate companies with over one billion US dollars in valuation. If we look back, only seven years before, in 2013, only four ecosystems could deliver this class of enterprises. This tremendous growth is directly related to more than 100 million startups born worldwide each year (InnMind, 2021). However, this kind of venture does not grow and prosper without proper funding.

The startup model venture (Blank & Dorf, 2020; Ries, 2011), due to its high-risk and high-uncertainty nature, requires a particular type of funding, mainly in its initial stages, classified as venture capital. In the United States, only 0,05% of startups raise venture capital (Fundera, 2020). For sure not all startup business is worthful of receiving investment. Nevertheless, the search for other's people money requires the capacity of the entrepreneur to translate their vision, passion, and dreams into pieces of information that the investors can understand, align with their goals and objectives and, why not, make a bet (Huang & Pearce, 2015, pp. 634-635).

For this reason and bringing together my learnings as a startup founder, previous personal experience in the innovation and entrepreneurship area with the knowledge acquired at the MIETE Masters program, I firmly believe that it is possible to increase the percentage of invested startups. Moreover, this can be done just by creating mechanisms that align different viewpoints from the same subject.

## **1.2 Scope of Work**

A startup is a temporary organization searching for a repeatable and scalable business model (Blank & Dorf, 2020; Ries, 2011), and this goal may never be achieved by several of them. For this reason, it's a high-risk and high-uncertainty venture that needs non-guaranteed investment to grow. Equity Investors are the ones that apply this kind of approach to funding business development.

The scope of this study aims at the relationship between Startups Entrepreneurs and Equity Investors, namely Business Angels and Venture Capitalists. This research aims to show the information assessed by Equity Investors and how entrepreneurs should prepare themselves

for this purpose. The greater the asymmetry in providing this information, the lower the entrepreneurs' chances of receiving approval from the investors. Nevertheless, it is beyond the scope of this work to identify the patterns of decision-making processes that may lead investors to decide to invest in some ventures over others.

### **1.3 Methodology**

The methodology used in this study is the Design Science approach, applied by building-evaluation iterations processes (van Aken, 2007). The building process develops the artifacts, and the evaluating process refines them.

An ontology was developed as the artifact of this research because it provides a common language for the knowledge about the research subject that must be shared and reused (Holsapple & Joshi, 2002). The approaches used in designing the ontology were: Inspiration; Deduction; and Collaboration (Holsapple & Joshi, 2002). The Unified Modelling Language (UML) was used as the modeling tool to produce the artifacts (Kogut et al., 2002).

The first step was building an initial version of the ontology based on the researcher's experience, the Supervisor's guidance, and grounded in the literature. Then, this version went through a series of iterations based on twenty-six online semi-structured interviews with investors and entrepreneurs (all profiles listed on Annex B). The result was the decreasing objections of the participants to get to a convergent point of view and reaching data saturation (Fusch & Ness, 2015).

The final step was to realize an online Focus Group (all profiles listed in Table 4) to objectively assess the compiled version of the previous step. This assessment was done by evaluating each Sub-Ontology (SO) from the perspective of four criteria: Completeness, Utility, Consistency, and Understandability (Bullinger & Reichwald, 2008). The Competence Questions (CQ) were also evaluated from the perspective of be answered or not be answered by the ontology (Pereira et al., 2019). At the end of the session, two open-ended questions were proposed to the participants, in order to get further feedback.

### **1.4 Structure of the document**

This dissertation is structured in five chapters, as follows:

- Chapter 1 introduces the work by showing the motivation for its development, the scope of the research, and an overview of the methodology applied.

- Chapter 2 reviews the literature related to the purpose of the study, indicating the article selection process and presenting a summary and analysis of the papers evaluated, and concludes with the gap found in this analysis of these papers.
- Chapter 3 presents in detail the methodology used, explaining the how, the what, and the why of the research conducted. It begins with the presentation of the Research Question and then shows the research design, based on Design Science Approach and in the process of an Ontology development.
- Chapter 4 is the core of this study, where the ontology is presented through the building and the validation processes of its artifacts, namely the Sub-Ontologies and the Competence Questions. Finally, it offers a discussion about the robustness of the results achieved and shows the ontology's limitations and recommendations for Entrepreneurs and Investors.
- Chapter 5 presents overall conclusions and signals future research based on the findings of the work.





## 2 Literature review

### 2.1 Introduction

This chapter starts with the keywords selection and the search performed in Scopus Database. We then describe how the articles were selected to be included in this process. Next, a brief bibliometric analysis is presented, and then synthesis is showed. Finally, it concludes with the gap identification as a result of the articles analyzed and the conclusions.

### 2.2 Paper selection process

The keywords used in the search query were “startup”, “risk”, “assessment”, and “venture capital decision-making”. The keywords used to refine the results further were “technolog”, “decision-making”, and “entrepreneurship”.

The logic applied to the literature review search is presented in Table 1. All the queries were performed in Scopus. In addition, R Studio and VOS Viewer together were used as supporting tools to help in the systematization of the process as described by (Pinto Ferreira et al., 2020).

**Table 1 - Search by Scopus Queries**

Scopus Query	Goal	Docs. Returned	Refined Selection	Docs. Returned	Articles Selected (by screening Title / Abstract)
(KEY (risk*) AND KEY (startup* OR "start-up*"))	Founders' point of view	243	R Studio used to select Field = "DE" with the string "TECHNOLO" <sup>1</sup>	21	5
KEY (risk* AND (startup* OR "start-up*")) AND (LIMIT-TO (SUBJAREA , "BUSI"))	Founders' point of view	48	-	48	1
(KEY (assessment AND (startup* OR "start-up*")) AND KEY (risk*))	Investors' point of view	89	(KEY (assessment AND (startup* OR "start-up*")) AND KEY (risk*) AND TITLE-ABS-KEY (investor* OR technolog*))	20	1
REF ("Venture capital decision-making")	Investors' point of view	402	Articles co-citation tool in VOS-Viewer	13	8

<sup>1</sup> This means to select only the papers which the author keywords contain the string "TECHNOLO"

Scopus Query	Goal	Docs. Returned	Refined Selection	Docs. Returned	Articles Selected (by screening Title / Abstract)
(REF ("venture capital decision-making") AND FIRSTAUTH (Zacharakis))	Investors' point of view	266	LIMIT-TO (DOCTYPE, "ar") AND (LIMIT-TO (EXACTKEYWORD, "Decision Making"))	18	4
			LIMIT-TO (DOCTYPE, "ar") AND (LIMIT-TO (EXACTKEYWORD, "Entrepreneurship"))	22	2
REF ("Carpentier & Suret, 2015")	Investors' point of view	50	-	50	4
TOTAL		1,096		192	25

The queries performed with the syntax “REF” aimed at identifying the main references to the venture capital decision-making processes from investors' perspectives. Thus, it was possible to select two articles that may be considered seminal in this subject. An older one, (Zacharakis & Meyer, 1998) and a more recent one (Carpentier & Suret, 2015). From identifying these two articles, searching by reference to each of them brought up a robust set of articles on the topic.

The selection process is presented in Figure 1, adapted from the Prisma flow diagram (Moher et al., 2009).

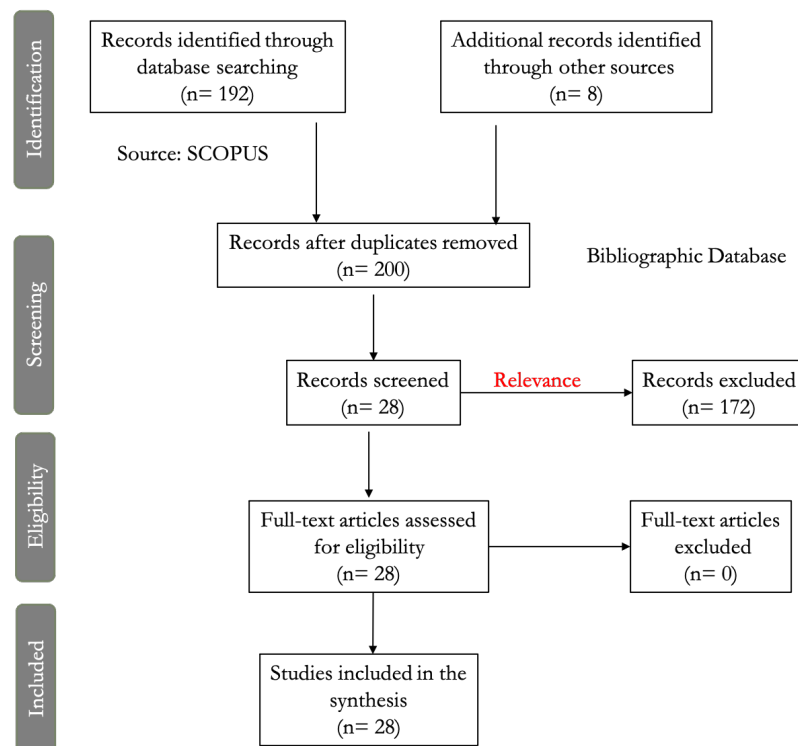
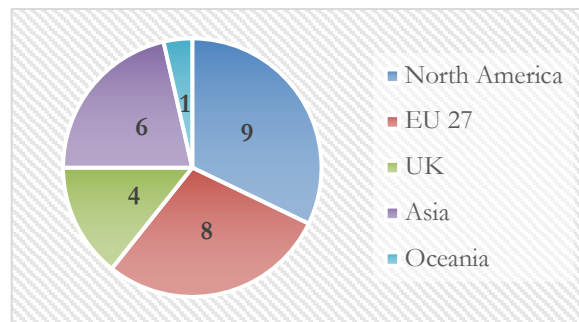


Figure 1 - Prisma Flow Diagram adapted from (Moher et al.,2009)

Within the 28 selected articles, the oldest one was published in 1998, the newest one was published in 2020, and the average publication year is 2015. The type of document indicates 27 Journal Articles and 1 Conference Paper.

### 2.3 Synthesis

Startups as an entrepreneurial type of business are present all around the world. This diversity in terms of the regions and cultures was found in the selected papers. For these papers, figure 2 shows the regions and the respective number of related papers.



**Figure 2 - Papers per region where the study was performed**

Table 4 in Annex A presents the synthesis of the selected articles. It shows the contributions of each article related to the topic under study, the limitations, and future research. The stakeholder's point of view in which the paper was written is also indicated (Entrepreneur, Venture Capitalist Investor, Business Angel Investor – in general, Independent Business Angel Investor, Angel Group Member Investor or Manager). The following paragraph makes a critical discussion of the contents of Table 4.

### 2.4 Analysis

This discussion aims to analyze Table 4 along with the most relevant issues for the research.

#### **Are there trade-offs between entrepreneurship and finance?**

“New digital technologies have transformed the nature of uncertainty inherent in entrepreneurial processes and outcomes as well as the ways of dealing with such uncertainty” (Nambisan, 2017, p. 1029) points to the need for “less bounded entrepreneurial outcomes and processes” (p.1032). On the other hand, Picken (2017) analyzes eight factors that influence the successful transition from a startup to a scalable enterprise. One of them is directly related to building financial capability to the endeavor and how entrepreneurs must look at a potential investor: “Investors and lenders are interested in the efficient utilization of the funds and expect a return on every dollar invested” (Picken, 2017, p.593). Besides,

(Cavallo et al., 2019) investigates how Angel Group Members (AGM) and Venture Capitalist (VC) funds affect digital new ventures' growth in their startup and scaleup phase.

### **Different risk perceptions**

Besides the inherent risks associated with the entrepreneurship activity (Li & Ahlstrom, 2019), "People take risks when the decision-making problems are framed as losses and avoid risks when they are framed as gains, in terms of framing effects" (pp. 902-903).

The work from (Frias et al., 2020) indicates factors that impact market risk during the investment screening process and identifies the circumstances where these elements are assessed differently by entrepreneurs versus AGMs.

An Analytic Network Process (ANP) methodology applied by (Milkova et al., 2018) helps VCs choose the best startup to invest in or ranking the cohort. This process makes it possible to make decisions under risks; however, this research is limited to only four startups in Russia.

### **The investor's decision-making process under various angles**

The investor's decision-making process to invest in a startup is analyzed from different perspectives among the evaluated articles.

The seminal work of (Zacharakis & Meyer, 1998) analyzes how VCs think about their decision-making process, applying the lens model from the social judgment theory (SJT) method (Brunswik, 1956). It is a basis for removing post hoc methods biases (as the previous work did). Although seminal, this article was written before the rise of digital startups as we know them nowadays, so its findings must be understood in the context of today's vision of Venture Capitalism.

Some authors show how the startup maturity stage, the type of Business Angel, and the steps inside the investment process strongly influence the decision-making process. Huang & Pearce (2015) examine the investment decision-making process in early-stage startups where the investment decision is making beneath conditions of severe unpredictability. Lefebvre et al. (2020) indicate how BAs' trust in the entrepreneur affects their decisions to invest in startups in the Valley of Death (Markham, S.K., 2002). Carpentier & Suret (2015) present the differences during the investment decision process from IA (more emphasis on the entrepreneur) and AGM (more focus on the opportunity) and is a relevant reference for the most recent articles on this subject. Mitteness et al. (2012) show that BAs strongly focus on the opportunity and market potential during the funding process. At the same time, the entrepreneur skills are most important at the screening stage and, (Petty & Gruber, 2011)

presents how the weight of decision-making factors changes between different stages during the VCs' investment assessment process.

From a behavioral point of view, (Warnick et al., 2018) research found that product passion and entrepreneurial passion are aspects of the entrepreneur that are essential to BAs and VCs. (Mason & Stark, 2004) indicates how entrepreneurs must adapt their message according to investor type. (Harrison et al., 2015) explores if BAs learn from experience and how and what they learn. This research suggests various dimensions of background that may impact BAs' investment decision-making.

Also, the market size impacts the investment decision-making process for BAs and VCs (Carlos Nunes et al., 2014; Crick & Crick, 2018).

On the other hand, as investors reject most of the proposals they receive, (Mason et al., 2016) explores the reasons informing such decisions for rejection (the deal killers).

### **What influences the assessment criteria?**

The study of Ferrati & Muffatto (2019) brings an updated literature review that shows the investment criteria most discussed in the literature from BAs' and VCs' Investors during their funding decisions and classifies them into four domains of analysis: the venture, the investor, the risk factors, and the environment.

According (Dhochak & Sharma, 2016), VCs' leading influencers for the assessment criteria are the entrepreneurs' characteristics, financial considerations, and product/services. At the same time (Franke et al., 2008) presents a detailed exploration of VCs' team evaluation factors and investigates the weight of VC's experience in this context. The findings report that future research on VC decision-making needs to weigh the VC experience to avoid sample selection bias.

Nevertheless, a paradox can occur when the investment assessment criteria are well evaluated, but the startup as a whole is assessed with low investment potential (Cox et al., 2017).

## **2.5 Conclusions**

In the light of the literature review, one can see that there is no single formula to address the alignment of startup entrepreneurs and investors. Moreover, the existent trade-offs between entrepreneurship and finance, the different perceptions of risk, the various angles that an investor's decision-making process can be analyzed, and the distinct factors that influence the assessment criteria inhibit a generalized study in the literature until this moment.

Since the decision-making process must be adjusted almost from case to case, at least an information roadmap is needed as a general guide to better prepare entrepreneurs and investors to talk to each other through all the startup's maturity stages. A systematized model or a comprehensive framework with this purpose was not found in the literature. Thus the opportunity found for research.

## **3 Methodology**

### **3.1 Introduction & Research Question**

The gap identified in the previous chapter confirms that no comprehensive model is available to describe how entrepreneurs look at investment or even, on the other hand, how investors look or perceive a startup. In this context, the proposed research question is as follows:

From an investment perspective, how do entrepreneurs, VCs and BAs look at a startup?

- Is there a model in the literature that describes how this works?
- If not, can we build a model that describes it?

The methodology applied in this study is presented in this section. First, the research design is given, with justifications for choosing the Design Science approach (van Aken, 2007). Next, the reasons for using ontology design to produce the artifacts to be validated are detailed (Holsapple & Joshi, 2002). In the last part, the design processes are explained, the collection methods applied are indicated, and also the reasons for choosing the Unified Modelling Language (UML) as the modeling tool (Kogut et al., 2002).

### **3.2 Research Design**

#### **3.2.1 Design Science Approach**

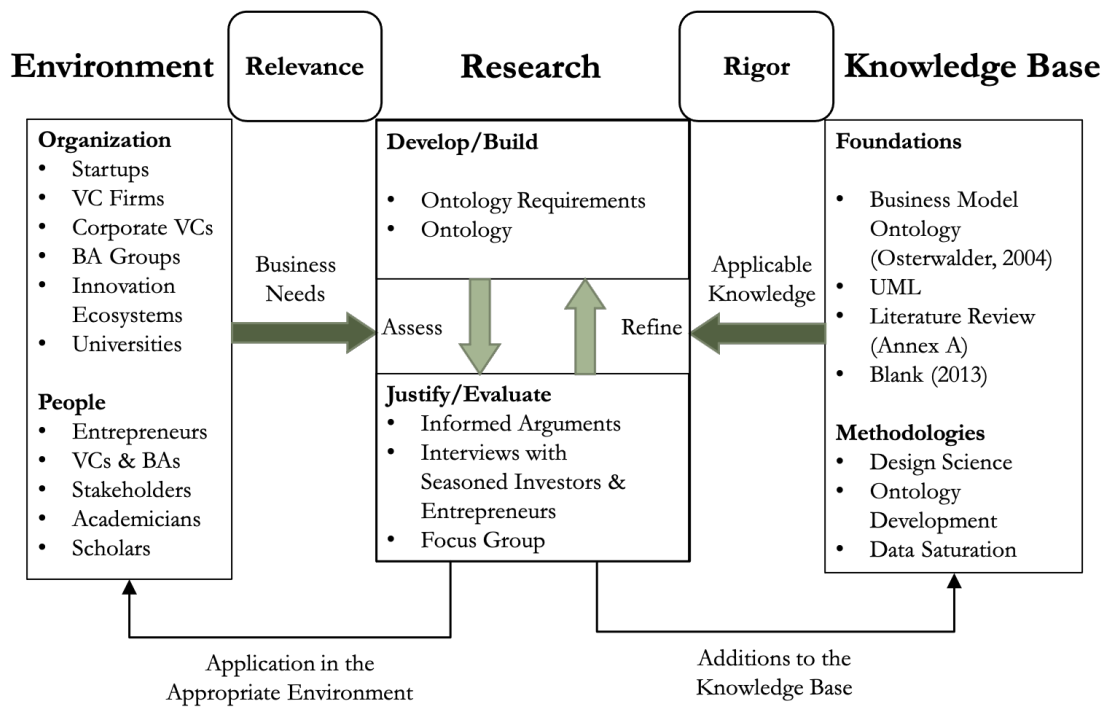
“Design science can be defined as the body of knowledge of a particular discipline on designs and design methods.” (van Aken, 2007, p. 68). Design Science Research is done from the professional’s perspective who has the problem, not from a neutral point of view (van Aken, 2007).

The designing approach to this research was accomplished by building-evaluation iterations processes (van Aken, 2007). The building process develops the artifacts, and the evaluating one refines them. This approach comprises three artifacts, i.e., constructs, models, and instantiations (Hevner et al., 2004).

The research artifacts produced during the design science research are based on pragmatic validity (van Aken, 2007). Therefore, the methodology must adequately assess these artifacts to address the suitability of their intended goals, which can be obtained from an Assess-Refine iterative process that will lead to an improved design process and an enhanced set of artifacts (Hevner et al., 2004).

The Design Science Approach applied to this study is represented in Figure 3.





*Note.* Adapted from “Design Science in Information Systems Research” by A.R. Hevner, S.T. March, P. Jinsoo, and R. Sudha, 2004, MIS Quarterly, Vol. 28 (1), p. 80. Copyright 2004 by MIS Quarterly.

**Figure 3 - Design Science applied to this study.**

### 3.2.2 An Ontology Development

An ontology was developed as the artifacts of this study. An ontology provides a common language for the knowledge about the research subject that must be shared and reused (Holsapple & Joshi, 2002, p. 42). In the development process, “Ontological commitment is important. It is the agreement by multiple parties” (Holsapple & Joshi, 2002, p. 43).

Approaches to ontology design can be of five types: Inspiration, Induction, Deduction, Synthesis, and Collaboration (Holsapple & Joshi, 2002, p. 44). All may be applied in designing an ontology. In this study, Inspiration, Deduction, and Collaboration were used.

The researcher started with an Inspiration approach with a premise about why an ontology is needed, using its experience in the domain of interest and the Supervisor's guidance. Then, the knowledge existing in the literature was researched and applied to support the model with the necessary scientific sustainability.

With a Collaborative approach, ontology development is a joint effort that brings people’s backgrounds who cooperate to produce it. Consequently, the results can be improved according to the diversity of points of view obtained (Holsapple & Joshi, 2002, p. 44). Therefore, the initial version of the developed ontology, built from the literature and the author experience, went through a series of iterations based on 26 online interviews with investors and entrepreneurs (all

profiles listed on Annex B), resulting in decreasing objections of the participants to get to a convergent point of view.

The resulting work of these interactions was produced with a Deductive approach, “filtering and distilling the general notions, so they are customized to a particular domain subset” (Holsapple & Joshi, 2002, p. 44). Then, the focus on VCs and BAs as investors was narrowed, and identifying the essential elements and concepts was strengthened.

### 3.3 Design Process

The design processes are detailed below:

a. Building the artifacts (ontology creation)

- The first step to build an ontology is the definition of the Ontology Requirements Specification Document (ORSD; Suárez-Figueroa et al., 2009, p. 970). The first version of the Competence Questions (CQ; Noy & McGuinness, 2001, p. 5) was elaborated as the functional requirements. Table 2 shows the ORSD for the ontology built in this work.

**Table 2 - Ontology Requirements Specifications Document**

<b>ONTOLOGY REQUIREMENTS SPECIFICATIONS DOCUMENT</b>
<b>PURPOSE</b>
To represent in a structured way the essential concepts that entrepreneurs and investors need to know to grow a business through venture capital for all stages of a startup’s development.
<b>SCOPE</b>
To be relevant without diving into all details related to the relationship between entrepreneurs and VCs or BAs.
<b>IMPLEMENTATION LANGUAGE</b>
The modeling tool used to create the ontology is Unified Modelling Language (UML). It provides the critical semantic foundation for knowledge management (Kogut et al., 2002).
<b>INTENDED END-USERS</b>
User 1. Startup entrepreneurs User 2. VCs User 3. BAs User 4. Innovation Ecosystems (Startup Genome, 2020) User 5. Scholars and academicians in subjects related to innovation and entrepreneurship
<b>INTENDED USES</b>
Use 1. Startup entrepreneurs see in advance a roadmap on how to better prepare themselves to search for investment from BAs and VCs. Use 2. VCs and BAs communicate what they expect to see in an investment presentation from startup entrepreneurs. Use 3. Teaching entrepreneurship to academicians, entrepreneurs, and potential startup investors.

ONTOLOGY REQUIREMENTS SPECIFICATIONS DOCUMENT	
ONTOLOGY REQUIREMENTS	
NON-FUNCTIONAL REQUIREMENTS (NFR)	FUNCTIONAL REQUIREMENTS
NFR1. The reuse of the Business Model Ontology (Osterwalder, 2004).	CQ1. What is a Startup? CQ2. What are the key Entrepreneur roles in a Startup?
NFR2. The definition of the ontology's key terms is supported by the literature.	CQ3. Who provides Venture Capital to a Startup? CQ4. Who are the members of the Startup Team?
NFR3. The ease of use and readability for the entrepreneur and the investor.	CQ5. What are the key resources needed by a Startup? CQ6. What key information must be increasingly compiled to present to Investors? CQ7. Which are the key evaluation criteria applied by Equity Investors? CQ8. What is an Investment Assessment Process? CQ9. What forms the scope of a startup's investment contract? CQ10. What are the shareholders' agreement key components?

*Note.* Adapted from “How to Write and Use the Ontology Requirements Specification Document” by M.C. Suárez-Figueroa, A. Gómez-Pérez, and B. Villazón-Terrazas, 2009, Springer-Verlag, p. 970, Copyright 2009 Springer-Verlag Berlin Heidelberg.

- Aiming to answer the research question that originated from the literature review, the ontology was modeled in a set of sub-ontologies (SO; Pereira et al., 2019) representing the ontology.
- Then, applying complementary views from the research team and arguments from the literature, some improvements were added to the ontology. This research involved a semi-structured interview collection method. The UML diagrams were used to guide the researcher's presentation, applying the ontology's Competence Questions (CQ) to stimulate and align feedback.
- A total of 26 people, between investors (BAs and VCs) and entrepreneurs (already invested or in search for an investment) from Portugal, Brazil, and Silicon Valley (USA), had been interviewed online to evaluate and help to improve the ontology. This step was vital for the significant improvements in the ontology. Data saturation was reached because no relevant new information was added to the model for the last five interviewees (Fusch & Ness, 2015).

b. Validating the artifacts (ontology assessment)

- A compiled new version of the ontology was updated to be evaluated in an online focus group session with investors and entrepreneurs from Portugal and Brazil (seven participants with their profiles presented in Table 4) to receive an objective evaluation. Each participant assessed each SO from the perspective of four criteria: Completeness, Utility, Consistency, and Understandability (Barradas, 2015; Bullinger & Reichwald, 2008; Holsapple & Joshi, 2002; Pereira et al. 2019). Next, the CQs were also evaluated by the same group from the perspective of be answered or not be answered by the ontology (Pereira et al., 2019). The last activity was the proposition of two open-ended questions related to the general impression of the ontology and for whom the work would be helpful.

### 3.4 Conclusions

This chapter showed the choices of the methodology and the design process applied in this work and how they fit with the Research Question answer.

The developed ontology was grounded on the Design Science approach (van Aken, 2007) and sustained by (Holsapple & Joshi, 2002; Noy and McGuinness, 2001; Pereira et al.,2019).

Figure 4 presents an overview of the ontology development process.

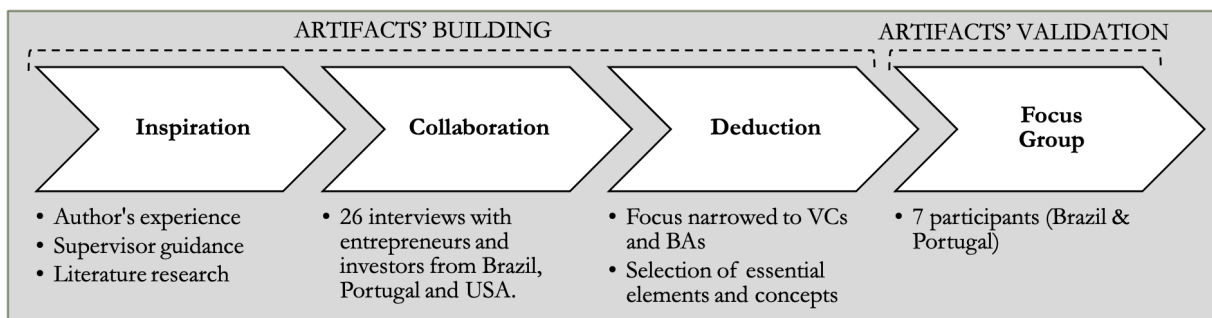


Figure 4 - Ontology Development Process

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## 4 The Startups' Investment Ontology (SAPIENT)

### 4.1 Introduction

The present study aims to answer the Research Question with the SAPIENT Ontology, structured in ten Sub-Ontologies, as indicated in Figure 5, and Competence Questions.

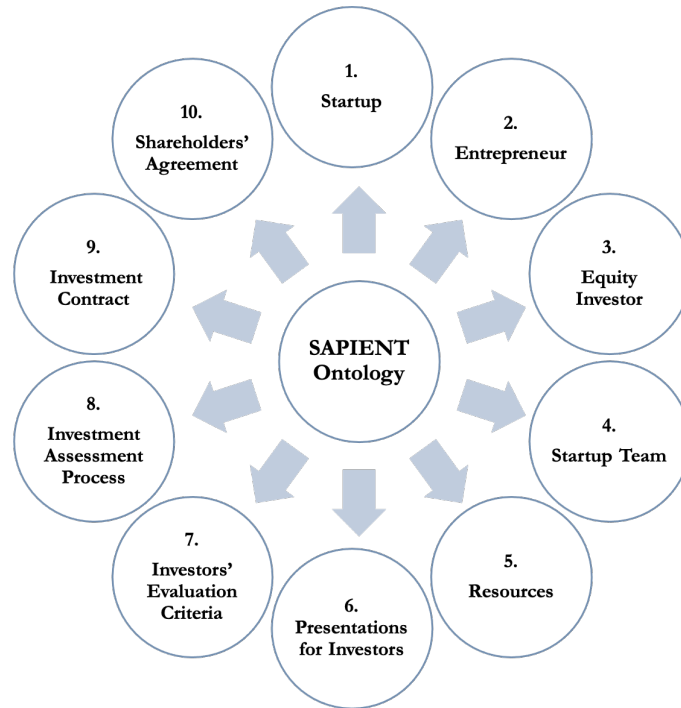


Figure 5 - SAPIENT Ontology Overview

SAPIENT “enables reuse of domain knowledge” (Noy & McGuinness, 2001, pp. 1-2) by building on the Business Model Ontology (Osterwalder, 2004). This practice is referenced in the ontology with the prefix BMO: (e.g., BMO: People-Based Skills).

To facilitate the reading of the Sub-Ontology (SO), Figure 6 shows an example of how the UML notation is used in the model.

The presentation order of the SOs, in the next session, follows the order pictured in Figure 5, thus enabling a fluid narrative.

In the SO description, the notation [ ] identifies a reference to the interviewees (Annex B). Some may not have emphasized it because the item was already represented in the SO at the time of their interview. The codes applied to classify the interviewees are E (Entrepreneur), I (Investor), and EI (Entrepreneur and Investor).

References to the Term definition are presented with the notation { }, indicating the code used to index its definition in Annex C (Glossary of Ontology Terms). The purpose is to make the reading of the ontology description cleaner.

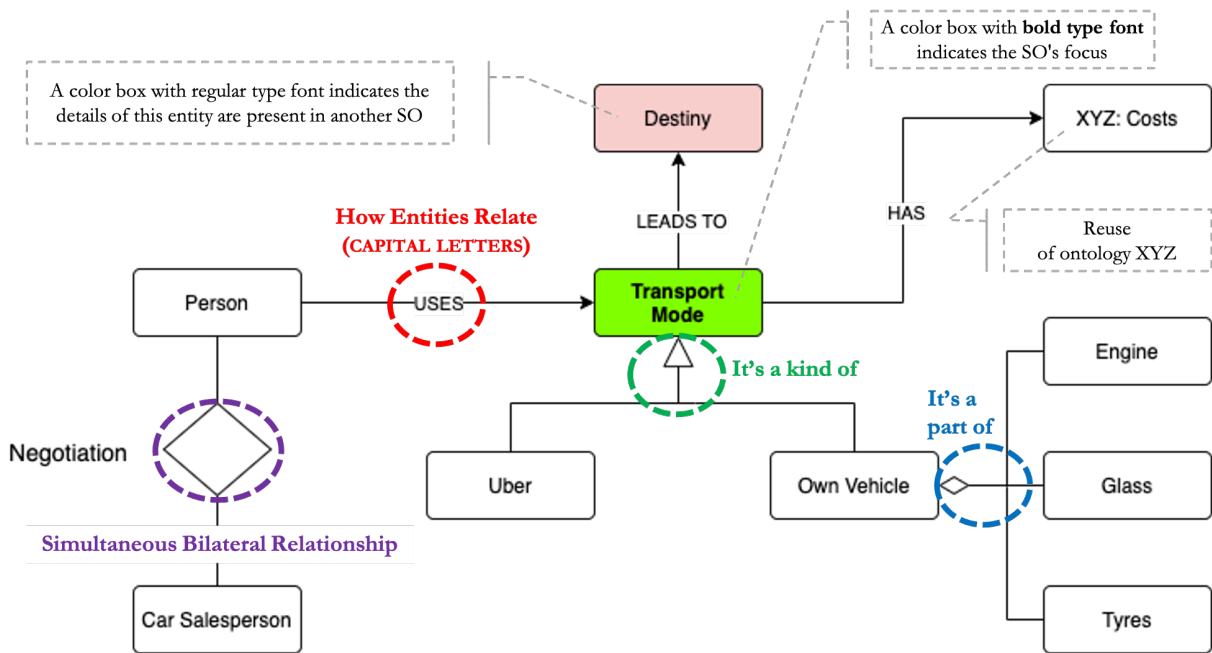


Figure 6 - Sub-ontology reading guide (a generic example)

## 4.2 Ontology

### 4.2.1 Sub-ontology 1: Startup

This SO describes the **STARTUP** {T01} and is represented in Figure 7.

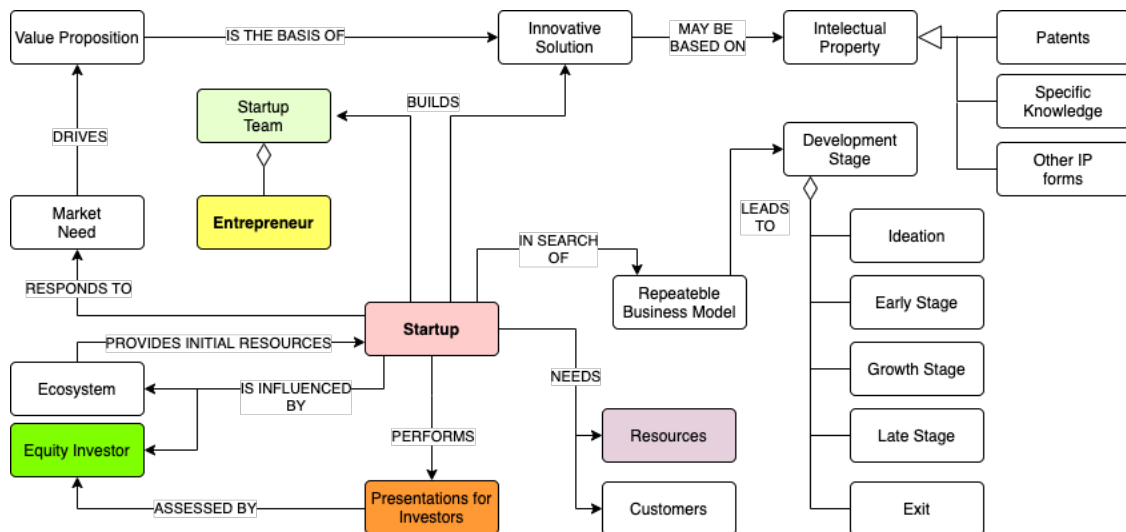


Figure 7 - Sub-ontology 1: Startup

A **STARTUP** {T01} according to Blank (2013, p. 5), is “a temporary organization designed to search for a repeatable and scalable business model”. The steps that a **STARTUP** {T01} performs during this quest leads it through **DEVELOPMENT STAGE**s {T02}, as follows:

- **IDEATION** {T126}, as in (OECD/Eurostat, 2018, p.18) is “... the creative process of generating new ideas ...”, where the focus is to confirm if a problem exists, then

brainstorming possible solutions for it and stick with the one that has the best fit to solve this problem (Kenton, 2021a).

- **EARLY STAGE** {T127} is where the startup focus is the building of a Minimum Viable Product (MVP), based on the findings from the previous stage, to get data from the MVP use, aiming to validate a scalable product and acquire the first customers (McGowan, 2017).
- **GROWTH STAGE** {T128} where the startup aims to accelerate the end-user demand through the modeled sales channels, typically increasing sales volume year over year, which needs a robust product (Hargrave, 2021).
- **LATE STAGE** {T129} where the goal is the total execution of the business model. At this stage, the startup must have a well-known product with a strong brand and possible positive cash flow generation, enabling expansion into new markets (Invest in Startups | Equity Crowdfunding | MicroVentures., n.d.).

The last stage, **EXIT** {T33}, according to Klonowski (2010, p. 11), is “... the disposal of shares at the end of a holding period.” and as pointed by [EI18], “is the point where the business ceases to exist like a startup”.

The fact that a **STARTUP** {T01} answers a **MARKET NEED** {T03} was stressed by [I03]. This aspect drives its **VALUE PROPOSITION** {T04} unfolding the creation of an **INNOVATIVE SOLUTION** {T05} [E19] and a **STARTUP TEAM** {T06} where “... most of the startup’s success is related to them ...” [EI08 and EI11].

The **INNOVATIVE SOLUTION** {T05} may be anchored in **INTELLECTUAL PROPERTY** {T07} [E10, I16 and I24], either as granted **PATENTS** {T08} or as **SPECIFIC KNOWLEDGE** {T09}, such as an algorithm, for instance, or as **OTHER IP FORMS** {T10}, as indicated in (OECD/Eurostat, 2018).

To advance to the more mature **DEVELOPMENT STAGES** {T02}, a **STARTUP** {T01} needs **RESOURCES** {T11} and **CUSTOMERS** {T12} “... who will use the venture’s product (i.e., the target market).” as (Warnick et al., 2018, p. 320) and as in [EI09] “... mainly customers ...”, which must be known in depth as pointed by [I24]. Even though some of the initial **RESOURCES** {T11} may be provided by the entrepreneurial **ECOSYSTEM** {T13} where the **STARTUP** {T01} is located, the bulk of it may come from **EQUITY INVESTORS** {T14}.



The initial relationship between the **STARTUP** {T01} and **EQUITY INVESTORS** {T14} is made through **PRESENTATIONS FOR INVESTORS**<sup>2</sup> {T15}.

On the other hand, a **STARTUP** {T01} is strongly influenced by its **ECOSYSTEM** {T13} [EI11, I16, and E20], that may provide initial resources, and by its **EQUITY INVESTORS** {T14} [I13, I14, I16 and I17].

#### 4.2.2 Sub-ontology 2: Entrepreneur

This SO describes the **ENTREPRENEUR** {T16} and is represented in Figure 8.

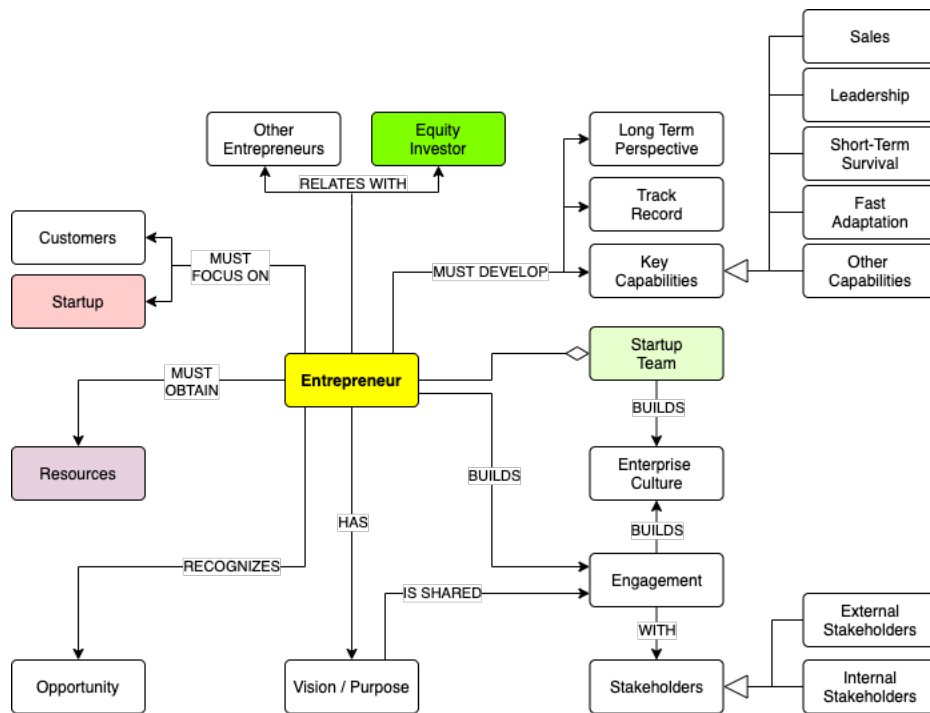


Figure 8 - Sub-ontology 2: Entrepreneur

An **ENTREPRENEUR** {T16} has to perform a set of roles and therefore must develop a set of soft and hard skills. As in Lazear (2004, p. 208), “entrepreneur must be jack-of-all-trades to some extent”. According to [E22], “I relate to all that is in this diagram”.

He/She must develop a **LONG-TERM PERSPECTIVE** {T17} [EI09 and E21] because successful startups are a long-run endeavor [EI09].

<sup>2</sup> The literature uses the term “Business Plan” to identify the structure needed for entrepreneurs to present information to investors (Evers et al., 2020; Mason & Stark, 2004; Sahlman, 1997). Nevertheless, during the first interview [E01] we had identified that the term “Business Plan” creates bias in the perception of the audience, associating it as something “old fashioned”, “very rigid” and of “little use”. So, the decision was to use a neutral name like “Presentations for Investors”.

According to Lazear (2004, p.208), “Even if individuals are not endowed with the complete set of skills necessary to start a business, they can acquire those skills.”, and these skills can be acquired from each professional challenge during his/her career (Politis, 2005), developing a **TRACK RECORD** {T18}.

Some **KEY CAPABILITIES** {T19} must be present in an entrepreneur profile, such as:

- **SALES** {T20} [I03], meaning the ability to plan, manage and execute sales to customers through the defined sales channels (OECD/Eurostat, 2018).
- **LEADERSHIP** {T21} [E12], meaning that besides passion, vision, and the ability to inspire the team also requires the ability to capture and develop new business opportunities (Thornberry, 2006).
- **SHORT-TERM SURVIVAL** {T22} [E19], meaning the entrepreneur’s ability to keep the startup running and live, even against unexpected threats (Levie & Gimmon, 2008).
- **FAST ADAPTATION** {T23} [E21], as explained by (Lopez Hernandez et al., 2018, p. 19), “This adaptability and flexibility allow technology-based startup teams to work as an intermediary driver between the knowledge available and economic agents in the market.”.
- **OTHER CAPABILITIES** {T102}, meaning capabilities not listed here, but that may be needed for some specific situations, such as speaking a non-native language.

As part of the **STARTUP TEAM** {T06} and also in charge of the leadership, the **ENTREPRENEUR** {T16} must have a **VISION / PURPOSE** {T24} [E01 and E108] that is shared through the **ENGAGEMENT** {T25} [E19] with the business’ **STAKEHOLDERS** {T26} [E01 and E111], i.e., the **EXTERNAL STAKEHOLDERS** {T27} and the **INTERNAL STAKEHOLDERS** {T28}.

The **ENTREPRENEUR** {T16} **ENGAGEMENT** {T25} together with the **STARTUP TEAM** {T06} form the roots of the **ENTERPRISE CULTURE** {T29} [E02 and E23] and, according to [E04], “the dream of an entrepreneur is to be an entrepreneur”.

An **ENTREPRENEUR** {T16} must be able to recognize an **OPPORTUNITY** {T30} [I05]. To turn this **OPPORTUNITY** {T30} into a business he/she must obtain **RESOURCES** {T11}, focusing on the **STARTUP** {T01} and its **CUSTOMERS** {T12} [E109 and E12]. These resources may be obtained through his/her relationship with **EQUITY INVESTORS** {T14} [E10 and E19], in this context, it should be stressed that “Entrepreneurs are very sensitive to what they perceive as the imposition of unfair terms in the funding offer” (Boocock & Woods, 1997) [E01].

The relationship with **OTHER ENTREPRENEURS** {T31} [E10] can also be a source of knowledge for all of them, i.e., they can learn from each other successes and failures (Politis, 2005; Startup Genome, 2020, p. 181).

### 4.2.3 Sub-ontology 3: Equity Investor

This SO describes the **EQUITY INVESTOR** {T14} and is represented in Figure 9.

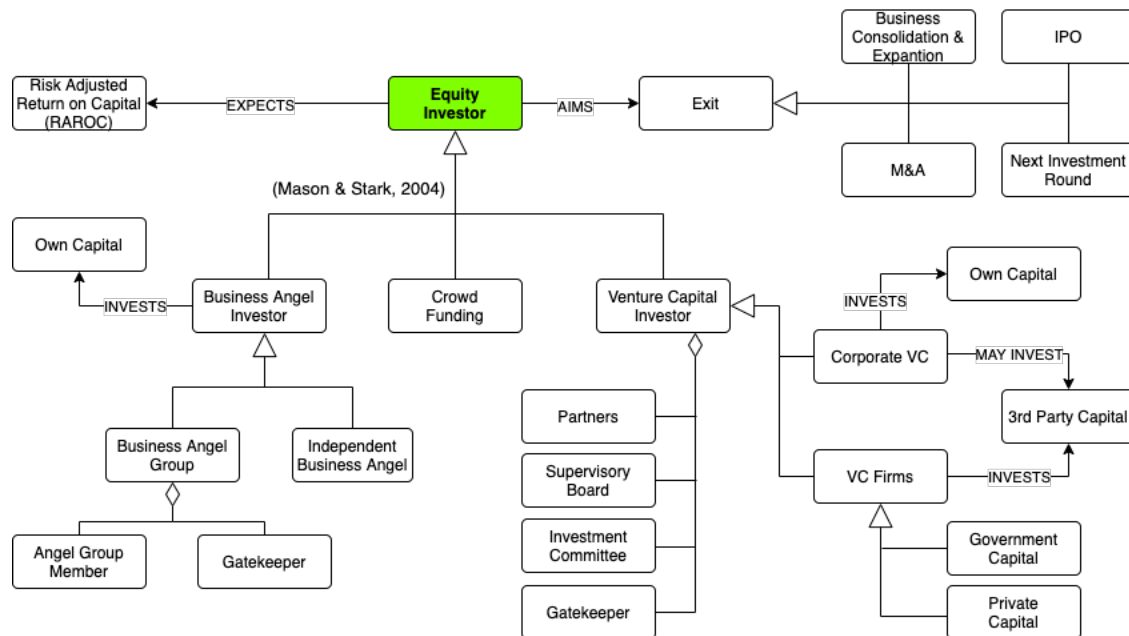


Figure 9 - Sub-ontology 3: Equity Investor

**EQUITY INVESTORS** {T14} are also called private equity investors or venture capitalists. According to (Klonowski, 2010, pp. 3-4), “It is an activity by which investors support firms with a combination of two important components— know-how and capital—in order to exploit market opportunities. Venture capitalists aim to achieve long-term, above-average returns.”.

To reward their investment, they expect a **RISK ADJUSTED RETURN ON CAPITAL (RAROC)** {T32} [E111] through “the disposal of shares at the end of a holding period” (Klonowski, 2010, p. 11), also known as **EXIT** {T33} [E109].

The **EXIT** {T33} can be performed in different strategies, like the share sales in the **NEXT INVESTMENT ROUND** {T34} [E22], through an Initial Public Offering (**IPO** {T35}), through Merger and Acquisitions (**M&A** {T36}) or even as a **BUSINESS CONSOLIDATION AND EXPANSION** {T37}.

An **EQUITY INVESTOR** {T14} can be classified as a **BUSINESS ANGEL INVESTOR** {T38} or a **VENTURE CAPITAL INVESTOR** {T39}. More recently, the **CROWDFUNDING** {T40} [E109] type of funding has also been classified as an **EQUITY INVESTOR** {T14}, although it’s out of the scope of this study.

**BUSINESS ANGEL INVESTORS** {T38} use their **OWN CAPITAL** {T42} [I13] to invest, and they can work as an individual, known as **INDEPENDENT BUSINESS ANGEL** {T42}, or as an **ANGEL GROUP MEMBER** {T43} within structured **BUSINESS ANGEL GROUP** {T44} or companies. A **BUSINESS ANGEL GROUP** {T44} usually has support staff, including a **GATEKEEPER** {T45}, who's in charge of the initial selection of the investment proposals.

A **VENTURE CAPITAL INVESTOR** {T39} may work for a specialized kind of businesses, known as **VC FIRMS** {T46} or may work for established large corporations who want to diversify their investments known as **CORPORATE VCs** {T47} [E02]. A **VC FIRM** {T46} invests **3RD PARTY CAPITAL**, {T48} [I13] originated from **PRIVATE CAPITAL** {T49} or even funds from **GOVERNMENT CAPITAL** {T50} [E01 and I16].

A **CORPORATE VC** {T47} may invest only its **OWN CAPITAL** {T41} [I13] or may also invest **3RD PARTY CAPITAL** {T48} [I16]. A **VENTURE CAPITAL INVESTOR** {T39} is usually structured in **PARTNERS** {T51}, known as Limited Partners, which are in charge of the management and the source of money, the **SUPERVISORY BOARD** {T52} and the **INVESTMENT COMMITTEE** {T53}, for internal approvals. It usually also contains a **GATEKEEPER** {T45} [E04].

#### 4.2.4 Sub-ontology 4: Startup Team

This SO describes the **STARTUP TEAM** {T06} and is represented in Figure 10.

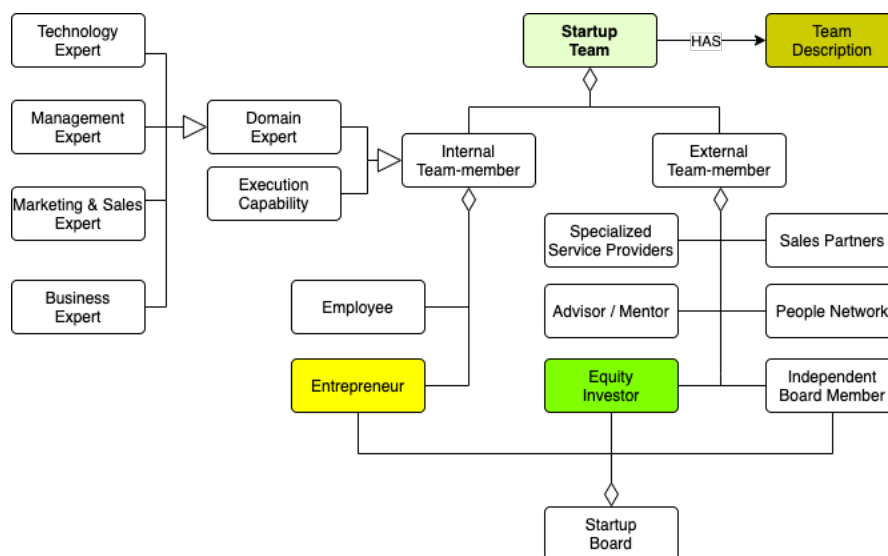


Figure 10 - Sub-ontology 4: Startup Team

The **STARTUP TEAM** {T06}, represented in the **TEAM DESCRIPTION** {T54}, has a significant weight in the evaluation of a startup's investment proposal. Some investors focus more on individual qualities while others direct their attention to team cohesion (Franke et al., 2008).

This high importance level can also be perceived in [I06] “... team and founders are fundamental” and [EI08] “... most of the startup’s success is related to its team.”.

**INTERNAL TEAM-MEMBER**s {T55} and **EXTERNAL-TEAM MEMBER**s {T56} [E02 and E20] form the **STARTUP TEAM** {T06}. The former has people with **EXECUTION CAPABILITY** [T57], as in [EI07] “... one issue I see here is people’s capacity to deliver ...” and also **DOMAIN EXPERT**s {T58} [EI09] in domains like **TECHNOLOGY EXPERT** {T59}, **MANAGEMENT EXPERT** {T60}, **MARKET EXPERT** {T61} [E23], and **BUSINESS EXPERT** {T62} as in [EI18] “... you have to understand in detail how the client’s business works.”.

The **ENTREPRENEUR**s {T16} and the **EMPLOYEE**s {T63}, who form the core of the startup, are the components of the **INTERNAL TEAM-MEMBER**s {T55}, as in [E12] “... I, as an entrepreneur, also put myself as part of the team ...”.

On the other hand, a startup needs to complement its team with permanent or temporary external contributors, i.e., the **EXTERNAL TEAM-MEMBER**s {T56}, that may be compounded of **SALES PARTNERS** {T64}, to boost or increase sales [E23], **SPECIALIZED SERVICE PROVIDERS** {T65} (e.g., digital marketing services) as in [I17] “... I have several external people hired on-demand, to complement the team, and this makes a difference...”, **ADVISOR / MENTOR** {T66}, i.e., seasoned people in specific subjects [E02], **PEOPLE/NETWORK** {T67} [E04], to share information, contacts, ideas, etc. (Klonowski, 2010; p. 64), and the **INDEPENDENT BOARD MEMBER**s {T68}, which is a third party that neither represents the entrepreneurs nor the investors and must have the industry knowledge and valuable contacts (Brunninge & Nordqvist, 2004) when needed.

The **STARTUP BOARD** {T69} [EI11 and E21], as in (Mittiness et al., 2012, p. 262) “... might serve to reduce the perceived uncertainty to the point where these individuals join the entrepreneur in the pursuit of an opportunity.” and its composition may vary related to the startup’s business development stage (Brunninge & Nordqvist, 2004). A typical **STARTUP BOARD** {T69} is comprised of the **ENTREPRENEUR**s {T16}, the leading **EQUITY INVESTOR** {T14} of an investment round (Startup Genome, 2020), and **INDEPENDENT BOARD MEMBER**s {T68}.

#### 4.2.5 Sub-ontology 5: Resources

This SO describes the **RESOURCES** {T11} and is represented in Figure 11.

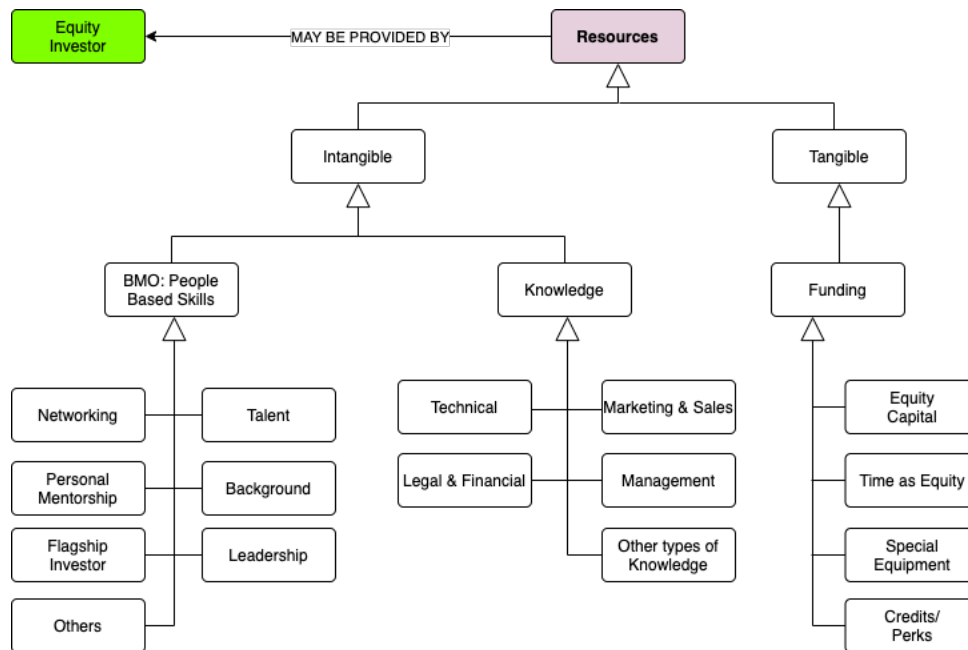


Figure 11 - Sub-ontology 5: Resources

A company needs **RESOURCES** {T11} to create value (Wernerfelt, 1984). According to Grant (1991), they can be classified as **TANGIBLE** {T70}, **INTANGIBLE** {T71}, and **PEOPLE-BASED SKILLS** {T72}. These **RESOURCES** {T71} may be provided by **EQUITY INVESTORS** {T14}.

For this study, we classify **PEOPLE-BASED SKILLS** {T72} as one subset of the **INTANGIBLE** {T71} resources and **KNOWLEDGE** {T73} as the other. Concerning **TANGIBLE** {T70} resources, we focus only on the types of **FUNDING** {T74} that are directly related to the scope of this research. According to [I13], “... the only tangible thing for us is the money we will invest.”.

Osterwalder (2004, p. 82) says, “Depending on the type of firm, people-based skills are of crucial value. Examples include consultancies, hospitals, universities and firms that rely on innovation.”. The types of **PEOPLE-BASED SKILLS** {T72} highlighted in this research are:

- The **NETWORKING** {T75} [EI08] around the startup as in (Klonowski, 2010, p. 64) “Relationships are a basic human need and creating camaraderie and connections between others is instinctive to all individuals.”.
- Seasoned professionals who can bring **PERSONAL MENTORSHIP** {T76} [EI11] to the team.

- A **FLAGSHIP INVESTOR** {T77} as in [EI11] “... the entrepreneur will also choose investors by the relationship he/she has with the rest of the ecosystem ... everyone wants to be a startup invested by Soft Bank ...”.
- **TALENT** {T78} [E01], which can have a more decisive influence on a startup’s success than previous experience in other ventures (Eesley & Roberts, 2012, p. 216).
- **BACKGROUND**, {T79} as in [EI09] “... experience helps to avoid mistakes ...”.
- **LEADERSHIP** {T21} [EI11 and E22], according (Renko et al., 2015), “Entrepreneurial leadership entails influencing and directing the performance of group members toward the achievement of organizational goals that involve recognizing and exploiting entrepreneurial opportunities.”.
- **OTHERS** {T115}, meaning skills not listed here, but that may be needed for some specific situations, such as speaking a non-native language.

**KNOWLEDGE** {T73} can come from distinct contexts to impact a startup to profit from innovation (Agarwal & Shah, 2014). However, the emphasis for our objective is given to:

- **TECHNICAL** {T80} [E01].
- **LEGAL & FINANCIAL** {T81}.
- **MARKETING & SALES** {T82} as in [E23] “... marketing and sales are vital ... I can’t see nothing more important ...”.
- **MANAGEMENT** {T83}

**FUNDING** {T74} can come in forms as:

- **EQUITY CAPITAL** {T84} [E23], the capital that is traded by a portion of company ownership and is the focus of this study (Drover et al., 2017).
- **TIME AS EQUITY** {T85} [E02 and I03] that is when someone works for a startup and receives equity in payment, also known as “stock options” (Dudley & Rouen, 2021).
- **SPECIAL EQUIPMENT** {T86} [E20] used in the production of the innovative product or service (like a sophisticated 3D printer, for instance).
- **CREDITS/PERKS** {T87} that is usually granted by Innovation Hubs, like accelerators or incubators, in the ways of pre-paid vouchers to have access to specific software or platforms or in the form of tax credits from the government (Startup Genome, 2020).

#### 4.2.6 Sub-ontology 6: Presentations for Investors

This SO describes the **PRESENTATIONS FOR INVESTORS** {T15} and is represented in Figure 12.

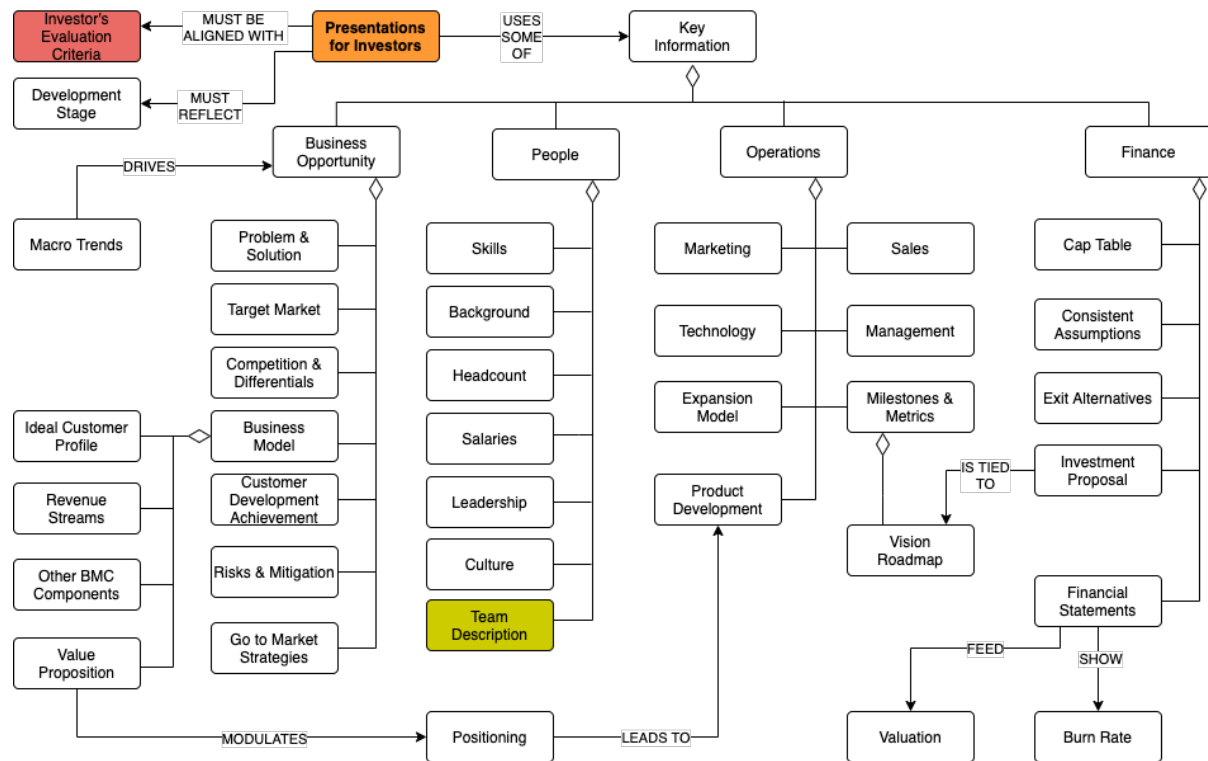


Figure 12 - Sub-ontology 6: Presentations for Investors

**PRESENTATIONS FOR INVESTORS** {T15}, performed by startups' entrepreneurs, must be aligned with the **INVESTOR'S EVALUATION CRITERIA** {T88} (Mason & Stark, 2004) and must reflect the startup's **DEVELOPMENT STAGE** {T02} (Sahlman, 1997). The startup must develop and enhance each piece of information as long as its business grows (Evers et al., 2020). There is no silver bullet to assemble only one best presentation.

Each of the **PRESENTATIONS FOR INVESTORS** {T15} uses some elements of the **KEY INFORMATION** {T89} set, that is organized in four categories, **BUSINESS OPPORTUNITY** {T103}, **PEOPLE** {T104}, **OPERATIONS** {T105} and **FINANCE** {T106}, which are detailed in the next paragraphs.

**BUSINESS OPPORTUNITY** {T103} category that is driven by **MACRO-TRENDS** {T90} [EI08 and EI11] shows the elements that are the basis of a business, that is, the problem to be solved and its respective solution, market and differentials, and its business model, as follows:

- **PROBLEM & SOLUTION** {T107} description.
- **TARGET MARKET** {T108}, indicating the context and what kind of customers will use the startup's product (Warnick et al., 2018, p. 320).



- **COMPETITION & DIFFERENTIALS** {T109} [E01 and I03], indicating number, size, qualitative measures, etc., about the startup's competition and how it creates its "unique selling proposition" (OECD/Eurostat, 2018).
- **BUSINESS MODEL** {T92} as in Blank (2013, p. 5) "... how a company creates value for itself and its customers.", must represent all the elements indicated in the Business Model Canvas (Osterwalder & Pigneur, 2010), although, for easy reading, only three of them are highlighted here:
  - **IDEAL CUSTOMER PROFILE** {T113} defines a hypothetical customer that is the best fit for the startup's products and services (Osterwalder & Pigneur, 2010; Wiley, 2019).
  - **REVENUE STREAMS** {T114}, or the processes in which a startup makes money (Osterwalder & Pigneur, 2010).
  - **VALUE PROPOSITION** {T93}, which must identify the benefits customers get when buying something (Osterwalder & Pigneur, 2010), and modulates the startup **POSITIONING** {T94} [EI11] leading to the **PRODUCT DEVELOPMENT** {T95} as in [EI11] "... there is a link between the business value proposition and the product positioning that will influence the product development."
- **CUSTOMER DEVELOPMENT ACHIEVEMENT** {T110} according to Blank & Dorf (2020) and stressed by [E04] "... the client has already been heard ... it was from the client's pain and feedback that the business opportunity was reviewed ...".
- **RISKS & MITIGATION** {T111} [I03] strategies to deal with fast-paced growth, a narrow revenue base, inexperienced employees, key employee leaving, poor infrastructure, etc. (Picken, 2017, p. 589).
- **GO TO MARKET STRATEGIES** {T112} according to Picken (2017) "... needed to deliver the offering reliably to the target customer at a profit." and [I24] "... because they are the bridge between Marketing and Sales."

**PEOPLE** {T104} category must contain the information needed for a complete evaluation of the startup's team from various angles. Here we highlight:

- **SKILLS** according to OECD/Eurostat (2018).
- **BACKGROUND** {T79}.
- **HEADCOUNT** {T117}.
- **SALARIES** {T118} [E01].

- **LEADERSHIP** {T21} [E10] according to (Dhochak & Sharma, 2016; Renko et al., 2015).
- **CULTURE** {T119} [EI11] as in Picken (2017).
- **TEAM DESCRIPTION** {T54}.

**OPERATIONS** {T105} category must show how the startup operates to make a profitable business from the **BUSINESS OPPORTUNITY** {103} (Evers et al., 2020). The components to have in mind are:

- **MARKETING** {T120}.
- **SALES** {T20}.
- **TECHNOLOGY** {T121} [EI07 and EI11].
- **MANAGEMENT** {T83} [EI07].
- **EXPANSION MODEL** {122} [E10], clearly articulating how the startup will grow and scale (Picken, 2017).
- **MILESTONES & METRICS** {T96}, indicating the stages and when they arrive in the planned future (Picken, 2017), and showing that it is compound of a **VISION ROADMAP** {T97}, that helps to deal with intense business dynamic conditions (Münch et al., 2019).
- **VISION ROADMAP** {T97} [I03 and E10] showing how they will get there (Münch et al., 2019) and how it is tied to the startup's **INVESTMENT PROPOSAL** {T98} [I24].

The **FINANCE** {T106} category has a relevant underlying link with **OPERATIONS** {T105}, which is stressed by [I13], indicating that "... financials and operations measure the level of both ambition and realism, and I think ambition without realism is of no use to us ...". This category shows investors the profitability and viability of the business and must contain:

- **CAP TABLE** {T123} [E02] according to Stevens (2012, pg. 83) is "The equity ownership structure as captured in a table of capitalization (Cap Table) determines how the fruits of success will be divided between founders, management, and investors at an exit event such as an acquisition or initial public offering.". According to [I06], "... if I enter to place seed money and the entrepreneur has already given 30% to the accelerator, it is already complex ...".
- **CONSISTENT ASSUMPTIONS** {T124} as in Klonowski (2010) and stressed by [E23] "... you present a well-made projection, but the investor has doubts when the assumptions are not consistent ...",

- **EXIT ALTERNATIVES** {T125} [E23] in research from (Klonowski, 2010, p. 236) “... represents an orchestrated way of cashing out a venture capital investment in a portfolio firm and is the monetization of cash committed to the deal by the virtue of a trade sale, an IPO, or other means.”.
- **INVESTMENT PROPOSAL** {T98} [E02 and I03].
- **FINANCIAL STATEMENTS** {T99}, i.e., P&L, Balance Sheet, and Cash Flow Statement (Klonowski, 2010) that support the **VALUATION** {T100} [I03 and EI11] calculus and the **BURN RATE** {T101} [E01], that is, the currency per time a startup needs to pay its obligations (Ripsas et al., 2018).

#### 4.2.7 Sub-ontology 7: Investor’s Evaluation Criteria

This SO describes the **INVESTOR’S EVALUATION CRITERIA** {T88} and is represented in Figure 13.

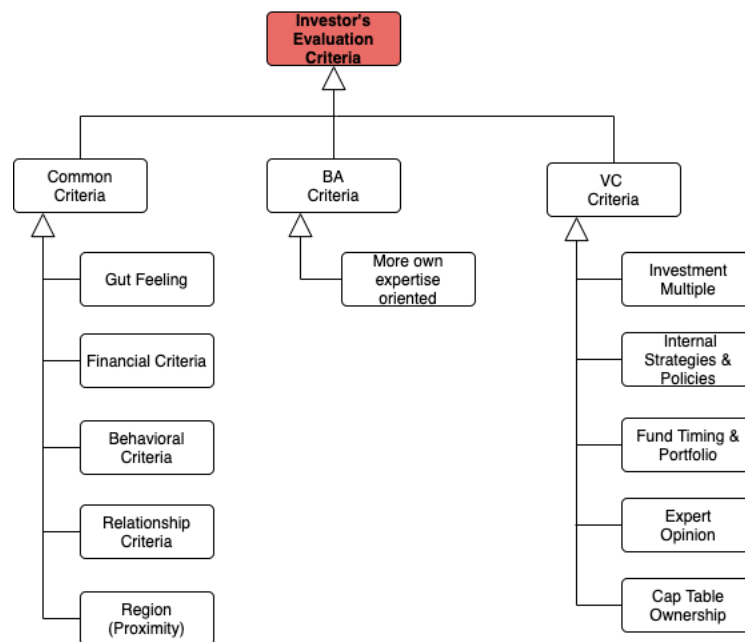


Figure 13 - Sub-Ontology 7: Investor’s Evaluation Criteria

According to (Levie & Gimmon, 2008), there is a large degree of divergence related to the literature of the essential evaluation criteria applied by investors. Their work shows that there is one line of research regarding the capabilities and attitudes of entrepreneurs and another regarding the importance of the startup’s target market.

Therefore, the actual criteria applied from one specific investor may be a subset or a superset from the ones represented in this study. Besides, as a modeling choice to make the ontology easier to read, some aspects that could be described in this SO 7, like the risk types (agency, market,

execution, etc.) and macro-trends, are represented in the SO 8, influencing the Investment Assessment Process as a whole.

Within this context, the investor's evaluation criteria are classified as **COMMON CRITERIA** {T136} (applied by both BAs and VCs), **BA CRITERIA** {T137} and **VC CRITERIA** {T138} (Mason & Stark, 2004).

The items in **COMMON CRITERIA** {T136} are:

- **GUT FEELING** {T130}, as in (Huang & Pearce, 2015, p. 634) "... their dynamic emotion-cognitions in which they blend analysis and intuition in ways that do not impair intuitive processes, and that effectively predict extraordinarily profitable investments.". Here we can see different perspectives from entrepreneurs and investors. For example, one interviewed entrepreneur [E01] indicates that VCs use GUT FEELING {T130} almost all the time, while one interviewed investor [I14] says "... I try to use the feeling as little as possible." and another investor [I24] indicates that this criterion is applied only on startup's early stages.
- **FINANCIAL CRITERIA** {T131}, where the results obtained and the coherence with the projections and scalability possibilities in the target market, with high returns, profitability, and liquidity, are evaluated (Dhochak & Sharma, 2016).
- **BEHAVIORAL CRITERIA** {T132}, i.e., the entrepreneur's passion for entrepreneurial activities and for the product or services it provides, and also the openness and receptivity to critics and feedback (Warnick et al., 2018).
- **RELATIONSHIP CRITERIA** {T133} is associated with how the entrepreneur creates and develops relationships since he/she must relate all the time with all sorts of people (customers, partners, investors, employees, suppliers, etc.) as in (OECD/Eurostat, 2018).
- **REGION (PROXIMITY)** {T134} [E10, E19, E22 and I24] to the investor's location that tends to be more geographically concentrated for BAs (Drover et al., 2017, p. 1842).

BAs tend to invest within their prior industry experience, being **MORE OWN EXPERTISE ORIENTED** {135} as in the research of (Mason & Stark, 2004).

The items in **VC CRITERIA** {T138} are classified as:

- **INVESTMENT MULTIPLE** {T139} [EI09], as in Klonowski (2010), “Venture capitalists generally perform business valuation using at least two methods: the discounted cash flow (DCF) method and EBITDA<sup>3</sup>-multiple method.”.
- **INTERNAL STRATEGIES & POLICIES** {T140} [E23] that relates to the fund’s purpose like foreign or domestic participation only, early-stage startups or late-stage startups preferences, specific industries, specific trends, etc. (Teubal & Luukkonen, 2006).
- **FUND TIMING & PORTFOLIO** {T141} [EI11] is related to the investment time horizon, i.e., periods where investments are held until they are needed, and they can be short-, medium- or long-term investment (Chen, 2021a). A medium-term investment is expected to be held for three to ten years, and its portfolio’s strategy tends to balance between high and low-risk startups (Chen, 2021a).
- **EXPERT OPINION** {T142} [I16], as in Klonowski (2010, p. 45), “... if venture capitalists are unconvinced as to the market acceptance of a product or service, they may ask for an external expert to be brought in to make an assessment.”
- **CAP TABLE OWNERSHIP** {T143} [E02 and EI08] as in (Stevens, 2012) to analyze whether the shareholding of the founding entrepreneurs is still significant after previous rounds of investment and employee stock options.

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<sup>3</sup> A company's **Earnings Before Interest, Taxes, Depreciation, and Amortization** (Hayes, 2021a)

#### 4.2.8 Sub-ontology 8: Investment Assessment Process

This SO describes the key factors that influence the **INVESTMENT ASSESSMENT PROCESS** {T144} and is represented in Figure 14.

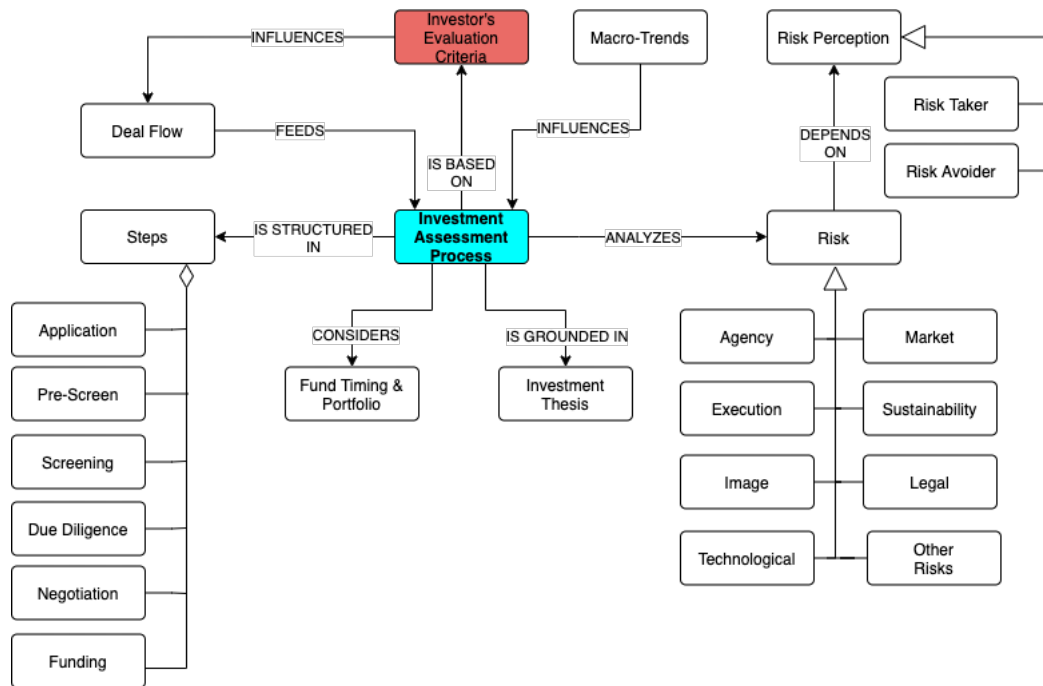


Figure 14 - Sub-Ontology 8: Investment Assessment Process

According to Klonowski (2010, pp. 77-78), “Extensive research has been conducted to examine the importance of the various decision-making criteria used by venture capitalists.” nevertheless, “Practitioners of venture capital regard the venture capital process as a combination of art and science.”. Therefore, the goal of this SO is to represent only the key factors that influence VCs and BAs’ assessment as a whole. It’s out of the scope of this study to characterize the decision-making dynamics that occur inside the investment assessment process itself.

The research of Boocock & Woods (1997) approaches the sequential nature of the **INVESTMENT ASSESSMENT PROCESSES** {T144} and shows different propositions from the literature and compiles its own model. The **STEPS** {T145} that structures the process from the beginning to the ending are presented below and is an adaptation from Boocock & Woods (1997) and Mitteness et al. (2012) studies:

- **APPLICATION** {T146}, which consists of a quick inspection of the business presentation (business plan or similar) looking for the main features (from the investor’s perspective) that may indicate the proposal should move forward.
- **PRE-SCREEN** {T147} that is usually the first meeting where investors evaluate both the presentations and the entrepreneurs. As indicated by [E04], in some evaluation processes,

the evaluators participating in this phase are intermediaries whose function is to make an initial filter. In this case, if the message is not aligned with the **GATEKEEPER's** {T45} criteria, this situation can bring difficulties about how the entrepreneur presents his arguments.

- **SCREENING** {T148}, where further information on the business and its management is obtained. At this stage, the entrepreneurs must understand and agree to the nature and purpose of the investment and investors.
- **DUE DILIGENCE** {T149}, where entrepreneurs are required to answer multiple questions, revise financial projections, and understand risks more clearly (Klonowski, 2010). According to (Levie & Gimmon, 2008, p. 242), "... where assessment of the potential in the technology is separate from the assessment of management.". Interviewee [EI08] indicates that sometimes the **NEGOTIATION** {T150} step comes before this one due to its complexity. On the other hand, [E19] stresses that "... in my experience in the two M&As I have had, the due diligence has to be extremely well detailed ...", otherwise it can lead the entrepreneur to a sub-optimal **NEGOTIATION** {T150}.
- **NEGOTIATION** {T150} and **FUNDING** {T151} are the final steps where the conditions for the investment are agreed upon and performed. Boocock & Woods (1997) observes:

... the fund managers are prepared to mix equity, convertible instruments, and pure loan finance as appropriate. The use of ratchets enables entrepreneurs to reduce the Fund's equity stake in their business if performance targets are met. Negotiations at this stage are critical. (p. 44)

To feed the process described above, investors need to receive a volume of investment proposals, as noted in Boocock & Woods (1997, p. 8) "... prospective investments emanate from a various sources, including unsolicited applications, via intermediaries and referrals ...". Therefore, this **DEAL FLOW** {T152}, is influenced by the **INVESTOR'S EVALUATION CRITERIA** {T88}.

**RISK** {T153} from a business perspective, according to Kenton (2020), "Business risk is the exposure a company or organization has to factor(s) that will lower its profits or lead it to fail. Therefore, anything that threatens a company's ability to achieve its financial goals is considered a business risk". The risks related to the entrepreneur itself is appointed by [E21] as "... the weight that the figure of the entrepreneur has will be diluted as you make the next rounds of investments ...".

In addition, research by Li & Ahlstrom (2019) looks at how risk-taking can vary in business decisions and also indicates the way a problem is framed can influence **RISK PERCEPTION** {T161}. Their study identifies people as **RISK TAKERS** {T162} (like to see problems framed as losses) and **RISK AVOIDERS** {T163} (like to see problems framed as gains).

The types of **RISKS** {T153} usually analyzed by investors are:

- **AGENCY** risks {T154} that is the possibility of divergent interests and goals between investors and entrepreneurs (Mason & Stark, 2004) and from the information asymmetry. Described in (Carpentier & Suret, 2015, p. 810) as “... a situation where managers have information that investors lack.”.
- **MARKET** risks {T155} that come from the market characteristics and the competition (Carpentier & Suret, 2015).
- **EXECUTION** risks {T156} that are related to the difficulty of implementing the technology, strategy, or business model (Kaplan and Stromberg, 2003).
- **IMAGE** risks {T157}, i.e., how the stakeholders perceive a startup (Picken, 2017). Interviewee [I05] mentioned politically exposed persons (PEP) as entrepreneurs to be invested as an example of this type of risk.
- **TECHNOLOGICAL** risks {T158} [E23] are the ones that can affect the product/service performance or scalability (Picken, 201).
- **SUSTAINABILITY** risks {T159} [I05], like emissions, land contamination, waste management, etc. (Klonowski, 2010)
- **LEGAL** risks {T160} [EI07], such as commercial contracts, IP, insurance, regulations, etc. (Klonowski, 2010).
- **OTHER RISKS** {T91}. This category includes risks not listed above, and that cannot be foreseen. Contextual risks may very well fit in here.

The **INVESTMENT ASSESSMENT PROCESS** {T144} is influenced by the **MACRO-TRENDS** {T90} and also considers **FUND TIMING & PORTFOLIO** {141}. It is grounded in the investor’s **INVESTMENT THESIS** {T164} as in (Kenton, 2021b) “An investment thesis is a reasoned argument for a particular investment strategy, backed up by research and analysis ... Individual investors can use this technique to investigate and select investments that meet their goals.”.



#### 4.2.9 Sub-ontology 9: Investment Contract

This SO describes the key factors that influence the **INVESTMENT CONTRACT** {T165} and is represented in Figure 15.

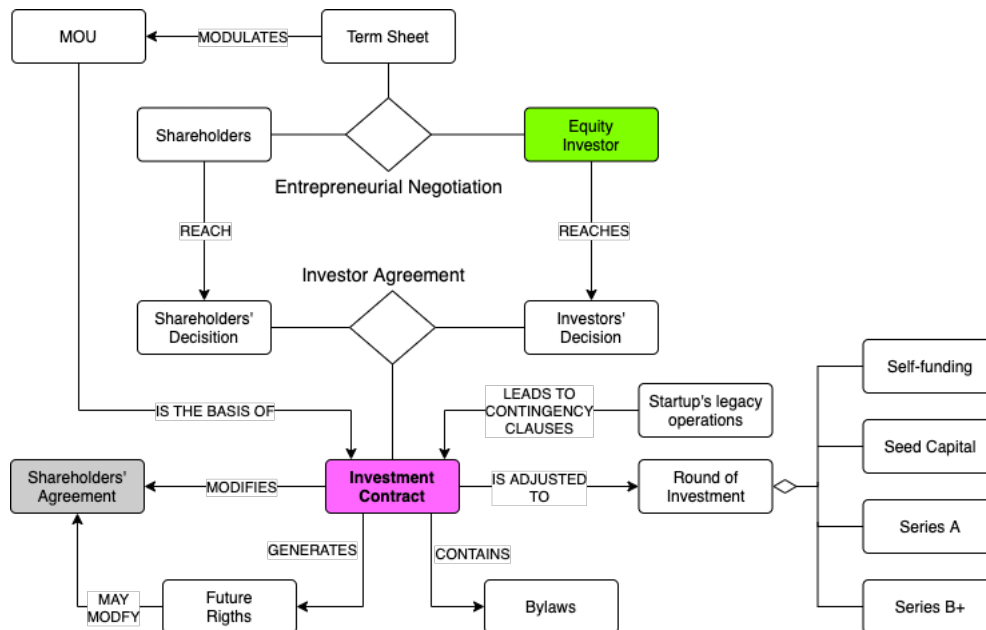


Figure 15 - Sub-Ontology 9: Investment Contract

According to (Drover et al., 2017, p. 1827), “... contractual arrangements between venture capitalists and entrepreneurs became a fruitful stream of research ...”, so the goal of this SO is to describe and to represent the elements that have a major influence on an **INVESTMENT CONTRACT** {T165} celebrated between entrepreneurs and investors. It’s out of the scope of this study to represent the content of such a contract.

The startup’s **SHAREHOLDERS** {T166} (entrepreneurs and previous investors, if any) and the **EQUITY INVESTORS** {T14} from the next round of investments craft and sign a **TERM SHEET** {T167} [E01; E08 and I24], i.e., a non-binding early and informal document of the terms of agreement (Klonowski, 2010), taking the first step into an **ENTREPRENEURIAL NEGOTIATION** {T169}. As stated, it seems a smooth process. Still, as indicated in (Dinnar & Susskind, 2018, p. 403) research, “the single biggest threat to entrepreneurial success is an inability to effectively manage the negotiations that arise at key interactions in the evolution of a startup.”. According to [I24], “... the term sheet is the key document of the negotiation ... it’s the basis ...”.

The **TERM SHEET** {T167} is a template for the Memorandum of Understanding (**MOU**) {T168} [E12], that is “... an agreement between two or more parties outlined in a formal document. It is not legally binding but signals the willingness of the parties to move forward with a contract.” (Kenton, 2021c). Some authors, like (Dinnar et al., 2018, p. 39), indicate that both documents have

the same purpose and “... typically include a clause on what level of commitment (to reaching a full agreement) the parties have taken on.”. The **MOU** {T168} is the basis of the **INVESTMENT CONTRACT** {T165}.

At the time that a **SHAREHOLDERS’ DECISION** {T170} and an **INVESTORS’ DECISION** {T171} is reached, to close the **INVESTOR AGREEMENT** {T172}, a formal **INVESTMENT CONTRACT** {T165} is produced and signed, legally binding both parties.

Some of the **STARTUP’S LEGACY OPERATIONS** {T173}, may require a contingency clause inclusion in the **INVESTMENT CONTRACT** {T165} (Chen, 2021b). For example, the **DUE DILIGENCE** {T149} stage may have indicated irregular hiring of employees for a period, and this should be reflected in the contract, as the sole responsibility of the startup partners at that time excluding new investors from any liability concerning this fact. According to [E22], “... a startup always has a past, unless you have just set up the company ...”.

The steps taken by a startup in growing its business through venture capital are called **ROUNDS OF INVESTMENT** {T174} [EI07] (Rieff, 2020). Typically, these rounds are:

- **SELF-FUNDING** {T175} is the beginning of the business, usually funded by entrepreneurs, family, and friends (Rieff, 2020). The typical value for this round is less than 500 thousand US Dollars in the USA (Index Ventures, n.d.).
- **SEED CAPITAL** {T176} is where the startup search for money to finance its first steps, mainly market development. The most common investor type at this stage is the **BUSINESS ANGEL INVESTOR** {T38} (Rieff, 2020). The typical value for this round is between 500 thousand and 2 million US Dollars in the USA (Index Ventures, n.d.).
- **SERIES A** {T177} is a fit when the business is ready for scaling up, with consistent and proven revenue streams. **BUSINESS ANGEL GROUPS** {T44} and **VENTURE CAPITAL INVESTORS** {T39} are the most suited types of investors for this step (Rieff, 2020). In the USA, startups usually raise between 3 million to 20 million US Dollars at this round (Index Ventures, n.d.).
- **SERIES B+** {T178} stages that include series B, C, and D are evaluated and invested by large **VENTURE CAPITAL INVESTORS** {T39} and pave the way for the startup’s **IPO** {T35} (Rieff, 2020). The typical value for the Series B round is between 10 and 40 million US Dollars in the USA (Index Ventures, n.d.).

The **INVESTMENT CONTRACT** {T165} is always adjusted to the respective **ROUND OF INVESTMENT** {T174}, and it also contains the **BYLAWS** {T179} [E10], that are the governing

documents of a company, such as board composition, meeting requirements, etc. (Klonowski, 2020). Besides, the contract modifies an existent **SHAREHOLDERS' AGREEMENT**<sup>4</sup> {T181}. Some **INVESTMENT CONTRACTS** {T165} may not immediately modify the **SHAREHOLDERS' AGREEMENT** {T181} but may have clauses that create **FUTURE RIGHTS** {T180} [E02], and that will change the agreement, according to provisions and conditions stipulated in the contract (Klonowski, 2010).

#### 4.2.10 Sub-ontology 10: Shareholders' Agreement

This SO describes the essential elements that must be present in a **SHAREHOLDERS' AGREEMENT** {T181} and is represented in Figure 16.

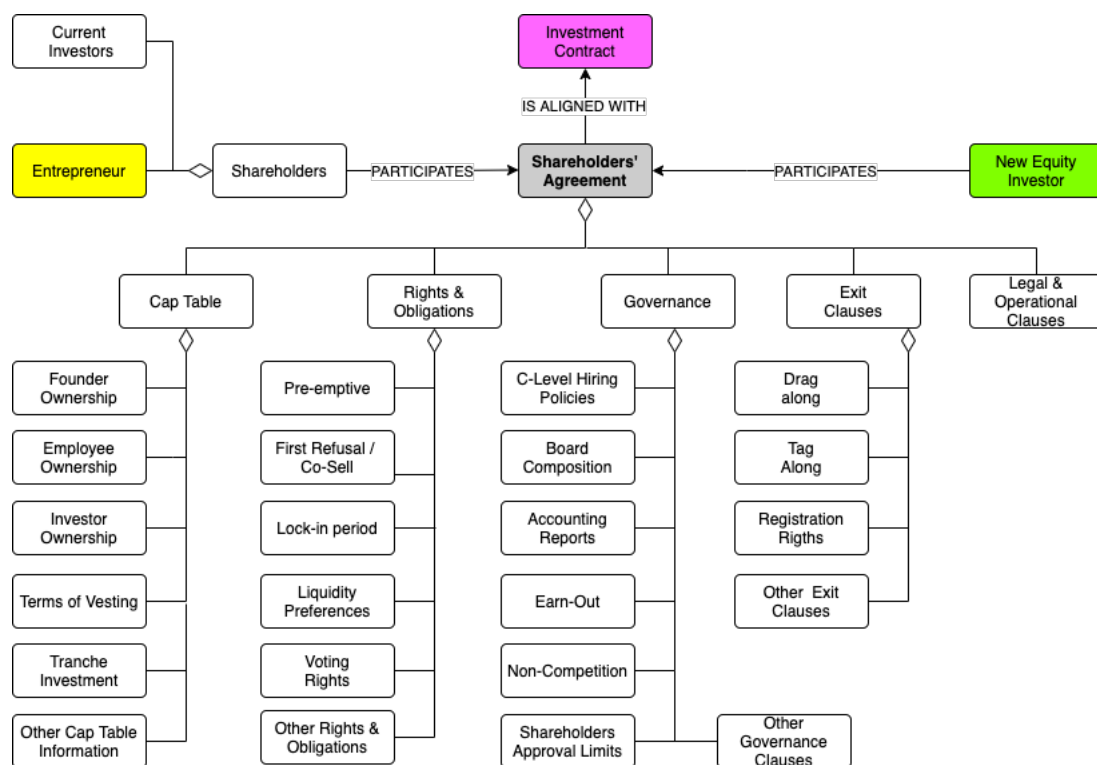


Figure 16 - Sub-Ontology 10: Shareholders' Agreement

**ENTREPRENEURS** {T16} and investors must agree on how they conduct themselves as the startup's **SHAREHOLDERS** {T166}. This agreement is related to the various aspects of a business venture, i.e., management decisions, approvals, transfer of shares, rights, and obligations, voting, the appointment of directors, among others, and this understanding must be represented in a formal document called **SHAREHOLDER'S AGREEMENT** {T181} (Klonowski, 2010).

<sup>4</sup> Detailed in SO 10

The **SHAREHOLDERS** {T166} are the **ENTREPRENEURS** {T16} and the **CURRENT INVESTORS** {T182} [EI11 and I13] (if any) from previous rounds of investment. The **SHAREHOLDERS' AGREEMENT** {T181} has the participation of these **SHAREHOLDERS** {T166} and the **NEW EQUITY INVESTORS** {T183}, and it must be aligned with the **INVESTMENT CONTRACT** {T165} firmed by both.

Based mainly on the literature (Klonowski, 2010; Mitteness et al., 2012; Pollman, 2019; Runde, 1994 and Stevens, 2012), interviewees observations and complementarily in trustable web sources (Chen, 2021c; Index Ventures, n.d.; Tarver, 2021 and Volker, n.d.) and aligned with the purpose of this study, we organized the essential elements of a **SHAREHOLDERS' AGREEMENT** {T181} in five categories: **CAP TABLE** {T123}, **RIGHTS & OBLIGATIONS** {T188}, **GOVERNANCE** {T194}, **EXIT CLAUSES** {T201} and **LEGAL & OPERATIONAL CLAUSES** {T205}, detailed in Table 3.

**Table 3 - Shareholders' Agreement Information Categories**

CATEGORIE / SUB-CATEGORIES	TERM {#}	DESCRIPTION AND INTERVIEWEES' HIGHLIGHTS
CATEGORIE: <b>CAP TABLE</b>	{T123}	According to Stevens (2012, pg. 83) is "The equity ownership structure as captured in a table of capitalization (Cap Table) determines how the fruits of success will be divided between founders, management, and investors at an exit event such as an acquisition or initial public offering."
FOUNDER OWNERSHIP	{T184}	The percentage of the shares owned by each entrepreneur in a startup (Index Ventures, n.d.).
EMPLOYEE OWNERSHIP	{T185}	This strategy attracts and retains the best talent available with low salaries (Index Ventures n.d.). Also known as Employee Stock Ownership Plan (ESOP), typically 10% of the startup's shares are reserved for the entire pool of eligible employees during the early stages (Index Ventures, n.d.).
INVESTOR OWNERSHIP	{T186}	The percentage of the shares owned by each investor in a startup (Index Ventures, n.d.).
TERMS OF VESTING	{T206}	Stevens (2012) explains: All employees who receive stock in a company, but particularly the founders because of the large amount of stock they receive, should be required to earn in their stock by maintaining their employment with the company for a defined period ... four years is a typical vesting period for founder/employee stock. (p. 83)
TRANCHE INVESTMENT	{T187}	The cash invested in installments related to the reach of goals and <b>MILESTONES &amp; METRICS</b> {T96} presented in the <b>VISION ROADMAP</b> {T97} (Klonowski, 2010). [EI07].
OTHER CAP TABLE INFORMATION	{T207}	Other information may be needed in specific situations but not mentioned in this study.

CATEGORIE / SUB-CATEGORIES	TERM {#}	DESCRIPTION AND INTERVIEWEES' HIGHLIGHTS
CATEGORIE: <b>RIGHTS &amp; OBLIGATIONS</b>	{T188}	The information in this category aims "... to protect venture capitalists during the term of their investment and provide them with additional powers or remedies in the event the firm struggles." as in (Klonowski, 2010, p. 151). [EI11].
PRE-EMPTIVE	{T189}	Stressed by [E01]. Klonowski (2010) explains: With these rights, venture capitalists can acquire new shares issued by the firm in direct proportion to their percentage holding in the firm at the time of the new issue. This ensures that venture capitalists' holdings are not diluted without consent. (p. 151)
FIRST REFUSAL / CO-SELL	{T190}	First refusal, as indicated in (Klonowski, 2010, pp. 151-152), means "If the firm's owners wish to sell any portion of their shareholding to an interested third party, venture capitalists have the right to acquire these shares on the same terms offered by the third party." Co-sell rights are similar and relate to the "... venture capitalists have the right to sell their shares in proportion to the level of shareholding (or on a pro-rata basis) to the willing buyer." (Klonowski, 2010, p. 152). [I24]
LOCK-IN PERIOD	{T191}	Due to the necessity to build a long-term value in the investment period, venture capitalists require shareholders not to transfer shares until specific goals are achieved (Klonowski, 2010). As in [I03], "...most of my investment agreements state that the entrepreneur who wants to exit must leave his shares with the company ...". [EI09 and E23].
LIQUIDITY PREFERENCES	{T192}	Liquidity preferences establish that investors demand progressively higher returns on medium and long-term assets, which is the case for startups. Also, according to the Keynesian theory, the demand for liquidity holds speculative power, so liquid investments are easier to get full value for (Runde, 1994). As in [I06], "...what we look at are the clauses that make liquidity possible ... that do not generate ties and do not bind us for the long term with the deal ...". [E10 and I24].
VOTING RIGHTS	{T193}	The rights are given to a shareholder to vote on matters of startup policy [I24]. Klonowski (2010) explains: Venture capitalists will usually want approval or control over the following issues: changes to the business plan, decisions to hire or remove key management, increases in capital, the sale of shares or significant assets, liquidation of the firm, entering into very large or long-term commitments or contracts, changing the compensation of management, and arrangements constituting a conflict of interest transaction. (p. 155)
OTHER RIGHTS & OBLIGATIONS	{T208}	Other information may be needed in specific situations but not mentioned in this study.
CATEGORIE: <b>GOVERNANCE</b>	{T194}	This category aims to represent the startup's governance rules [I16 and E22]. Regarding the specificities of a startup, it is paramount to cite Pollman (2019): Longstanding theories of corporate ownership and governance do not capture the special features of startups. They can grow large with ownership shared by diverse participants, and they face issues that do not fit the dominant principal-agent paradigm of public corporations or the classic narrative of controlling shareholders in closely held corporations. (p.155)
C-LEVEL HIRING POLICIES	{T195}	The policies applied to select, hire and fire employees at the executive level (Pollman, 2019). [E02 and I16].
BOARD COMPOSITION	{T196}	How the <b>STARTUP BOARD</b> 's {T69} members are indicated, the quantity, and what elements compound it (Pollman, 2019). [EI09 and I24].
ACCOUNTING REPORTS	{T197}	How entrepreneurs will report the milestones & metrics achievement to the investors. Monthly, quarterly and annual reports may exist, and audited financial statements may be required (Klonowski, 2010). [EI07].

CATEGORIE / SUB-CATEGORIES	TERM {#}	DESCRIPTION AND INTERVIEWEES' HIGHLIGHTS
EARN-OUT	{T198}	According to (Tarver, 2021) “An earnout is a contractual provision stating that the seller of a business is to obtain additional compensation in the future if the business achieves certain financial goals, which are usually stated as a percentage of gross sales or earnings.”. [EI08 and I14].
NON-COMPETITION	{T199}	It states that shareholders agree to not compete with the business while they remain stockholders and for a period after a transfer of its shares ( <i>Key Issues to consider for a Shareholders' Agreement.</i> , n.d.; Pollman, 2019). [I16].
SHAREHOLDERS APPROVAL LIMITS	{T200}	It establishes actions and respective financial limits that shareholders are entitled to approve or not (Pollman, 2019). [E22].
OTHER GOVERNANCE CLAUSES	{T209}	Other information may be needed in specific situations but not mentioned in this study.
CATEGORIE: <b>EXIT CLAUSES</b>	{T201}	This category indicates the rules that must be applied when a shareholder transfers the totality of its shares (Klonowski, 2010). [I03] “... I [the investor] never forget ... what do we do if you [the entrepreneur] want to leave?”. [E04].
DRAG-ALONG	{T202}	This clause is mainly protection for investors. Klonowski (2010) says: The preferred exit route is the sale of the investee firm to a strategic investor ... Under the terms of these rights, venture capitalists can solicit offers for shares in the investee firm. If an offer crystallizes, the entrepreneurs must sell a sufficient number of shares to satisfy the requirements of the offer. (p. 153).
TAG-ALONG	{T203}	This clause protects minority investors when a majority shareholder sells his or her shares. This gives minority shareholders the right to go along and sell their stake in the company as well (Klonowski, 2010).
REGISTRATION RIGHTS <sup>5</sup>	{T204}	This clause indicates how <b>INTELLECTUAL PROPERTY</b> {T07} must be managed when a shareholder transfers all his shares (OECD/Eurostat, 2018).
OTHER EXIT CLAUSES	{T210}	Other information may be needed in specific situations but not mentioned in this study.
CATEGORIE: <b>LEGAL &amp; OPERATIONAL CLAUSES</b>	{T205}	It is out of the scope of this study to go deeper into these categories that are more related to lawyers. [E02]. Nevertheless, Pollman (2019) states: From a legal perspective, startups simply represent part of the universe of private companies, subject to general principles of corporate law but otherwise free to privately order their affairs. It is, therefore, the nature of the startup business and its life cycle that significantly drive governance arrangements and conflicts. (p. 165)

### 4.3 Validation

The validation phase was performed, encouraging collaboration from knowledge people with the acumen to evaluate the ontology and give feedback related to its purpose (Lenat et al., 1990). Therefore, the subsequent paragraphs address how a Focus Group validated the ontology to evaluate each SO and the Competence Questions.

<sup>5</sup> Another possible meaning for “Registration Rights”, not used in the context of this research, is explained by (Klonowski, 2010):

The registration rights agreement provides venture capitalists with the right to require the firm to prepare, file, and maintain a registration statement on the appropriate stock exchange at its own expense in order to achieve the sale of shares to the public in the initial public offering (should venture capitalists wish to do this). Filing a registration statement is one of the key steps in the IPO process. (p. 203)

### 4.3.1 Participants inviting criteria

The criteria used to form the Focus Group’s participants “... is the single most important aspect of the success of the focus group interview.” according (Vaughn et al., 1996, p. 56). So, the criteria applied to identify and recruit the appropriate subjects was:

- Entrepreneurs of startups (or companies) in different development stages and equity investors.
- Senior, middle, and junior professionals.
- Brazilian and Portuguese professionals.
- Subjects that participated in the artifact’s building stage (as interviewees) and subjects who had no previous contact with the ontology.

Twenty subjects with these characteristics were invited, and seven of them accepted the invitation for the Focus Group. Their profiles are shown in Table 4.

**Table 4 - Focus Group Participants’ Profile**

ID	CATEGORY	GENDER	COUNTRY	CONTACT WITH SAPIENT	SENIORITY LEVEL	DEVELOPMENT STAGE
P1	Entrepreneur	Male	Brazil	2 <sup>nd</sup>	Junior	Growth
P2	Investor	Male	Portugal	2 <sup>nd</sup>	Senior	n/a
P3	Entrepreneur	Male	Portugal	2 <sup>nd</sup>	Senior	Late
P4	Entrepreneur	Male	Brazil	2 <sup>nd</sup>	Senior	Growth
P5	Entrepreneur	Male	Brazil	2 <sup>nd</sup>	Middle	Early
P6	Entrepreneur / Investor	Male	Brazil	1 <sup>st</sup>	Senior	Late
P7	Entrepreneur / Investor	Female	Brazil	1 <sup>st</sup>	Middle	n/a

### 4.3.2 Meeting appointment, organization, and execution

A challenge to perform this phase was to set a common schedule for all participants due to their jobs and the time zone difference between Brazil and Portugal. For this reason, three dates/hours were proposed, and the best voted was the one defined for the meeting.

The session, with the seven participants indicated in Table 4 plus the Supervisor of this research (participating as an observer), occurred via videoconference call and lasted one hour and thirty minutes, on 12<sup>th</sup> May 2021, from 02:00 pm (Brazil) / 06:00 pm (Portugal) to 03:30 pm (Brasil) / 07:30 pm (Portugal). It was recorded, with the acknowledgment of all participants, for notes and references. The meeting was conducted mainly in Portuguese with the SAPIENT Ontology Terms and the Competence Questions presented in English.

At the beginning of the meeting, the researcher presented the goals of this work and the meeting rules. Then, each participant made a brief introduction of themselves to the others. Next, the notation used in the SAPIENT Ontology was explained, and each of the ten SO was detailed presented by the researcher.

After, the researcher sent a link to the SO evaluation form (see Figure 17) and briefly explained the SO, and the participants gave their scores. This process was repeated for each SO.

Then, the researcher gave a brief explanation about the Competence Questions and sent a link to the CQ evaluation form (Annex D).

The last part of the session was dedicated to open comments from the participants related to two open-ended questions presented by the researcher.

Como você avalia essa Sub-Ontologia em relação aos critérios abaixo? \*

(👍) 1 = Concordo fortemente / (👎) 5 = Discordo fortemente

	1	2	3	4	5
É completa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
É útil	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
É consistente	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
É compreensível	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 17 - Excerpt from the form applied to evaluate each SO (original in Portuguese<sup>6</sup>)

### 4.3.3 Sub-Ontologies Validation

A validation process by its intended end-users is fundamental to certify the ability of an ontology to meet its purpose (Hevner et al., 2004; Holsapple & Joshi, 2002; Lenat et al., 1990). Therefore, the evaluation criteria must be defined before the artifacts' evaluation process itself. Table 5 shows criteria applied to evaluate design science studies.

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6

- “Como você avalia essa Sub-Ontologia em relação aos critérios abaixo?” means “How do you rate this Sub-Ontology regarding the following criteria?”
- “Concordo fortemente” means “Strongly agree” / “Discordo fortemente” means “Strongly disagree”
- “É completa / É útil / É consistente / É compreensível” means “Completeness / Utility / Consistency / Understandability”



**Table 5 - Criteria applied to evaluate design science studies**

CRITERIA	(HOLSAPPLE & JOSHI, 2002)	(PEREIRA ET AL., 2019)	THIS RESEARCH
Clarity	✓		
Completeness		✓	✓
Comprehensiveness	✓	✓	
Conciseness	✓		
Consistency		✓	✓
Correctness	✓		
Understandability		✓	✓
Utility	✓	✓	✓

The evaluation criteria selected for this research are indicated in Table 5. This set forms the basis for an objective evaluation of the ten SOs of the SAPIENT Ontology, as follows:

- SO 1: Startup
- SO 2: Entrepreneur
- SO 3: Equity Investor
- SO 4: Startup Team
- SO 5: Resources
- SO 6: Presentations for Investors
- SO 7: Investors' Evaluation Criteria
- SO 8: Investment Assessment Process
- SO 9: Investment Contract
- SO 10: Shareholders' Agreement

The participants were invited to rate each attribute applying a five-point end-labelling Likert Scale (Marquez, 2018), where “1” is “Strongly Agree” and “5” is “Strongly Disagree. To analyze the results, according to (Barradas, 2015; Pereira et al., 2019), the Attribute Agreement Analysis method (Attribute Agreement Analysis, n.d.), a quantitative approach, was applied by transforming the answers from the Likert Scale to a Binary Scale, as follows:

- Likert Scale (1 or 2) transformed to Binary Scale (1).
- Likert Scale (3, 4, or 5) transformed to Binary Scale (0).

A similar approach applied by (Barradas, 2015; Pereira et al., 2019) was used to consider if each SO was validated. For the SAPIENT Ontology, the results were obtained from the averaged sum of all participants' scores, for each criterion, in each SO. See Equation 1, where “ $n$ ” relates to the number of effective validations and “ $x_i$ ” relates to the attribute classification.

**Equation 1 - Attribute Agreement Analysis Equation**

$$Approval = \frac{100}{n} \sum_{i=1}^n x_i$$

The SAPIENT Ontology applied the same rule as in (Barradas, 2015; Pereira et al., 2019), i.e., if  $Approval \geq 70$ , the SO was classified as validated. The scores were also calculated for all SAPIENT Ontology and global for each participant (to evaluate its acceptance) as indicated in Table 6.

**Table 6 - Ontology Evaluation**

PT/SO	SO 1	SO 2	SO 3	SO 4	SO 5	SO 6	SO 7	SO 8	SO 9	SO 10	GLOBAL
<b>P1</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	<b>100%</b>
<b>P2</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	<b>100%</b>
<b>P3</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	<b>100%</b>
<b>P4</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	<b>100%</b>
<b>P5</b>	100%	100%	100%	75%	75%	100%	75%	75%	75%	100%	<b>88%</b>
<b>P6</b>	100%	50%	100%	50%	100%	100%	50%	100%	50%	100%	<b>80%</b>
<b>P7</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	<b>100%</b>
<b>GLOBAL</b>	<b>100%</b>	<b>93%</b>	<b>100%</b>	<b>89%</b>	<b>96%</b>	<b>100%</b>	<b>89%</b>	<b>96%</b>	<b>89%</b>	<b>100%</b>	<b>95%</b>

The SAPIENT Ontology is considered validated with a high-approval overall score of 95%. We also see those four ontologies (SO 1, SO 3, SO 6, and SO 10) received 100% approval, and the lowest score is 89% (SO 4, SO 7 and SO 9). From each participant's point-of-view, five in seven gave a 100% approval (P1, P2, P3, P4 and P7), and the lowest individual approval was 80% (P6). Individuals' evaluations of each SO are presented in Annex E.

**4.3.4 Competence Questions Validation**

To be certified that the SAPIENT Ontology answers its Competence Questions (Noy & McGuinness, 2001), the validation process must address the CQs as well. The answers given by the participants are presented in Table 7.

The results show that 9 in 10 CQs received 100% of approval. CQ1 was the exception, receiving just one "NO" answer, meaning it received 86% of approval. So, the CQs are also considered validated with an overall 99% of approval. There were no doubts from the participants in this point. However, the decision for this stage of the process was not to give the participants any clarification on the meaning of the CQs.

**Table 7 - Competence Questions Evaluation**

COMPETENCE QUESTION	YES	NO
1. What is a Startup?	6	1
2. What are the key Entrepreneur's roles in a Startup?	7	0
3. Who provides Venture Capital to a Startup?	7	0
4. Who are the members of the startup team?	7	0
5. What are the key resources needed by a Startup?	7	0
6. What key information must be increasingly compiled to present to Investors?	7	0
7. What are the key evaluation criteria applied by Equity Investors?	7	0
8. What is an Investment Assessment Process?	7	0
9. What forms the scope of a startup's investment contract?	7	0
10. What are the shareholders' agreement key components?	7	0

#### 4.3.5 Open-ended Questions and Free Comments

At the final part of the Focus Group, the researcher proposed two open-ended questions and encouraged open comments from the participants willing to answer them. The two open-ended questions were:

- What is your general opinion about the ontology?
- For whom can it be useful and why?

The highlights from the session transcripts are presented in Table 8.

**Table 8 - Focus Group Open-Ended Questions Comments Highlights**

ID	COMMENTS HIGHLIGHTS
P1	<ul style="list-style-type: none"> <li>▪ "...is very useful ... and I wish I had access to this material before we started my first company."</li> <li>▪ "... useful not only for us entrepreneurs but also for Brazilian investors. In a general way for our startup ecosystem of innovation and business creation."</li> <li>▪ "...you are enabling a business to be created more securely."</li> </ul>
P2	<ul style="list-style-type: none"> <li>▪ "It is perfect ... I had a lot of work to find 2 or 3 minor defects."</li> <li>▪ "You get an excellent approach... it is comprehensive, and at the same time it is focused on what is needed".</li> <li>▪ "I agree with P1 and wish I had this material before ... I had to spend a lot of time to get this information that is scattered in various places and comes from various authors."</li> <li>▪ "And here we are talking about businesses to be leveraged through venture capital so clearly this relationship is important and will be very useful for entrepreneurs but also very useful for investors, because we know that we still have very few angel investors ... so, maybe helping new investors to feel more secure in their first steps."</li> </ul>
P3	<ul style="list-style-type: none"> <li>▪ "... is perfect ... it was difficult at some points trying to find an error ..."</li> <li>▪ "...the investor part I think is very well defined and without being exhaustive ... So I think it is very good."</li> </ul>
P4	<ul style="list-style-type: none"> <li>▪ "... your framework is complete ... but I agree with P6 that this model can reflect a timeline and be more simplified at the beginning ... so it can become a guide for the entrepreneur in the sense that there is no point in him going straight out to look for investment ..."</li> </ul>
P5 (*)	

ID	COMMENTS HIGHLIGHTS
P6	<ul style="list-style-type: none"> <li>▪ "... very nice work, very detailed. Super understandable ... you'll see I gave a maximum grade for understandability ... because I think the way you guys built ... It's easy to understand."</li> <li>▪ "...I gave a lower score for usefulness for the entrepreneur ... Because I think that deep down ... entrepreneurship is a characteristic that is not very mathematical, not very structured ..."</li> <li>▪ "...it lacks to represent with more prominence the stages of the company ..."</li> <li>▪ "...congratulations ... It will look very cool ... I'm curious to see the final result."</li> </ul>
P7	<ul style="list-style-type: none"> <li>▪ "I found it super interesting because it is what P1 said ... with this information at the beginning ... everything would be easier ..."</li> <li>▪ "...you connect all the dots ..."</li> <li>▪ "...all this union of efforts so that the company works out ... that is what is very interesting here."</li> </ul>

*Note.* (\*) P5 had to leave the meeting before this final round and was not able to give its point-of-view.

#### 4.4 Discussion

This work's main goal was always to focus on the knowledge's production and not just create something with a document focus (Staab, et al., 2001). The Design Science approach (van Aken, 2007) and an ontology (Hevner et al., 2004) development had an important role in pursuing this objective. With this strategy, and the existing literature, we were able to come up with a solid and diverse contribution from 28 professionals from three continents (Europe, South America, and North America).

This contribution was paramount to build a robust answer to the Research Question, replicated here:

- From an investment perspective, how do entrepreneurs, VCs and BAs look at a startup?
- Is there a model in the literature that describes how this works?
  - If not, can we build a model that describes it?

The literature review shows existent trade-offs between entrepreneurship and finance, different perceptions of risk, various angles that an investor's decision-making process can be analyzed, and distinct factors influencing the assessment criteria. These aspects inhibit creating a model that describes everything together. Hence, a systematized model or a comprehensive framework that answers the Research Question was not found in the literature.

The artifacts produced by this research are composed of ten SOs and CQs. They describe key concepts related to the Research Question (Startup, Entrepreneur, Equity Investor, Startup Team, Resources, Presentations for Investors, Investors' Evaluation Criteria, Investment Assessment Process, Investment Contract, and Shareholders' Agreement), and how these concepts relate to each other. Thus, this approach brings the point of view from entrepreneurs, VCs, and BAs in one piece of knowledge, in the format of an ontology.

The main strength of the SAPIENT Ontology is that it brings together in a single model diverse information scattered in various sources and with varying approaches from multiple authors. In

addition, the curation of information present in the SAPIENT was performed based on the existing literature, reinforced by the careful evaluation of entrepreneurs and investors of varying degrees of experience and from different cultures. As stressed in the Focus Group by [P7], “... you connect all the dots ...”.

#### **4.4.1 Limitations**

The timeframe limitation usually imposed by a master's dissertation brought restrictions to the present study. The author desired to conduct at least one case study to instantiate the ontology. He would also have liked to interview more professionals from other world regions, such as Africa, Asia, the Middle East, and Oceania.

Nevertheless, professionals from Brazil, Portugal, and the USA participated in the process, strongly reducing the cultural bias that the model could present. Additionally, data saturation was obtained (Fusch & Ness, 2015) before the final five interviews, and seasoned entrepreneurs and investors gave substantial contributions to the model's robustness.

#### **4.4.2 Recommendations for Entrepreneurs and Investors**

Valuable insights and reflections emerged from all the development steps of this research. The literature review and the interactions during the interviews and the focus group ignited recommendations of great value for entrepreneurs and investors. Although their references are indicated in sessions 4.2 and 4.3 of this work, some are spotlighted here:

- It is essential to point out that equity investors are not the only way to finance startups. Some entrepreneurs choose the bootstrap approach (Pollman, 2019), for instance, and also achieve their goals. But, once this way has been chosen, entrepreneurs must take a long-term view of what this way will look like and what to expect from it, noted by [P1] “... I wish I had access to this material before we started my first company.”, [P2] “... I agree with P1 and wish I had this material before ...” and [P7] “... with this information at the beginning ... everything would be easier ...”, participants of the Focus Group.
- Entrepreneurs must pay special attention to the startup team. Professionals with a background in both sides of the table, i.e., as entrepreneurs and investors, indicate its importance as stressed by [EI08 and EI11] “... most of the startup’s success is related to them ...”, and also a senior investor [I06] pointed “... team and founders are fundamental.”, during the interviews’ phase.
- Another aspect is the multiple roles that an entrepreneur must play. He/She “... must be a jack-of-all-trades to some extent” (Lazear, 2004, p. 208) and as promptly stressed by a

seasoned entrepreneur [E22] “I relate to all that is in this diagram”, when he/she was assessing the entrepreneur’s sub-ontology, during the interview.

- On the other hand, the entrepreneurship world needs more investors, as stressed in the Focus Group by [P2] “... because we know that we still have very few angel investors ... so, [this ontology] may help new investors to feel more secure in their first steps.”.
- Discipline, intuition, or both? Here controversial points-of-view appear from an experienced entrepreneur and a senior investor. While the entrepreneur [E01] indicates that VCs put substantial weight on “gut feeling”, investor [I14] says, “... I try to use the feeling as little as possible.”.
- Investors must not push too hard. Entrepreneurs know who has the money but “... are very sensitive to what they perceive as the imposition of unfair terms in the funding offer” (Boocock & Woods, 1997).
- Negotiation ability is critical for entrepreneurs and investors. According to Dinnar & Susskind (2018, p. 43), “the single biggest threat to entrepreneurial success is an inability to effectively manage the negotiations that arise at key interactions in the evolution of a startup.”. For example, a senior investor from Silicon Valley, [I24], spotlighted the term sheet’s negotiation, indicating that “... the term sheet is the key document of the negotiation ... it’s the basis ...” during the interview.

#### 4.5 Conclusions

This study was made robust by the processes used to refine and evaluate the ontology and its artifacts. Comprehensive evaluation methods with exploration and validation phases were applied, structured as indicated in Figure 18.

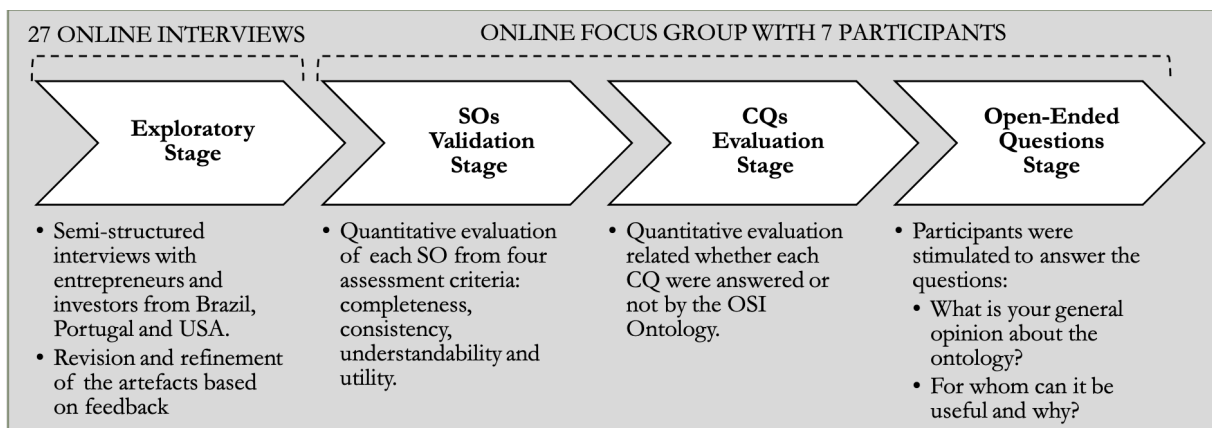


Figure 18 - SAPIENT Evaluation & Validation Process

The diversity of the interviewees' profiles (Annex B) and the Focus Groups' participants (Table 4) in terms of culture, background, business development stage, and professional experience was paramount to the development of SAPIENT Ontology. Moreover, their respective views enriched the final result, leading to high approval scores.

The evaluation followed an iterative evaluation process and analysis of the CQs (Staab et al., 2001). The exploratory and the validation steps proved to be complete and comprehensive for evaluating the SAPIENT ontology. As we can see, the Attribute Agreement Analysis indicated an overall approval of 95% for the ontology. Furthermore, the validation for whether SAPIENT answers the CQs received a general endorsement of 99%. Thus, we believe there is robust evidence to claim a very successful evaluation of this research.

## 5 Conclusions

### 5.1 Research goals

Entrepreneurship via startups is a worldwide phenomenon (Startup Genome, 2020), with more than one hundred million new businesses born each year (InnMind, 2021), and it is strongly linked to the innovation's concept (OECD/Eurostat, 2018).

Venture Capital is one of the most popular forms of startup funding (Startup Genome, 2020). However, in the USA, only 0,05% of the existing startups are able to raise this type of investment (Fundera, 2020). This research aimed to contribute to increase this rate worldwide by aligning the entrepreneur and investor perspectives.

### 5.2 Key findings

There is vast literature about venture capital funding and its related issues. The literature review performed for this research revealed the lack of a comprehensive model describing how entrepreneurs look at an investment or even, on the opposite, how investors look or perceive a startup.

The uncovering of this gap led through the Research Question:

From an investment perspective, how do entrepreneurs, VCs and BAs look at a startup?

- Is there a model in the literature that describes how this works?
- If not, can we build a model that describes it?

To fill in this gap, the researcher selected the Design Science approach (van Aken, 2007) as the methodology to support this study. Furthermore, the development of an ontology (Holsapple & Joshi, 2002), named SAPIENT, was performed to apply this methodology.

This ontology pulls the main pieces of entrepreneurship funding by venture capital in just one place. SAPIENT covers concepts such as Startup, Entrepreneur, Equity Investor, Startup Team, Resources, Presentations for Investors, Investors' Evaluation Criteria, Investment Assessment Process, Investment Contract, and Shareholder's Agreement.

The model was initially crafted by the author's personal experience and grounded in the literature. Then, applying semi-structured interviews and a Focus Group, the different perspectives and know-how from twenty-eight professionals, comprising entrepreneurs and investors from three countries (Brazil, Portugal, and the USA), expanded, validated, and enriched the results.

SAPIENT received an overall approval of 95% from the Focus Group's participants. In other words, the model "connects all the dots" as supported by [P7].



### **5.3 Limitations and opportunities for improvement**

As discussed in (Holsapple & Joshi, 2002), an ontology should be instantiated to improve its value by feedbacks on its application. However, due to the timeframe limitation usually imposed by a master's dissertation, this instantiation could not be done in this research. Moreover, even with the participation of professionals from three different cultures, since entrepreneurship is a subject of worldwide interest, SAPIENT needs to be evaluated by other cultures, such as Africa, Asia, the Middle East, and Oceania.

### **5.4 Implications and contributions**

The knowledge contribution of this research can be valuable to academia, investors, and entrepreneurs. SAPIENT can support the teaching of innovation and entrepreneurship, helps the decision-making process of investment via venture capital, and improves the general understanding of what entrepreneurship funded by other people's money is all about.

### **5.5 Future Research**

The present research has raised an important question that needs to be explored, thus opening a path for further investigation. A startup is not a static element and, as a living organization (Adizes, 1990), has different needs at different stages of its existence. Thus, the ontology should reflect this path from one stage to another and how some elements gain or lose importance for each of these stages.

## References

- 11 Ways To Establish, And Then Reach, Your Long-Term Goals. (2018, November 13). Forbes. <https://www.forbes.com/sites/forbescoachescouncil/2018/11/13/11-ways-to-establish-and-then-reach-your-long-term-goals/?sh=247628677273>
- Adizes, I. (1990). *Corporate Lifecycles: How and Why Corporations Grow and Die and What to Do About It* (1st ed.). The Adizes Institute.
- Agarwal, R., & Shah, S. K. (2014). Knowledge sources of entrepreneurship: Firm formation by academic, user and employee innovators. *Research Policy*, 43(7), 1109–1133. <https://doi.org/10.1016/j.respol.2014.04.012>
- Attribute Agreement Analysis*. (n.d.). <https://www.Minitab.Com>. Retrieved June 5, 2021, from [https://support.minitab.com/en-us/minitab/18/Assistant Attribute Agreement Analysis.pdf](https://support.minitab.com/en-us/minitab/18/Assistant%20Attribute%20Agreement%20Analysis.pdf)
- Barradas, L.C.S. (2015). *Information Technology and Enterprise Integration for the Fuzzy Front End of Innovation* [Doctoral Thesis, University of Porto].
- Blank, S. (2013, May 1). Why the Lean Start-Up Changes Everything. Harvard Business Review. <https://hbr.org/2013/05/why-the-lean-start-up-changes-everything?referral=00060>. Access February 07, 2021.
- Blank, S., & Dorf, B. (2020). *The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company* (1st ed.). Wiley.
- Botha, M., & Pietersen, M. (2020). Entrepreneurial Action and Competencies: Exploring Pathways to Venturing Accomplishments. *Entrepreneurship Research Journal*, 1(ahead-of-print). <https://doi.org/10.1515/erj-2019-0347>
- Brunninge, O., & Nordqvist, M. (2004). Ownership structure, board composition and entrepreneurship. *International Journal of Entrepreneurial Behavior & Research*, 10(1/2), 85–105. <https://doi.org/10.1108/13552550410521399>
- Brunswik, E. (1956). *Perception and the Representative Design of Psychological Experiments*. University of California Press.
- Bruton, G. D., Filatotchev, I., Chahine, S., & Wright, M. (2009). Governance, ownership structure, and performance of IPO firms: the impact of different types of private equity investors and institutional environments. *Strategic Management Journal*, 31, 491–509. <https://doi.org/10.1002/smj.822>

- Bullinger, A., & Reichwald, H. D. H. R. (2008). *Innovation and Ontologies: Structuring the Early Stages of Innovation Management (Market- und Unternehmensentwicklung Markets and Organisations)* (2009th ed.). Gabler Verlag.
- Carlos Nunes, J., Gomes Santana Félix, E., & Pacheco Pires, C. (2014). Which criteria matter most in the evaluation of venture capital investments? *Journal of Small Business and Enterprise Development*, 21(3), 505–527. <https://doi.org/10.1108/jsbed-10-2013-0165>
- Carpentier, C., & Suret, J.-M. (2015). Angel group members' decision process and rejection criteria: A longitudinal analysis. *Journal of Business Venturing*, 30(6), 808–821. <https://doi.org/10.1016/j.jbusvent.2015.04.002>
- Cavallo, A., Ghezzi, A., Dell'Era, C., & Pellizzoni, E. (2019). Fostering digital entrepreneurship from startup to scaleup: The role of venture capital funds and angel groups. *Technological Forecasting and Social Change*, 145, 24–35. <https://doi.org/10.1016/j.techfore.2019.04.022>
- Chen, J. (2021a, May 30). *Investment Time Horizon Definition*. Investopedia. <https://www.investopedia.com/terms/t/timehorizon.asp>
- Chen, J. (2021b, May 31). *How a Contingency Clause Works*. Investopedia. <https://www.investopedia.com/terms/c/contingency-clause.asp>
- Chen, J. (2021c, May 22). *Tag-Along Rights*. Investopedia. <https://www.investopedia.com/terms/t/tagalongrights.asp>
- Cox, K. C., Lortie, J., & Gramm, K. (2017). The investment paradox: why attractive new ventures exhibit relatively poor investment potential. *Venture Capital*, 19(3), 163–181. <https://doi.org/10.1080/13691066.2016.1247982>
- Crick, J. M., & Crick, D. (2018). Angel investors' predictive and control funding criteria. *Journal of Research in Marketing and Entrepreneurship*, 20(1), 34–56. <https://doi.org/10.1108/jrme-11-2016-0043>
- Dhochak, M., & Sharma, A. K. (2015). Using interpretive structural modeling in venture capitalists' decision-making process. *DECISION*, 43(1), 53–65. <https://doi.org/10.1007/s40622-015-0106-0>
- Dhochak, M., & Sharma, A. K. (2016). Identification and prioritization of factors affecting venture capitalists' investment decision-making process. *Journal of Small Business and Enterprise Development*, 23(4), 964–983. <https://doi.org/10.1108/jsbed-12-2015-0166>

- Drover, W., Busenitz, L., Matusik, S., Townsend, D., Anglin, A., & Dushnitsky, G. (2017). A Review and Road Map of Entrepreneurial Equity Financing Research: Venture Capital, Corporate Venture Capital, Angel Investment, Crowdfunding, and Accelerators. *Journal of Management*, 43(6), 1820–1853. <https://doi.org/10.1177/0149206317690584>
- Dudley, T., & Rouen, E. (2021, May 18). *The Big Benefits of Employee Ownership*. Harvard Business Review. <https://hbr.org/2021/05/the-big-benefits-of-employee-ownership>
- Easley, C. E., & Roberts, E. B. (2012). Are You Experienced or Are You Talented?: When Does Innate Talent versus Experience Explain Entrepreneurial Performance? *Strategic Entrepreneurship Journal*, 6(3), 207–219. <https://doi.org/10.1002/sej.1141>
- Emami, A., Welsh, D. H. B., Ramadani, V., & Davari, A. (2019). The impact of judgment and framing on entrepreneurs' decision-making. *Journal of Small Business & Entrepreneurship*, 32(1), 79–100. <https://doi.org/10.1080/08276331.2018.1551461>
- Evers, N., Cunningham, J., & Hoholm, T. (2020). *Technology Entrepreneurship: Bringing Innovation to the Marketplace* (2nd ed. 2021 ed.). Red Globe Press.
- Fernando, J. (2021, March 1). *Initial Public Offering (IPO)*. Investopedia. <https://www.investopedia.com/terms/i/ipo.asp>
- Ferrati, F., & Muffatto, M. A systematic literature review of the assessment criteria applied by equity investors (2019) Proceedings of the European Conference on Innovation and Entrepreneurship, ECIE, 1, pp. 304-312.
- Ferreira, A., & Otley, D. (2009). The design and use of performance management systems: An extended framework for analysis. *Management Accounting Research*, 20(4), 263–282. <https://doi.org/10.1016/j.mar.2009.07.003>
- Franke, N., Gruber, M., Harhoff, D., & Henkel, J. (2008). Venture Capitalists' Evaluations of Startup Teams: Trade-Offs, Knock-Out Criteria, and the Impact of VC Experience. *Entrepreneurship Theory and Practice*, 32(3), 459–483. <https://doi.org/10.1111/j.1540-6520.2008.00236.x>
- Frias, K. M., Popovich, D. L., Duhan, D. F., & Lusch, R. F. (2020). Perceived Market Risk in New Ventures: A Study of Early-Phase Business Angel Investment Screening. *Journal of Macromarketing*, 40(3), 339–354. <https://doi.org/10.1177/0276146720926637>
- Fundera. (2020, February 3). Raising Capital for Startups: 8 Statistics That Will Surprise You. <https://www.fundera.com/resources/startup-funding-statistics>. Access February 05, 2021.

- Fusch, P., & Ness, L. (2015). Are We There Yet? Data Saturation in Qualitative Research. *The Qualitative Report*, 20(9), 1408–1416. <https://doi.org/10.46743/2160-3715/2015.2281>
- García-Meca, E., & Palacio, C. J. (2018). Board composition and firm reputation: The role of business experts, support specialists and community influentials. *BRQ Business Research Quarterly*, 21(2), 111-123. <https://doi.org/10.1016/j.brq.2018.01.003>
- Glaser, B. (1999). *By Barney Glaser - The Discovery of Grounded Theory: Strategies for Qualitative Research* (12.1.1999 ed.). Aldine Transaction.
- Grant, R. M. (1991). The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation. *California Management Review*, 33(3), 114–135. <https://doi.org/10.2307/41166664>
- Hargrave, M. (2021, April 22). *Life Cycle*. Investopedia. <https://www.investopedia.com/terms/l/lifecycle.asp>
- Harrison, R. T., Mason, C., & Smith, D. (2015). Heuristics, learning and the business angel investment decision-making process. *Entrepreneurship & Regional Development*, 27(9–10), 527–554. <https://doi.org/10.1080/08985626.2015.1066875>
- Hayes, A. (2021a, February 24). *EBITDA – Earnings Before Interest, Taxes, Depreciation, and Amortization*. Investopedia. <https://www.investopedia.com/terms/e/ebitda.asp>
- Hayes, A. (2021b, May 15). *Shareholder Definition*. Investopedia. <https://www.investopedia.com/terms/s/shareholder.asp>
- Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science in information systems research. *MIS quarterly*, 28(1), 75-105. <https://doi.org/10.2307/25148625>
- Holsapple, C. W., & Joshi, K. D. (2002). A collaborative approach to ontology design. *Communications of the ACM*, 45(2), 42–47. <https://doi.org/10.1145/503124.503147>
- Huang, L., & Pearce, J. L. (2015). Managing the Unknowable. *Administrative Science Quarterly*, 60(4), 634–670. <https://doi.org/10.1177/0001839215597270>
- Index Ventures. (n.d.). *Rewarding Talent: A guide to stock options for European entrepreneurs*. <https://www.indexventures.com>. Retrieved March 8, 2021, from <https://www.indexventures.com/rewardingtalent/handbook>
- InnMind. (2021, February 1). How many startups are there in the world? (infographic). <https://innmind.com/articles/262>. Access February 05, 2021.
- Invest in Startups | Equity Crowdfunding | MicroVentures*. (n.d.). MicroVentures Blog. Retrieved June 3, 2021, from <https://microventures.com/early-stage-vs-late-stage>

- Kaplan, S. N., & Stromberg, P. (2003). Financial Contracting Theory Meets the Real World: An Empirical Analysis of Venture Capital Contracts. *Review of Economic Studies*, 70(2), 281–315. <https://doi.org/10.1111/1467-937x.00245>
- Kenton, W. (2020, July 28). *The Ins and Outs of Business Risk*. Investopedia. <https://www.investopedia.com/terms/b/businessrisk.asp>
- Kenton, W. (2021a, January 4). *Ideation*. Investopedia. <https://www.investopedia.com/terms/i/ideation.asp>
- Kenton, W. (2021b, January 31). *What Is an Investment Thesis?* Investopedia. <https://www.investopedia.com/terms/i/investment-thesis.asp>
- Kenton, W. (2021c, February 25). *Memorandum of Understanding (MOU): What You Need to Know*. Investopedia. <https://www.investopedia.com/terms/m/mou.asp>
- Key Issues to consider for a Shareholders' Agreement*. (n.d.). Russel-Cooke Solicitors. Retrieved June 3, 2021, from <https://www.russell-cooke.co.uk/media/2037/key-issues-to-consider-for-instructions-on-a-shareholders-agreement-november-2009.pdf?webp=false>
- Klonowski, D. (2010). *The Venture Capital Investment Process* (1st ed.). Palgrave Macmillan.
- Kogut, P. A., Cranefield, S., Hart, L., Dutra, M., Backlowski, K., Kokar, M., & Smith, J. (2002). UML for ontology development. *The Knowledge Engineering Review*, 17(1), 61–64. <https://doi.org/10.1017/s0269888902000358>
- Lazear, E. P. (2004). Balanced Skills and Entrepreneurship. *American Economic Review*, 94(2), 208–211. <https://doi.org/10.1257/0002828041301425>
- Lefebvre, V., Certhoux, G., & Radu-Lefebvre, M. (2020). Sustaining trust to cross the Valley of Death: A retrospective study of business angels' investment and reinvestment decisions. *Technovation*, 102159. <https://doi.org/10.1016/j.technovation.2020.102159>
- Lenat, D. B., Guha, R. V., Pittman, K., Pratt, D., & Shepherd, M. (1990). Cyc: toward programs with common sense. *Communications of the ACM*, 33(8), 30–49. <https://doi.org/10.1145/79173.79176>
- Levie, J., & Gimmon, E. (2008). Mixed signals: why investors may misjudge first time high technology venture founders. *Venture Capital*, 10(3), 233–256. <https://doi.org/10.1080/13691060802151820>
- Li, Y., & Ahlstrom, D. (2019). Risk-taking in entrepreneurial decision-making: A dynamic model of venture decision. *Asia Pacific Journal of Management*, 37(3), 899–933. <https://doi.org/10.1007/s10490-018-9631-7>

- Lopez Hernandez, A. K., Fernandez-Mesa, A., & Edwards-Schachter, M. (2018). Team collaboration capabilities as a factor in startup success. *Journal of Technology Management & Innovation*, 13(4), 13–23. <https://doi.org/10.4067/s0718-27242018000400013>
- Malmi, T., & Brown, D. A. (2008). Management control systems as a package—Opportunities, challenges and research directions. *Management Accounting Research*, 19(4), 287–300. <https://doi.org/10.1016/j.mar.2008.09.003>
- Markham, S. K. (2002). Moving Technologies from Lab To Market. *Research-Technology Management*, 45(6), 31–42. <https://doi.org/10.1080/08956308.2002.11671531>
- Marquez, M. (2018, April 11). *Question Scale Format : Full vs End Labelling – Marketing Science Macky*. [Http://Www.Marketingsciencemacky.Com](http://Www.Marketingsciencemacky.Com).  
<http://www.marketingsciencemacky.com/2018/04/11/question-scale-format-full-vs-end-labelling/>
- Mason, C., & Stark, M. (2004). What do Investors Look for in a Business Plan? *International Small Business Journal: Researching Entrepreneurship*, 22(3), 227–248. <https://doi.org/10.1177/0266242604042377>
- Mason, C., Botelho, T., & Zygmunt, J. (2016). Why business angels reject investment opportunities: Is it personal? *International Small Business Journal: Researching Entrepreneurship*, 35(5), 519–534. <https://doi.org/10.1177/0266242616646622>
- McGowan, E. (2017, October 9). *From Early to Acquired: What Are the Stages of a Startup?* Startups.Com. <https://www.startups.com/library/expert-advice/startup-stages>
- Milkova, M., Andreichikova, O., & Andreichikov, A. (2018). VENTURE CAPITALISTS DECISION MAKING: APPLYING ANALYTIC NETWORK PROCESS TO THE STARTUPS EVALUATION. *International Journal of the Analytic Hierarchy Process*, 10(1), 2–19. <https://doi.org/10.13033/ijahp.v10i1.511>
- Mittiness, C. R., Baucus, M. S., & Sudek, R. (2012). Horse vs. Jockey? How stage of funding process and industry experience affect the evaluations of angel investors. *Venture Capital*, 14(4), 241–267. <https://doi.org/10.1080/13691066.2012.689474>
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *BMJ*, 339(jul21 1), b2535. <https://doi.org/10.1136/bmj.b2535>
- Münch, J., Trieflinger, S., & Lang, D. (2019, June). Product roadmap—from vision to reality: a systematic literature review. In 2019 IEEE International Conference on Engineering,

- Technology and Innovation (ICE/ITMC) (pp. 1-8). IEEE. doi: 10.1109/ICE.2019.8792654.
- Nambisan, S. (2017). Digital Entrepreneurship: Toward a Digital Technology Perspective of Entrepreneurship. *Entrepreneurship Theory and Practice*, 41(6), 1029–1055. <https://doi.org/10.1111/etap.12254>
- Noy, N. F., & McGuinness, D. L. (2001). *Ontology development 101: A guide to creating your first ontology*.
- OECD/Eurostat (2018), *Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition*, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris/Eurostat, Luxembourg, <https://doi.org/10.1787/9789264304604-en>.
- Osterwalder, A. (2004). *The Business Model Ontology a Proposition in a Design Science Approach* (Ph.D. thesis). Ecole Des Hautes Etudes Commerciales de l'Université de Lausanne. <https://doi.org/10.1017/CBO9781107415324.004>
- Osterwalder, A., & Pigneur, Y. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers (The Strategyzer series)* (1st ed.). John Wiley and Sons.
- Pasa, M., & Shugan, S. M. (1996). The Value of Marketing Expertise. *Management Science*, 42(3), 370–388. <https://doi.org/10.1287/mnsc.42.3.370>
- Pereira, A. R., Ferreira, J. J. P., & Lopes, A. (2020). A knowledge representation of the beginning of the innovation process: The Front End of Innovation Integrative Ontology (FEI2O). *Data & Knowledge Engineering*, 125, 101760. <https://doi.org/10.1016/j.datak.2019.101760>
- Petty, J. S., & Gruber, M. (2011). “In pursuit of the real deal.” *Journal of Business Venturing*, 26(2), 172–188. <https://doi.org/10.1016/j.jbusvent.2009.07.002>
- Picken, J. C. (2017). From startup to scalable enterprise: Laying the foundation. *Business Horizons*, 60(5), 587–595. <https://doi.org/10.1016/j.bushor.2017.05.002>
- Pinto Ferreira, J. J., Mention, A.-L., & Torkkeli, M. (2020). Phrasing the giant: on the importance of rigour in literature search process. *Journal of Innovation Management*, 8(2), 1–10. [https://doi.org/10.24840/2183-0606\\_008.002\\_0001](https://doi.org/10.24840/2183-0606_008.002_0001)
- PitchBook. (n.d.). *Venture Capital, Private Equity and M&A Database*. Retrieved May 29, 2021, from <https://pitchbook.com/>



- Politis, D. (2005). The Process of Entrepreneurial Learning: A Conceptual Framework. *Entrepreneurship Theory and Practice*, 29(4), 399–424. <https://doi.org/10.1111/j.1540-6520.2005.00091.x>
- Pollman, E. (2019). Startup governance. *University of Pennsylvania Law Review*, 168(1), 155-222.
- Reiff, N. (2020, March 5). *Series A, B, C Funding: How It Works*. Investopedia. <https://www.investopedia.com/articles/personal-finance/102015/series-b-c-funding-what-it-all-means-and-how-it-works.asp>
- Renko, M., El Tarabishy, A., Carsrud, A. L., & Brännback, M. (2015). Understanding and Measuring Entrepreneurial Leadership Style. *Journal of Small Business Management*, 53(1), 54–74. <https://doi.org/10.1111/jsbm.12086>
- Reymen, I., Berends, H., Oudehand, R., & Stultiëns, R. (2016). Decision making for business model development: a process study of effectuation and causation in new technology-based ventures. *R&D Management*, 47(4), 595–606. <https://doi.org/10.1111/radm.12249>
- Ries, E. (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses* (Illustrated ed.). Currency.
- Ripsas, S., Schaper, B., & Tröger, S. (2018). A startup cockpit for the proof-of-concept. In *Handbuch entrepreneurship* (pp. 263-279). Springer Gabler, Wiesbaden. DOI:[10.13140/RG.2.1.1276.9363](https://doi.org/10.13140/RG.2.1.1276.9363)
- Rostamzadeh, R., Ismail, K., & Zavadskas, E. K. (2014). MULTI CRITERIA DECISION MAKING FOR ASSISTING BUSINESS ANGELS IN INVESTMENTS. *Technological and Economic Development of Economy*, 20(4), 696–720. <https://doi.org/10.3846/20294913.2014.984364>
- Runde, J. (1994). Keynesian uncertainty and liquidity preference. *Cambridge Journal of Economics*, 18(2), 129–144. <https://doi.org/10.1093/oxfordjournals.cje.a035266>
- Sahlman, W. A. (1997). How to write a great business plan. *Harvard business review*, 75(4), 98-109.
- Sinek, S. (2011). *Start with Why: How Great Leaders Inspire Everyone to Take Action* (Illustrated ed.). Portfolio.
- Staab, S., Studer, R., Schnurr, H. P., & Sure, Y. (2001). Knowledge processes and ontologies. *IEEE Intelligent Systems and Their Applications*, 1, 26–34. <https://doi.org/10.1109/5254.912382>
- Startup Genome. (2020, June). *The global startup ecosystem report 2020*. <https://startupgenome.com/report/gser2020>

- Stevens, A. J. (2012). The Art of the Cap Table. *Journal of Commercial Biotechnology*, 18(2), 83–97. <https://doi.org/10.5912/jcb522>
- Stoughton, N. M., & Zechner, J. (2007). Optimal capital allocation using RAROC™ and EVA®. *Journal of Financial Intermediation*, 16(3), 312–342. <https://doi.org/10.1016/j.jfi.2006.12.004>
- Suárez-Figueroa, M. C., Gómez-Pérez, A., & Villazón-Terrazas, B. (2009, November). How to write and use the ontology requirements specification document. In *OTM Confederated International Conferences" On the Move to Meaningful Internet Systems"* (pp. 966-982). Springer, Berlin, Heidelberg. [https://doi.org/10.1007/978-3-642-05151-7\\_16](https://doi.org/10.1007/978-3-642-05151-7_16)
- Tarver, E. (2021, April 23). *The Earnout: Selling Your Business and Collecting Future Earnings*. Investopedia. <https://www.investopedia.com/terms/e/earnout.asp>
- Teubal, M., & Luukkonen, T. (2006). Venture capital industries and policies: some cross-country comparisons (No. 1006). ETLA Discussion Papers.
- Thornberry, N. (2006). *Lead Like an Entrepreneur* (1st ed.). McGraw-Hill.
- Useche, D., & Pommet, S. (2020). Where do we go? VC firm heterogeneity and the exit routes of newly listed high-tech firms. *Small Business Economics*, 1-21. <https://doi.org/10.1007/s11187-020-00351-x>
- van Aken, J. E. (2007). Design Science and Organization Development Interventions. *The Journal of Applied Behavioral Science*, 43(1), 67–88. <https://doi.org/10.1177/0021886306297761>
- Vaughn, S., Schumm, J., & Sinagub, J. (1996). *Focus group interviews in education and psychology*. SAGE Publications, Inc., <https://www.doi.org/10.4135/9781452243641>
- Verner, J., & Abdullah, L. (2012). Exploratory case study research: Outsourced project failure. *Information and Software Technology*, 54(8), 866–886. <https://doi.org/10.1016/j.infsof.2011.11.001>
- Viaene, S., (2013), “Data Scientists Aren’t Domain Experts,” in *IT Professional*, vol. 15, no. 6, pp. 12-17, Nov.-Dec. 2013, doi: 10.1109/MITP.2013.93.
- Volker, M. (n.d.). *The Shareholders Agreement*. <https://Mikevolker.Com>. Retrieved June 3, 2021, from <https://www.sfu.ca/%7Emvolker/biz/agree.htm>
- Warnick, B. J., Murnieks, C. Y., McMullen, J. S., & Brooks, W. T. (2018). Passion for entrepreneurship or passion for the product? A conjoint analysis of angel and VC decision-making. *Journal of Business Venturing*, 33(3), 315–332. <https://doi.org/10.1016/j.jbusvent.2018.01.002>

- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic management journal*, 5(2), 171-180.  
<https://doi.org/10.1002/smj.4250050207>
- Wiley, S. (2019, July 22). *Ideal Customer Profiles and Buyer Personas—How Are They Different?*  
Https://Blog.Hubspot.Com/. <https://blog.hubspot.com/customers/ideal-customer-profiles-and-buyer-personas-are-they-different>
- Wu, A. (2016). Organizational Decision-Making and Information: Angel Investments by Venture Capital Partners. *Academy of Management Proceedings*, 2016(1), 11043.  
<https://doi.org/10.5465/ambpp.2016.4>
- Zacharakis, A. L., & Meyer, G. D. (1998). A lack of insight: do venture capitalists really understand their own decision process? *Journal of Business Venturing*, 13(1), 57–76.  
[https://doi.org/10.1016/s0883-9026\(97\)00004-9](https://doi.org/10.1016/s0883-9026(97)00004-9)
- Zacharakis, A. L., & Shepherd, D. A. (2001). The nature of information and overconfidence on venture capitalists' decision making. *Journal of Business Venturing*, 16(4), 311–332.  
[https://doi.org/10.1016/s0883-9026\(99\)00052-x](https://doi.org/10.1016/s0883-9026(99)00052-x)

## Annex A Papers selected for the literature review

Table 9 - Papers selected for the literature review (times cited order in Scopus Database)

Reference	Times Cited	Stakeholder point of view	Contributions	Limitations and Future Research
(Malmi & Brown, 2008)	572	Manager	The authors provide a new and integrated typology for management control systems. It is structured in five types of controls: planning, cybernetic, reward, compensation, administrative and cultural.	The findings must be adapted to early-stage ventures during a period of its evolution based on high uncertainty.
(Ferreira & Otley, 2009)	479	Manager	It proposes a holistic and integrated management framework that includes variables that refer to the external environment, strategies, cultural aspects, organizational structure, size, technologies, and ownership structure that impact control systems design and use.	The framework must be applied by empirical research. It also needs to be adapted to early-stage ventures during a period of its evolution based on high uncertainty.
(Nambisan, 2017)	271	Entrepreneur	It shows how digital entrepreneurship implies nonfixed boundaries associated with entrepreneurial processes. It improves understanding the subjacent issues related to integrating digital-technology-related concepts and constructs with those in actual entrepreneurship theories.	The need to obtain critical insights on how digitally fueled entrepreneurial processes unravel and how entrepreneurs' interactions and actions influence and are influenced by digital technologies.
(Zacharakis & Meyer, 1998)	267	Venture Capitalist Investor	Compare and analyze how VCs think about their decision-making process. It is a seminal paper on this subject, mainly because it applies the lens model from the social judgment theory (SJT) (Brunswik, 1956) method. It is a basis for removing post hoc methods biases.	Although seminal, this article was written before the rise of startups as we know them nowadays, so its findings must be understood in the context of today's vision of Venture Capitalism. Besides, the method's reductionism, to select some factors to be evaluated by the VCs, does not correctly represent the real-life decision process.
(Mason & Stark, 2004)	245	Independent Business Angel & Venture Capitalist Investors	How entrepreneurs must adapt their business plan according to investor type. The article's discovery gives guidance to entrepreneurs on how to tailor-make their business plan according to the type of investor they approach.	The limitation is due to the small sample and the fictitious investment proposals employed in the study. Besides, the focus of the research was only on the screening stage of the process approval.
(Franke et al., 2008)	159	Venture Capitalist Investor	The research presents a detailed exploration of VCs' team evaluation factors and investigates the weight of VC's experience.	The findings report that future research on VC decision-making needs to weigh the VC experience to avoid sample selection bias.

Reference	Times Cited	Stakeholder point of view	Contributions	Limitations and Future Research
(Huang & Pearce, 2015)	101	Independent Business Angel Investor	The study examines early-stage entrepreneurial investment decision-making under conditions of extreme uncertainty.	Future research needs to explore groups of BAs from different countries and cultures.
(Petty & Gruber, 2011)	96	Venture Capitalist Investor	How the weight of decision-making factors changes between different stages during the investment assessment process.	The data was obtained from just one VC firm in Europe. It does not fully apprehend the context and subtlety of the decision-making process that only ethnographic studies can provide.
(Carpentier & Suret, 2015)	50	Independent Business Angel & Angel Group Member Investors	The differences presented by the investment decision process (risk analysis) from IA (more emphasis on the entrepreneur) and AGM (more emphasis on the opportunity).	The study was limited to a single Canadian angel group, and the conclusions may not be applied to the general angel group context. The dynamic that occurs during the meetings between entrepreneurs and investors is not captured in this research.
(Mittens et al., 2012)	40	Entrepreneur & Business Angel Investor (in general)	The findings present that BAs strongly focus on the opportunity and its market potential during the funding process. The entrepreneur skills are most important at the screening stage.	The research is not clear about the differences that can come up between Independent Business Angel's and Angel Group Member's assessment criteria. The results come from only one cohort of ventures.
(Reymen et al., 2016)	37	Entrepreneur	How the combination of different logics based upon certainty and uncertainty describes the startup entrepreneurs' decision-making process.	The sample was small and specific (The Netherlands). Other studies can focus on the factors that rule why a particular pattern arises.
(Harrison et al., 2015)	27	Business Angel Investors (in general)	The article explores if business angels learn from experience and how and what they learn. This research suggests various dimensions of experience that may impact BAs' investment decision-making.	The research is not clear about the differences that can come up between Independent Business Angel's and Angel Group Member's assessment criteria. Future research can explore the role of heuristics in BAs' decision-making.
(Picken, 2017)	23	Entrepreneur	The factors that influence the most the successful transition from a startup to a scalable enterprise.	The proposed theoretical model needs empirical research.

Reference	Times Cited	Stakeholder point of view	Contributions	Limitations and Future Research
(Warnick et al., 2018)	22	Business Angel (in general) & Venture Capitalist Investors	The research found that product passion and entrepreneurial passion are aspects of the entrepreneur that are essential to BAs and VCs.	The research is not clear about the differences that can come up between Independent Business Angel's and Angel Group Member's assessment criteria.
(Dhochak & Sharma, 2016)	19	Venture Capitalist Investors	The research indicates that VCs' leading influencers regarding investment decisions are the entrepreneurs' characteristics, financial considerations, and products/services.	The number of elements applied during the study that influence investment decisions was limited. Besides, the selected sample was only from India.
(Cavallo et al., 2019)	18	Angel Group Member & Venture Capitalist Investors	This study investigates how AGM and VC funds affect digital new ventures' growth in their startup and scaleup phases.	The sample was from the Italian venture capital market (not yet fully developed compared to other mature markets like the USA, the UK, and others).
(Mason et al., 2016)	17	Independent Business Angel Investors	IAs reject most of the proposals they receive. This article explores the reasons informing such decisions for rejection (the "deal killers").	The limitation is related to the sample that mixes less seasoned investors with very experienced ones. Besides, the group was composed only of investors from the UK.
(Crick & Crick, 2018)	12	Independent Business Angel Investors	The research points to specific aspects in IAs' decision-making in small domestic markets that may demand entrepreneurs to look for scalability abroad.	Limitations are the sample size and the participant investors focused on high-technology startups—additionally, the focus was only on the New Zealand market.
(Rostamzadeh et al., 2014)	12	Business Angel Investors (in general)	This study aims to enhance the notion of investment decision-making criteria by BAs. Besides, it presents the results of an exploratory project that analyzed their process.	The research is not clear about the differences that can come up between Independent Business Angel's and Angel Group Member's assessment criteria. Besides, the focus is only on the Malaysian venture capital market.
(Carlos Nunes et al., 2014)	11	Venture Capitalist Investors	This paper identifies the importance of VCs investors' criteria to assess early-stage startups in a small VC market (Portugal).	Future research should study if BAs' most valued criteria are similar to VCs' ones most valued.
(Emami et al., 2019)	5	Entrepreneur	This research presents how entrepreneurs promote judgments and make decisions when confronted with decision inconsistencies.	The sample comes from only one country (Iran).

Reference	Times Cited	Stakeholder point of view	Contributions	Limitations and Future Research
(Li & Ahlstrom, 2019)	3	Entrepreneur, Business Angel (in general) & Venture Capitalist Investors	This research explores the temporal variation of risk-taking in entrepreneurial decisions, such as creating a new business organization.	The model was applied only for graduated and undergraduate students in South Asia.
(Cox et al. 2017)	3	Business Angel Investors (in general)	This study explores a paradox that occurs when the investment assessment criteria are well evaluated (by BAs), but the startup as a whole is evaluated with low investment potential.	Future studies can investigate other factors that influence the fit between entrepreneur and investor.
(Dhochak & Sharma, 2016)	3	Venture Capitalist Investors	The paper presents an Interpretative Structural Based Model for the decision-making process.	The proposed model is based on restricted factors. Future research may be conducted by selecting a larger sample size.
(Frias et al., 2020)	0	Angel Group Member Investors	The research indicates factors that impact market risk during the investment screening process and identifies the circumstances where these elements are assessed differently by entrepreneurs versus AGMs.	Future research can examine the market risk assessments across the other stages of the BA investment process.
(Lefebvre et al., 2020)	0	Business Angel Investors (in general)	The study indicates how BAs' trust in the entrepreneur affects their decisions to invest in startups in the Valley of Death (Markham, S.K., 2002).	The post-hoc method applied in the research may generate retrospective bias in the participants.
(Ferrati & Muffatto, 2019)	0	Business Angel (in general) & Venture Capitalist Investors	It presents an updated literature review that shows the investment criteria most discussed in the literature from Business Angels and Venture Capitalists Investors during their funding decisions and classifies them into four analysis domains: the venture, the investor, the risk factors, and the environment.	As future research, the authors propose a new approach, based on large databases on venture funding (e.g., Crunchbase), analyzing data on thousands of actual investments.
(Milkova et al., 2018)	0	Venture Capitalist Investors	The research applies the Analytic Network Process (ANP) methodology, which helps VCs choose the best startup to invest in or ranking the cohort. This process makes it possible to make decisions under risks as it allows examining the problem from different angles, e.g., benefits, opportunities, and risks.	The research was limited to only four startups in Russia.

## Annex B Interviewees' Profiles

Table 10 - Interviewee Profiles

ID	CATEGORY	COUNTRY	INTERVIEW DATE	SENIORITY LEVEL	PROFILE
E01	Entrepreneur	Portugal	08/04/2021	Senior	Serial entrepreneur, currently Founder & CEO of a growth-stage startup in the transportation industry.
E02	Entrepreneur	Brazil	11/04/2021	Senior	Serial entrepreneur, currently Founder & CEO of a startup studio, a venture that creates ventures.
I03	VC & BA	Brazil & Portugal	12/04/2021	Senior	Founder & CEO of a mature investment company and also a BA.
E04	Entrepreneur	Portugal	12/04/2021	Senior	Founder of a mature design company with a focus on product innovation.
I05	VC	Brazil	12/04/2021	Senior	Founder & President of a mature family-owned equity investment holding company focused on the agribusiness, logistics, and real estate industries.
I06	VC & BA	Brasil	14/04/2021	Senior	Founder & CEO of a mature venture capital company.
EI07	Entrepreneur & BA	Brazil	14/04/2021	Middle	Founder & CEO of a startup innovation hub (accelerator).
EI08	Entrepreneur & former-VC	Brazil	14/04/2021	Middle	Founder & CEO of a young financial management advisory company focusing on startups and scaleups. Previous experience as a VC investor.
EI09	Entrepreneur	Brazil	14/04/2021	Senior	Founder & CEO of a Venture Builder, with a focus on innovation.
E10	Entrepreneur	Portugal	14/04/2021	Middle	Founder & CEO of an invested and growth-stage startup in the energy industry.
EI11	Entrepreneur & VC	Brazil	19/04/2021	Senior	CEO of an invested company in the documents management industry.
E12	Entrepreneur & BA	Brazil	20/04/2021	Junior	Founder & CEO of a growth-stage startup in the service intermediation industry and also works as a BA.
I13	VC	Portugal	20/04/2021	Senior	Partner of a large, traditional venture capital company.
I14	VC	Portugal	20/04/2021	Senior	CEO of a venture capital company with more than 18 years of existence.
E15	Entrepreneur	Brazil	20/04/2021	Junior	Founder & CEO of an early-stage startup in the financing services industry.
I16	VC	Portugal	21/04/2021	Senior	Investment Director of a traditional venture capital company.
I17	former-VC	Brazil	21/04/2021	Senior	CEO of an invested and growth-stage startup in the healthcare industry.
EI18	Entrepreneur & former-BA	Brazil	21/04/2021	Senior	CTO of an invested company in the financing services industry.
E19	Entrepreneur	Brazil	22/04/2021	Senior	CEO of an invested and growth-stage startup in the management industry.
E20	Entrepreneur	Brazil	22/04/2021	Middle	Serial entrepreneur, currently Founder & CEO of an invested early-stage startup in the financing services industry.
E21	Entrepreneur	Brazil	23/04/2021	Middle	Founder & CEO of an invested growth-stage startup in the human resources industry.
E22	Entrepreneur	Brazil	23/04/2021	Senior	Serial entrepreneur, currently Founder & CEO of a company in the manufacturing industry, recently acquired by a larger group.
E23	Entrepreneur	Brazil	23/04/2021	Senior	CEO of a technology company of more than 16 years in the utilities industry.



<b>ID</b>	<b>CATEGORY</b>	<b>COUNTRY</b>	<b>INTERVIEW DATE</b>	<b>SENIORITY LEVEL</b>	<b>PROFILE</b>
I24	VC & BA	USA	03/05/2021	Senior	Seasoned VC investor with more than 20 years in this industry.
EI25	Former-Entrepreneur, VC & BA	USA	03/05/2021	Senior	Seasoned VC investor with more than 20 years in this industry
EI26	Entrepreneur, VC & BA	USA	05/05/2021	Senior	Serial Entrepreneur, Seasoned VC investor with more than 15 years in this industry, and Entrepreneurship Professor.

## Annex C Glossary

**Table 11 - SAPIENT Ontology Glossary**

ID	TERM	DESCRIPTION
T01	STARTUP	According to (Blank, 2013, p. 5), “a temporary organization designed to search for a repeatable and scalable business model”.
T02	DEVELOPMENT STAGE	The stages performed by a startup from the idea through the exit to a mature company (Picken, 2017).
T03	MARKET NEED	Market needs provide companies with information about products and services to be developed, the type of customers they must target, and the distribution channels that must be used (Picken, 2017).
T04	VALUE PROPOSITION	According to (Osterwalder & Pigneur, 2010, p. 23), “A Value Proposition creates value for a Customer Segment through a distinct mix of elements catering to that segments’ needs.”
T05	INNOVATIVE SOLUTION	An innovative solution can come from an identified market need or a technology development via R&D (OECD/Eurostat, 2018).
T06	STARTUP TEAM	The internal (entrepreneurs and employees) and external members compound a startup’s workforce (Franke et al., 2008).
T07	INTELLECTUAL PROPERTY	According to (OECD/Eurostat, 2018, p. 89), “IP related activities include the protection or exploitation of knowledge, often created through R&D, software development, engineering, design, and other creative work.”
T08	PATENTS	A patent is a type of Intellectual Property {T07} granting rights for a technical invention (OECD/Eurostat, 2018).
T09	SPECIFIC KNOWLEDGE	Type of Intellectual Property {T07}. A highly specialized knowledge, like an algorithm, for instance (OECD/Eurostat, 2018).
T10	OTHER IP FORMS	Other types of Intellectual Property {T07} besides Patents (OECD/Eurostat, 2018).
T11	RESOURCES	A startup needs resources to grow (Wernerfelt, 1984). The startups’ resources may be intangible (People-Based Skills or Knowledge) or Tangible, like funding (Huang & Pearce, 2015; Osterwalder, 2004).
T12	CUSTOMERS	According to (Warnick et al., 2018, p. 320), customers are the ones “... who will use the venture’s product (i.e., the target market).”
T13	ECOSYSTEM	According to (Startup Genome, 2020, pg. 180), “A shared pool of resources, generally located within 100-kilometer radius around a center point in a given region, with a few exceptions based on local reality. Resources typically include policymakers, accelerators, incubators, coworking spaces, educational institutions, and funding groups.”
T14	EQUITY INVESTOR	An investor that “... trade capital for a portion of company ownership.”, as in (Drover et al., 2017, pg. 1821).
T15	PRESENTATIONS FOR INVESTORS	The literature uses the term “Business Plan” to identify the structure needed for entrepreneurs to present information to investors. Nevertheless, during the first interviews we had identified that the term “Business Plan” creates a bias in the perception of the audience, associating it as something “old fashioned”, “very rigid” and of “little use”. So, the decision was to use this neutral name (Evers et al., 2020; Mason & Stark, 2004; Sahlman, 1997).
T16	ENTREPRENEUR	It relates to a person with a business vision and someone who has to perform a set of roles. Therefore he/she must develop a set of soft and hard skills (Lazear, 2004).
T17	LONG-TERM PERSPECTIVE	Define the goals a startup wants to achieve in a long-run perspective, several years ahead (11 Ways To Establish, And Then Reach, Your Long-Term Goals, 2018).
T18	TRACK RECORD	The entrepreneur’s performance in past ventures (Macmillan et al., 1997).
T19	KEY CAPABILITIES	The main capabilities an entrepreneur must have or develop to run an innovative business (OECD/Eurostat, 2018).
T20	SALES	Type of Key Capability {T19} meaning the ability to plan, manage and execute sales to customers through the defined sales channels (OECD/Eurostat, 2018).
T21	LEADERSHIP	Type of Key Capability {T19}, meaning that besides passion, vision and the ability to inspire the team also requires the ability to capture and develop new business opportunities (Thornberry, 2006).
T22	SHORT-TERM SURVIVAL	Type of Key Capability {T19} meaning the entrepreneur’s ability to keep the startup running and live, even against unexpected threats (Levie & Gimmon, 2008).

ID	TERM	DESCRIPTION
T23	FAST ADAPTATION	Type of Key Capability {T19}, according to (Lopez Hernandez et al., 2018, p. 19), “This adaptability and flexibility allow technology-based startup teams to work as an intermediary driver between the knowledge available and economic agents in the market.”.
T24	VISION / PURPOSE	The answer to the questions: why your business exists? What is your purpose? (Sinek, 2011).
T25	ENGAGEMENT	According to (Osterwalder, 2004, p. 17), “... the vision of the company and its strategy are translated into value propositions, customer relations and value networks ...”.
T26	STAKEHOLDERS	The internal and external actors which are interested in the startup (Huang & Pearce, 2015; Warnick et al., 2018).
T27	EXTERNAL STAKEHOLDERS	Type of Stakeholder {T26} representing the external actors, such as partners, customers, suppliers, etc., that have some kind of interest in the startup (Huang & Pearce, 2015; Warnick et al., 2018).
T28	INTERNAL STAKEHOLDERS	Type of Stakeholder {T26} representing the internal actors, such as employees, entrepreneurs, and investors, that have some kind of interest in the startup (Huang & Pearce, 2015; Warnick et al., 2018).
T29	ENTERPRISE CULTURE	A set of values of a startup (Picken, 2017).
T30	OPPORTUNITY	Opportunity recognition is the faculty of detecting potential conditions in the market that represent underlying sources of revenue for a business venture (Botha & Pietersen, 2020).
T31	OTHER ENTREPRENEURS	See {T16}
T32	RISK ADJUSTED RETURN ON CAPITAL (RAROC)	It is a risk-based metric of profitability, being the baseline for risk-adjusted performance analysis and providing a reliable view of cross-business profitability (Stoughton & Zechner, 2007).
T33	EXIT	According to (Klonowski, 2010, p.11) is “...the disposal of shares at the end of a holding period.”. According to (Klonowski, 2010, p. 236), “Exit represents an orchestrated way of cashing out a venture capital investment in a portfolio firm and is the monetization of cash committed to the deal by the virtue of a trade sale, an IPO, or other means.”.
T34	NEXT INVESTMENT ROUND	The sequence of investments that a startup must go through to raise funding via venture capital (Huang & Pearce, 2015; Startup Genome, 2020). It can be used as a type of Exit {T33}.
T35	IPO	Type of Exit {T33}, according to (Fernando, 2021), “An initial public offering (IPO) refers to the process of offering shares of a private corporation to the public in a new stock issuance. Public share issuance allows a company to raise capital from public investors.”.
T36	M&A	Type of Exit {T33} that another company fully incorporates a startup (Klonowski, 2010; Picken, 2017).
T37	BUSINESS CONSOLIDATION AND EXPANSION	Type of Exit {T33} that a startup is invested or bought by a larger corporation to create or dominate a target market (Klonowski, 2010).
T38	BUSINESS ANGEL INVESTOR	Type of Equity Investor {T14} that invest its own capital {T41} in the initial stages of a startup’s Development Stages {T02} (Mason & Stark, 2004).
T39	VENTURE CAPITAL INVESTOR	Type of Equity Investor {T14} that invest third party capital {T48} in the last stages of a startup’s Development Stages {T02} (Mason & Stark, 2004).
T40	CROWD FUNDING	Type of Equity Investor {T14}, according to (Belleflamme et al., 2014, p. 585), “With crowdfunding, an entrepreneur raises external financing from a large audience (the crowd), in which each individual provides a very small amount, instead of soliciting a small group of sophisticated investors.”
T41	OWN CAPITAL	Cash is provided by the investor’s resources (Huang & Pearce, 2015).
T42	INDEPENDENT BUSINESS ANGEL	Type of Business Angel Investor {T38} that works solo (Carpentier & Suret, 2015).
T43	ANGEL GROUP MEMBER	Type of Business Angel Investor {T38} that works together and belongs to a Business Angel Group {T44}, with other group members (Carpentier & Suret, 2015).
T44	BUSINESS ANGEL GROUP	Type of Business Angel Investor {T38} formed by an organized group or firm (Carpentier & Suret, 2015).
T45	GATEKEEPER	Usually, support staff in an investment firm, which is in charge of the initial selection of the investment proposals (Carpentier & Suret, 2015).
T46	VC FIRM	Type of Venture Capital Investor {T39} being a specialized kind of business of venture capital investments (Useche & Pomet, 2020).

ID	TERM	DESCRIPTION
T47	CORPORATE VC	Type of Venture Capital Investor {T39}, usually an established large corporation that wants to diversify its investments (Useche & Pommet, 2020).
T48	3RD PARTY CAPITAL	Cash provided by external sources in VC Firms {T46} or in Corporate VCs {T47} (Klonowski, 2010).
T49	PRIVATE CAPITAL	Source of cash from private individuals or private companies (Klonowski, 2010).
T50	GOVERNMENT CAPITAL	Source of cash from government funds (Klonowski, 2010).
T51	PARTNERS	Component of the Venture Capital Investor {T39}. Also known as Limited Partners, which are in charge of the management and the source of money (Klonowski, 2010).
T52	SUPERVISORY BOARD	Component of the Venture Capital Investor {T39}. It is in charge of internal approvals (Klonowski, 2010).
T53	INVESTMENT COMMITTEE	Component of the Venture Capital Investor {T39}. It is in charge of internal approvals (Klonowski, 2010).
T54	TEAM DESCRIPTION	See {T06}.
T55	INTERNAL TEAM-MEMBER	The component of a Startup Team {T06} that is the core of the venture, formed by Employees {T63} and Entrepreneurs {T16} (Lopez Hernandez et al., 2018).
T56	EXTERNAL-TEAM MEMBER	The on-demand component of a Startup Team {T06} complements the Internal Team-Members {T55} (Lopez Hernandez et al., 2018).
T57	EXECUTION CAPABILITY	One of the characteristics demanded as an Internal-Team Member {T55} relating to the ability to transform ideas and plans into actions and results (Lazear, 2004).
T58	DOMAIN EXPERT	One of the characteristics demanded as an Internal-Team Member {T55} that relates to a deep knowledge of specific subjects such as technology, management, market, or business, as in (Viaene, 2013, p. 12), "... domain experts—buyers, merchandisers, product managers and others [who] have worked in retail for years and years—these people know the market really well ...".
T59	TECHNOLOGY EXPERT	The type of Domain Expert {T58} that is a specialist in the technology set used by the startup (OECD/Eurostat, 2018).
T60	MANAGEMENT EXPERT	The type of Domain Expert {T58} that is in charge of the planning and organization of the startup's activities, as in (Lopez Hernandez et al., 2018, p. 16), "In terms of innovation management, one of the main aspects of managerial responsibilities is the development of dynamic capabilities in the organization." or as indicated by (Picken, 2017): Professional investors have often been quoted as saying 'It's all about the management team.' Although they are interested in the breakthrough product and the untapped market opportunity, they recognize that good management is the most essential element. Building an organization and a team is among the entrepreneur's most critical tasks, but it requires considerably more than just hiring people who appear to be qualified and assuming that they can do the job. (p. 592)
T61	MARKET EXPERT	The type of Domain Expert {T58} that is in charge of the assessment of the startup's target market, as in (Pasa & Shugan, 1996, p. 372) "We argue that marketing expertise creates better decisions by providing interpreted market data. Hence, expertise creates information from data by adding interpretation. Beyond interpreting data, expertise also filters information and determines which information to collect."
T62	BUSINESS EXPERT	The type of Domain Expert {T58} that must understand deeply how the customer's business works, mainly its value-chain and supply-chain and the standards of the market, if any (García-Meca & Palacio, 2018; OECD/Eurostat, 2018).
T63	EMPLOYEE	Component of the Internal Team-Member {T55} that regularly works for a startup, on an employee-contract basis and must have a fit with the startup's goals and values according to (Mitteness et al., 2012): Similar to angel investors, individuals considering joining an organization as a new venture team member or employee likely examine the strength of the opportunity and entrepreneur to first determine if the organization will be successful (third-person opportunity exists for anyone to join the organization) and then determine whether joining the organization appears to fit with them and their career goals. (p. 261)
T64	SALES PARTNERS	Component of the External Team-Member {T56} that helps the startup boosting or increasing sales, as in (Osterwalder, 2004, p. 2), "In other words, they can increasingly work in partnerships, offer joint value propositions, build-up multi-channel and multi-owned distribution networks and profit from diversified and shared revenue streams ...".

ID	TERM	DESCRIPTION
T65	SPECIALIZED SERVICE PROVIDERS	Component of the External Team-Member {T56} as in (OECD/Eurostat, 2018, p. 112), “Firms need to search and evaluate potential knowledge partners, sources and their offerings; agree on the terms of knowledge purchases where necessary and resolve potential disputes.”.
T66	ADVISOR / MENTOR	Component of the External Team-Member {T56}, according to (OECD/Eurostat, 2018): Direct or indirect provision of infrastructure and services for business innovation activities, such as subsidized access to R&D, testing or prototyping facilities, or allowing access to relevant data, networking or advisory resources This may include allocating vouchers to firms to allow them to acquire certain types of specialised services from approved providers, such as universities, research centres or design consultants. (p. 158)
T67	PEOPLE/NETWORK	Component of the External Team-Member {T56}. According to (Klonowski, 2010): Relationships are a basic human need, and creating camaraderie and connections between others is instinctive to all individuals. One of the ways in which this is done is through social networking. Business opportunities are created through active interaction between people, whether by making contacts or by building strong relationships or partnerships. Such networks grow in size and deepen in strength. (p. 64)
T68	INDEPENDENT BOARD MEMBER	Component of the Startup Board {T69} which is a third party that neither represents the entrepreneurs nor the investors and must have industry knowledge and valuable contacts (Brunninge & Nordqvist, 2004).
T69	STARTUP BOARD	It is composed of representatives of the Entrepreneurs {T16}, representatives of the current Equity Investors {T14}, and also Independent Board Members {T68}, and is in charge of the overall direction of the startup, for setting strategies, and for making major decisions (Brunninge & Nordqvist, 2004).
T70	TANGIBLE	Type of Resource {T11} according to (Osterwalder, 2004, p. 81), “Tangible resources include plants, equipment and cash reserves.”
T71	INTANGIBLE	Type of Resource {T11} according to (Osterwalder, 2004, p. 81), “Intangible resources include patents, copyrights, reputation, brands and trade secrets.”.
T72	PEOPLE-BASED SKILLS	People-Based Skills (Grant, 1991) are the “... people a firm needs in order to create value with tangible and intangible resources” (Osterwalder, 2004, p. 81). However, for this study, we classify this Resource {T11} as one type of the Intangible {T71} resources.
T73	KNOWLEDGE	Type of Intangible {T71} resource that can come from distinct contexts to impact a startup to profit from innovation (Agarwal & Shah, 2014; OECD/Eurostat, 2018).
T74	FUNDING	Type of Tangible {T70} resource that represents the way a startup brings money to pay for its operations (OECD/Eurostat, 2018).
T75	NETWORKING	Type of People-Based Skills {T72}. See {T67}.
T76	PERSONAL MENTORSHIP	Type of People-Based Skills {T72}. See {T66}.
T77	FLAGSHIP INVESTOR	Type of People-Based Skills {T72}. See {T14}. In this case, someone or some company that is a beacon in the market, like the ones that can be found in (PitchBook, n.d.).
T78	TALENT	Type of People-Based Skills {T72}, as in (OECD/Eurostat, 2018): People are the most important resource for innovation as they are the source of creativity and new ideas. The design, development and implementation of innovations require a variety of skills and the co-operation of different individuals. Data on the skill levels of a firm’s workforce and on how a firm organises its human resources (including how it attracts and retains talent) are therefore critical for understanding innovation activities and innovation outcomes. (p. 115)
T79	BACKGROUND	Type of People-Based Skills {T72} related to their academic, professionals, and personal experiences (Lopez Hernandez et al., 2018).
T80	TECHNICAL	Type of Knowledge {T73}. See {T59}.
T81	LEGAL & FINANCIAL	Type of Knowledge {T73} related to legal and financial subjects in a startup (Agarwal & Shah, 2014; OECD/Eurostat, 2018).
T82	MARKETING & SALES	Type of Knowledge {T73}. See {T20} and {T61}.
T83	MANAGEMENT	Type of Knowledge {T73}. See {T60}.
T84	EQUITY CAPITAL	Type of Funding {T74} where the capital is traded by a portion of company ownership and is the focus of this study (Drover et al., 2017)

ID	TERM	DESCRIPTION
T85	TIME AS EQUITY	Type of Funding {T74} where someone works for a startup and receives equity in payment, also known as “stock options” (Dudley & Rouen, 2021).
T86	SPECIAL EQUIPMENT	Type of Funding {T74} where equipment used in the production of the innovative product or service is traded by a portion of company ownership (OECD/Eurostat, 2018).
T87	CREDITS/PERKS	Type of Funding {T74} that is usually granted by Innovation Hubs, like accelerators or incubators, in the ways of pre-paid vouchers to have access to specific software or platforms or in the form of tax credits from the government, usually without equity (Startup Genome, 2020).
T88	INVESTOR'S EVALUATION CRITERIA	The factors that VCs and BAs apply to assess a startup's investment proposal (Mason & Stark, 2004).
T89	KEY INFORMATION	The essential information that is needed by Equity Investors {T14} to evaluate a startup's investment proposal during all the Development Stages {T02} (Dhochak & Sharma, 2016).
T90	MACRO-TRENDS	According to (OECD/Eurostat, 2018), “This fourth edition of the Oslo Manual takes account of major trends such as, the pervasive role of global value chains; the emergence of new information technologies and how they influence new business models ...”.
T91	OTHER RISKS	Component of Risks {T153}. This category includes risks that cannot be foreseen. Contextual risks may very well fit in here.
T92	BUSINESS MODEL	Component of the Business Opportunity {T103}, as in (Blank; 2013, p. 5), “... how a company creates value for itself and its customers.”.
T93	VALUE PROPOSITION	Component of the Business Model {T92}. See {T04}.
T94	POSITIONING	According to (Picken, 2017): There are four fundamental questions that must be addressed: Who is our customer? What are his/ her needs? What are his/her priorities? How will we sell, deliver, service, and support our products? These questions must be revisited repeatedly as the firm engages progressively broader markets. (p. 591).
T95	PRODUCT DEVELOPMENT	Component of the Operations {T105}. The steps needed to develop a product/service (Blank, 2013).
T96	MILESTONES & METRICS	Component of the Operations {T105}. According to Picken (2017): Setting a direction and maintaining focus. The entrepreneur must be clear about his/her goals, view the situation realistically, and establish and communicate a clear direction (target customer, offering, value proposition, business model and key milestones) to keep the organization focused on the proper objectives. (p. 589)
T97	VISION ROADMAP	Component of the Milestones & Metrics {T96}. It shows how the strategies will be planned, delivered, and measured (Münch et al., 2019).
T98	INVESTMENT PROPOSAL	Component of the Finance {T106}. It is the document that contains what the Entrepreneur {T16} asks the Equity Investor {T14} and what is given in Return (Zacharakis & Shepherd, 2001).
T99	FINANCIAL STATEMENTS	Component of the Finance {T106}. The Profit & Loss Statement, the Balance Sheet, and the Cash Flow Statement (Klonowski, 2010).
T100	VALUATION	According to (Klonowski, 2010): Most commonly, business valuations measure the value of the business. Business valuations are performed ahead of the firm receiving additional capital, performing a merger, or engaging into an acquisition. The main objective of business valuation is to develop a valuation spectrum (the science) for the business, which best describes where the value of the firm may be ... Venture capitalists generally perform business valuation using at least two methods: the discounted cash flow (DCF) method and EBITDA-multiple method. (p. 127)
T101	BURN RATE	According to (Ripsas et al., 2018): ... the ideas behind this metric are the same: to know for how long the iterative process of finding the right business model can be prolonged ... the dimension of the burn rate (the amount of money a startup needs to pay its monthly bills) is the currency (Euro, Dollar ...) per time. (p. 11)
T102	OTHER CAPABILITIES	Type of Key Capability {T19}, meaning capabilities not indicated as a type of Key Capability {T19}, but that may be needed for some specific situations, such as speaking a non-native language.

ID	TERM	DESCRIPTION
T103	BUSINESS OPPORTUNITY	Category Component of the Key Information {T89}. See {T30}.
T104	PEOPLE	Category Component of the Key Information {T89}. See {T78} and {T72}.
T105	OPERATIONS	Category Component of the Key Information {T89}. It evidences how the startup operates to make a business from the Business Opportunity {T103} (Evers et al., 2020).
T106	FINANCE	Category Component of the Key Information {T89}. It shows what financial information is needed by an Equity Investor {T14} (Evers et al., 2020).
T107	PROBLEM & SOLUTION	Component of the Business Opportunity {T103}. The description of the problem from the customer point-of-view and the solution that solves it (Osterwalder, 2004; Blank & Dorf, 2020).
T108	TARGET MARKET	Component of the Business Opportunity {T103}. According to (Warnick et al., 2018, p. 320), "...the context and customers who will use the venture's product (i.e., the target market)."
T109	COMPETITION & DIFFERENTIALS	Component of the Business Opportunity {T103}. Competition concerns the various alternatives a customer has to solve his problem {T107} and Differentials are related to what the startup does better than its competitors or does uniquely in the market (Grant, 1991; OECD/Eurostat, 2018).
T110	CUSTOMER DEVELOPMENT ACHIEVEMENT	Component of the Business Opportunity {T103}. The stage at which the startup is concerning the Customer Development model, proposed by Blank & Dorf (2020).
T111	RISKS & MITIGATION	Component of the Business Opportunity {T103}. The strategies to deal with fast-paced growth, a narrow revenue base, inexperienced employees, key employee leaving, poor infrastructure, etc. (Picken, 2017).
T112	GO TO MARKET STRATEGIES	Component of the Business Opportunity {T103}. How the startup will reach its target market (Picken, 2017).
T113	IDEAL CUSTOMER PROFILE	Component of the Business Model {T92}. The definition of a hypothetical customer being the best fit for the startup's products and services (Osterwalder & Pigneur, 2010; Wiley, 2019).
T114	REVENUE STREAMS	Component of the Business Model {T92}. The processes in which a startup makes money (Osterwalder & Pigneur, 2010).
T115	OTHERS	Type of People-Based Skills {T72}. See {T102}.
T116	SKILLS	Component of People {T104}. According to (OECD/Eurostat, 2018).
T117	HEADCOUNT	Component of People {T104}. The share of human resources working in the startup, according to (OECD/Eurostat, 2018).
T118	SALARIES	Component of People {T104}. Monthly payment to the startup's employees {T63} (Klonowski, 2010).
T119	CULTURE	Component of People {T104}. See {T29}.
T120	MARKETING	Component of People {T104}. See {T61}.
T121	TECHNOLOGY	Component of People {T104}. See {T59}.
T122	EXPANSION MODEL	Component of Operations {T105}. A model that articulates how the startup will grow and scale (Picken, 2017).
T123	CAP TABLE	Component of Finance {T106} and Category Component of the Shareholders' Agreement {T181}. According to Stevens (2012, pg. 83) is "The equity ownership structure as captured in a table of capitalization (Cap Table) determines how the fruits of success will be divided between founders, management, and investors at an exit event such as an acquisition or initial public offering."
T124	CONSISTENT ASSUMPTIONS	Component of Finance {T106}. The assumptions are used to make financial projections (Klonowski, 2010).
T125	EXIT ALTERNATIVES	Component of Finance {T106}. See {T33}.
T126	IDEATION	Component of Development Stage {T02}. As in (OECD/Eurostat, 2018, p.18) is "... the creative process of generating new ideas ...", where the focus is to confirm if a problem exists, then brainstorming possible solutions for it and stick with the one that has the best fit to solve this problem (Kenton, 2021a).
T127	EARLY STAGE	Component of Development Stage {T02}. The startup focus is the building of an MVP, based on the findings from the previous stage, get data from the MVP use to validate a scalable product and acquire the first customers (McGowan, 2017).

ID	TERM	DESCRIPTION
T128	GROWTH STAGE	Component of Development Stage {T02}. The startup focus is to accelerate the end-user demand through the modeled sales channels, typically increasing sales volume year over year, which needs a robust product (Hargrave, 2021).
T129	LATE STAGE	Component of Development Stage {T02}. The startup goal is the total execution of the business model. At this stage, the startup must have a well-known product with a strong brand and possible positive cash flow generation, enabling expansion into new markets (Invest in Startups   Equity Crowdfunding   MicroVentures., n.d.).
T130	GUT FEELING	Type of Common Criteria {T136}. A non-structured criterion applied by Equity Investors {T14}, according to (Huang & Pearce, 2015, p. 634) “... their dynamic emotion-cognitions in which they blend analysis and intuition in ways that do not impair intuitive processes and that effectively predict extraordinarily profitable investments.”
T131	FINANCIAL CRITERIA	Type of Common Criteria {T136}. The way results are obtained and the coherence with the projections and scalability possibilities in the target market, with high returns, profitability, and liquidity, are evaluated (Dhochak & Sharma, 2016).
T132	BEHAVIORAL CRITERIA	Type of Common Criteria {T136}. It relates to the entrepreneur’s passion for entrepreneurial activities and the product or services it provides, and the openness and receptivity to critics and feedback (Warnick et al., 2018).
T133	RELATIONSHIP CRITERIA	Type of Common Criteria {T136}. It is associated with how the entrepreneur creates and develops relationships since he/she must relate all the time with all sorts of people (customers, partners, investors, employees, suppliers, etc.) as in (OECD/Eurostat, 2018).
T134	REGION (PROXIMITY)	Type of Common Criteria {T136}. As indicated in (Drover et al., 2017, p. 1842), “For instance, the supply of in-person angel financing has tended to be geographically concentrated ...”, and stressed in (Klonowski, 2010): Venture capitalists, who manage investments on behalf of LPs, have two constraints on their activities: time and money. To address the issue of an optimal allocation of time, venture capitalists generally attempt to focus their efforts on a specific industry, geographic region, or firms’ stage of development. (p. 4).
T135	MORE OWN EXPERTISE ORIENTED	Type of BA Criteria {T137}. BAs tend to invest within their prior industry experience (Mason & Stark, 2004).
T136	COMMON CRITERIA	Category Type of Investor’s Evaluation Criteria {T88}. Criteria applied by both BAs and VCs (Mason & Stark, 2004).
T137	BA CRITERIA	Category Type of Investor’s Evaluation Criteria {T88}. Criteria applied only by both BAs (Mason & Stark, 2004).
T138	VC CRITERIA	Category Type of Investor’s Evaluation Criteria {T88}. Criteria applied only by both VCs (Mason & Stark, 2004).
T139	INVESTMENT MULTIPLE	Type of VC Criteria {T138}. The number of times the investment may return based on financial projections. See {T100}.
T140	INTERNAL STRATEGIES & POLICIES	Type of VC Criteria {T138}. It relates to the fund’s purpose like foreign or domestic participation only, early-stage startups or late-stage startups preferences, specific industries, specific trends, etc. (Teubal & Luukkonen, 2006).
T141	FUND TIMING & PORTFOLIO	Type of VC Criteria {T138}. It relates to the investment time horizon, i.e., periods where investments are held until they are needed, and they can be short-, medium- or long-term investments (Chen, 2021a). For example, a medium-term investment is expected to be held for three to ten years, and its portfolio’s strategy tends to balance between high and low-risk startups (Chen, 2021a).
T142	EXPERT OPINION	Type of VC Criteria {T138}. As in Klonowski (2010, p. 45), “... if venture capitalists are unconvinced as to the market acceptance of a product or service, they may ask for an external expert to be brought in to make an assessment.”
T143	CAP TABLE OWNERSHIP	Type of VC Criteria {T138}. According to Stevens (2012), the goal is to analyze whether the shareholding of the founding entrepreneurs is still significant after previous rounds of investment and employee stock options.
T144	INVESTMENT ASSESSMENT PROCESS	According to Klonowski (2010, pp. 77-78), “Extensive research has been conducted to examine the importance of the various decision-making criteria used by venture capitalists.” nevertheless, “Practitioners of venture capital regard the venture capital process as a combination of art and science.”. The goal here is to represent only the key factors that influence VCs and BAs’ assessment as a whole. It’s out of the scope of this study to characterize the decision-making dynamics that occur inside the investment assessment process itself



ID	TERM	DESCRIPTION
T145	STEPS	The stages of an Investment Assessment Process {T144} that structures the process from the beginning to the ending is an adaptation from Boocock & Woods (1997) and Mitteness et al. (2012) studies.
T146	APPLICATION	Component of Steps {T145}. It consists of a quick inspection of the business presentation (business plan or similar) looking for the main features (from the investor's perspective) that may indicate the proposal should move forward (Boocock & Woods, 1997; Mitteness et al., 2012).
T147	PRE-SCREEN	Component of Steps {T145}. It is usually the first meeting where investors evaluate both the presentations and the entrepreneurs (Boocock & Woods, 1997; Mitteness et al., 2012).
T148	SCREENING	Component of Steps {T145}. When further information on the business and its management is obtained. At this stage, the entrepreneurs must understand and agree to the nature and purpose of the investment and investors (Boocock & Woods, 1997; Mitteness et al., 2012).
T149	DUE DILIGENCE	Component of Steps {T145}. When entrepreneurs are required to answer multiple questions, revise financial projections, and understand risks more clearly (Klonowski, 2010). According to (Levie & Gimmon, 2008, p. 242), "... where assessment of the potential in the technology is separate from the assessment of management."
T150	NEGOTIATION	Component of Steps {T145}. Negotiation and Funding {T151} are the final steps where the conditions for the investment are agreed upon and performed. As stressed in (Boocock & Woods, 1997): ... the fund managers are prepared to mix equity, convertible instruments, and pure loan finance as appropriate. The use of ratchets enables entrepreneurs to reduce the Fund's equity stake in their business if performance targets are met. Negotiations at this stage are critical. (p. 44)
T151	FUNDING	Component of Steps {T145}. See {T150}.
T152	DEAL FLOW	Investors need to receive a volume of investment proposals, i.e., "... prospective investments emanate from a variety of sources, including unsolicited applications, via intermediaries and referrals ..." (Boocock & Woods, 1997, p. 8).
T153	RISK	From a business perspective, according to Kenton (2020), "Business risk is the exposure a company or organization has to factor(s) that will lower its profits or lead it to fail. Therefore, anything that threatens a company's ability to achieve its financial goals is considered a business risk".
T154	AGENCY risk	Type of Risk {T153}. It relates to the possibility of divergent interests and goals between investors and entrepreneurs (Mason & Stark, 2004) and from the information asymmetry, according (Carpentier & Suret, 2015, p. 810) "... a situation where managers have information that investors lack."
T155	MARKET risk	Type of Risk {T153}. It relates to the market characteristics and the competition (Carpentier & Suret, 2015).
T156	EXECUTION risk	Type of Risk {T153}. Related to the difficulty of implementing the technology, strategy, or business model (Kaplan and Stromberg, 2003).
T157	IMAGE risk	Type of Risk {T153}. Related to how the stakeholders perceive a startup (Picken, 2017).
T158	TECHNOLOGICAL risk	Type of Risk {T153}. Related to what can affect the product/service performance or scalability (Picken, 2017).
T159	SUSTAINABILITY risk	Type of Risk {T153}. It relates to emissions, land contamination, waste management, etc. (Klonowski, 2010).
T160	LEGAL risk	Type of Risk {T153}. It relates to commercial contracts, IP, insurance, regulations, etc. (Klonowski, 2010).
T161	RISK PERCEPTION	It is related to how risk-taking can vary in business decisions and indicates that how a problem is framed can influence the risk perception (Li & Ahlstrom, 2019).
T162	RISK TAKER	Type of Risk Perception {T161}. A person who likes to see problems framed as losses (Li & Ahlstrom, 2019).
T163	RISK AVOIDER	Type of Risk Perception {T161}. A person who likes to see problems framed as gains (Li & Ahlstrom, 2019).
T164	INVESTMENT THESIS	According to (Kenton, 2021b), "An investment thesis is a reasoned argument for a particular investment strategy, backed up by research and analysis ... Individual investors can use this technique to investigate and select investments that meet their goals."

ID	TERM	DESCRIPTION
T165	INVESTMENT CONTRACT	According to (Drover et al., 2017, p. 1827), "... contractual arrangements between venture capitalists and entrepreneurs became a fruitful stream of research ...", so the goal here is to describe and to represent the elements that have a significant influence on an Investment Contract celebrated between entrepreneurs and investors. It's out of the scope of this study to represent the content of such a contract.
T166	SHAREHOLDERS	According to (Hayes, 2021b), "A shareholder, also referred to as a stockholder, is a person, company, or institution that owns at least one share of a company's stock, which is known as equity."
T167	TERM SHEET	According to Klonowski (2010), it is a non-binding early and informal document of the terms of the agreement.
T168	MOU	As in (Kenton, 2021c), "A memorandum of understanding is an agreement between two or more parties outlined in a formal document. It is not legally binding but signals the willingness of the parties to move forward with a contract."
T169	ENTREPRENEURIAL NEGOTIATION	A negotiation among Entrepreneurs {T16} and Equity Investors {T14} about the Investment Proposal {T98} (Dinnar & Susskind, 2018).
T170	SHAREHOLDERS' DECISION	Acceptance from the current Shareholders {T166} on the Term Sheet's {T167} clauses (Pollman, 2019).
T171	INVESTORS' DECISION	Acceptance from the Equity Investor {T14} on the Term Sheet's {T167} clauses (Pollman, 2019).
T172	INVESTOR AGREEMENT	A simultaneous decision from the Shareholders {T166} and the Equity Investor {T14} to firm an Investment Contract {T165} (Pollman, 2019).
T173	STARTUP'S LEGACY OPERATIONS	All the operations performed by a startup before the Investment Contract's signature (Chen, 2021b).
T174	ROUND OF INVESTMENT	The steps a startup can take in growing its business through venture capital (Rieff, 2020).
T175	SELF-FUNDING	Component of Round of Investment {T174}. This is the beginning of the business, usually funded by entrepreneurs, family, and friends (Index Ventures, n.d.; Rieff, 2020).
T176	SEED CAPITAL	Component of Round of Investment {T174}. This is where the startup search for money to finance its first steps, mainly market development. The most common investor type at this stage is the Business Angel Investor {T38} (Index Ventures, n.d.; Rieff, 2020).
T177	SERIES A	Component of Round of Investment {T174}. It fits when the business is ready for scaling up, with consistent and proven revenue streams. Business Angel Groups {T44} and Venture Capital Investors {T39} are the most suited types of investors for this step. In the USA, startups usually raise between 3 million to 20 million US Dollars at this stage
T178	SERIES B+	Component of Round of Investment {T174}. Stages that include series B, C, and D are evaluated and invested by large Venture Capital Investors {T39} and pave the way for the startup's IPO {T35} (Rieff, 2020). The typical value for the Series B round is between 10 and 40 million US Dollars in the USA (Index Ventures, n.d.).
T179	BYLAWS	They are the governing documents of a company, such as board composition, meeting requirements, etc. (Klonowski, 2010).
T180	FUTURE RIGHTS	Provisions and conditions stipulated in the Investment Contract {165} granting rights to future modifications in the Shareholders' Agreement {T181} (Klonowski, 2010).
T181	SHAREHOLDERS' AGREEMENT	An achieved agreement by the Entrepreneurs {T16} and Equity Investors {T14}. It relates to the various aspects of a business venture, i.e., management decisions, approvals, transfer of shares, rights, and obligations, voting, the appointment of directors, among others, and this understanding must be represented in a formal document (Klonowski, 2010; Volker, n.d.).
T182	CURRENT INVESTORS	Component of Shareholders {T166}. See {T14}.
T183	NEW EQUITY INVESTOR	See {T14}.
T184	FOUNDER OWNERSHIP	Component of Cap Table {T123}. The percentage of the shares owned by each entrepreneur in a startup (Index Ventures, n.d.).
T185	EMPLOYEE OWNERSHIP	Component of Cap Table {T123}. This strategy attracts and retains the best talent available with low salaries (Index Ventures n.d.). Also known as Employee Stock Ownership Plan (ESOP), typically 10% of the startup's shares are reserved for the entire pool of eligible employees during the early stages (Index Ventures, n.d.).

ID	TERM	DESCRIPTION
T186	INVESTOR OWNERSHIP	Component of Cap Table {T123}. The percentage of the shares owned by each investor in a startup (Index Ventures, n.d.).
T187	TRANCHE INVESTMENT	Component of Cap Table {T123}. The cash invested in installments related to the reach of goals and Milestones & Metrics {T96} presented in the Vision Roadmap {T97} (Klonowski, 2010).
T188	RIGHTS & OBLIGATIONS	Category Component of the Shareholders' Agreement {T181}. The information in this category aims "... to protect venture capitalists during the term of their investment and provide them with additional powers or remedies in the event the firm struggles." as in (Klonowski, 2010, p. 151).
T189	PRE-EMPTIVE	Component of Rights & Obligations {T188}. Klonowski (2010) explains: With these rights, venture capitalists can acquire new shares issued by the firm in direct proportion to their percentage holding in the firm at the time of the new issue. This ensures that venture capitalists' holdings are not diluted without consent. (p. 151)
T190	FIRST REFUSAL / CO-SELL	Component of Rights & Obligations {T188}. First refusal, as indicated in (Klonowski, 2010, pp. 151-152), means "If the firm's owners wish to sell any portion of their shareholding to an interested third party, venture capitalists have the right to acquire these shares on the same terms offered by the third party."  Co-sell rights are similar and relate to the "... venture capitalists have the right to sell their shares in proportion to the level of shareholding (or on a pro-rata basis) to the willing buyer." (Klonowski, 2010, p. 152).
T191	LOCK-IN PERIOD	Component of Rights & Obligations {T188}. Due to the necessity to build a long-term value in the investment period, venture capitalists require shareholders not to transfer shares until specific goals are achieved (Klonowski, 2010).
T192	LIQUIDITY PREFERENCES	Component of Rights & Obligations {T188}. Liquidity preferences establish that investors demand progressively higher returns on medium and long-term assets, which is the case for startups. Also, according to the Keynesian theory, the demand for liquidity holds speculative power, so liquid investments are easier to get full value for (Runde, 1994).
T193	VOTING RIGHTS	Component of Rights & Obligations {T188}. The rights are given to a shareholder to vote on matters of startup policy. Klonowski (2010) explains: Venture capitalists will usually want approval or control over the following issues: changes to the business plan, decisions to hire or remove key management, increases in capital, the sale of shares or significant assets, liquidation of the firm, entering into very large or long-term commitments or contracts, changing the compensation of management, and arrangements constituting a conflict of interest transaction. (p. 155)
T194	GOVERNANCE	Category Component of the Shareholders' Agreement {T181}. It is related to the startup's governance rules. Regarding the specificities of a startup, it is paramount to cite Pollman (2019): Longstanding theories of corporate ownership and governance do not capture the special features of startups. They can grow large with ownership shared by diverse participants, and they face issues that do not fit the dominant principal-agent paradigm of public corporations or the classic narrative of controlling shareholders in closely held corporations. (p. 155)
T195	C-LEVEL HIRING POLICIES	Component of Governance {T194}. The policies applied to select, hire and fire employees at the executive level (Pollman, 2019).
T196	BOARD COMPOSITION	Component of Governance {T194}. How the Startup Board's {T69} members are indicated, the quantity, and what elements compound it (Pollman, 2019).
T197	ACCOUNTING REPORTS	Component of Governance {T194}. How entrepreneurs will report the milestones & metrics achievement to the investors. Monthly, quarterly and annual reports may exist, and audited financial statements may be required (Klonowski, 2010).
T198	EARN-OUT	Component of Governance {T194}. According to (Tarver, 2021) "An earn-out is a contractual provision stating that the seller of a business is to obtain additional compensation in the future if the business achieves certain financial goals, which are usually stated as a percentage of gross sales or earnings."
T199	NON-COMPETITION	Component of Governance {T194}. It states that shareholders agree to not compete with the business while they remain stockholders and for a period after a transfer of its shares ( <i>Key Issues to consider for a Shareholders' Agreement</i> , n.d.; Pollman, 2019).
T200	SHAREHOLDERS APPROVAL LIMITS	Component of Governance {T194}. It establishes actions and respective financial limits that shareholders are entitled to approve or not (Pollman, 2019).

ID	TERM	DESCRIPTION
T201	EXIT CLAUSES	Category Component of the Shareholders' Agreement {T181}. It indicates the rules that must be applied when a shareholder transfers the totality of its shares (Klonowski, 2010).
T202	DRAG-ALONG	Component of Exit Clauses {T201}. This clause is mainly protection for investors. Klonowski (2010) says: The preferred exit route is the sale of the investee firm to a strategic investor ... Under the terms of these rights, venture capitalists can solicit offers for shares in the investee firm. If an offer crystallizes, the entrepreneurs must sell a sufficient number of shares to satisfy the requirements of the offer. (p. 153).
T203	TAG-ALONG	Component of Exit Clauses {T201}. This clause protects minority investors when a majority shareholder sells his or her shares. This gives minority shareholders the right to go along and sell their stake in the company as well (Klonowski, 2010).
T204	REGISTRATION RIGHTS	Component of Exit Clauses {T201}. This clause indicates how Intellectual Property {T07} must be managed when a shareholder transfers all his shares (OECD/Eurostat, 2018). Another possible meaning for "Registration Rights", not used in the context of this research, is explained by (Klonowski, 2010): The registration rights agreement provides venture capitalists with the right to require the firm to prepare, file, and maintain a registration statement on the appropriate stock exchange at its own expense in order to achieve the sale of shares to the public in the initial public offering (should venture capitalists wish to do this). Filing a registration statement is one of the key steps in the IPO process. (p. 203)
T205	LEGAL & OPERATIONAL CLAUSES	Category Component of the Shareholders' Agreement {T181}. It is out of the scope of this study to go deeper into these categories that are more related to lawyers. Nevertheless, Pollman (2019) states: From a legal perspective, startups simply represent part of the universe of private companies, subject to general principles of corporate law but otherwise free to privately order their affairs. It is, therefore, the nature of the startup business and its life cycle that significantly drive governance arrangements and conflicts. (p. 165)
T206	TERMS OF VESTING	Component of Cap Table {T123}. Stevens (2012) explains: All employees who receive stock in a company, but particularly the founders because of the large amount of stock they receive, should be required to earn in their stock by maintaining their employment with the company for a defined period ... four years is a typical vesting period for founder/employee stock. (p. 83)
T207	OTHER CAP TABLE INFORMATION	Component of Cap Table {T123}. Other information that may be needed in specific situations, but not mentioned in this study.
T208	OTHER RIGHTS & OBLIGATIONS	Component of Rights & Obligations {T188}. Other information that may be needed in specific situations but not mentioned in this study.
T209	OTHER GOVERNANCE CLAUSES	Component of Governance {T194}. Other information that may be needed in specific situations but not mentioned in this study.
T210	OTHER EXIT CLAUSES	Component of Exit Clauses {T201}. Other information that may be needed in specific situations but not mentioned in this study.

## Annex D Competence Questions evaluation form

The original form was created and applied in Portuguese, with the Competence Questions written in English (like the ontology terms).

Figure 19 - Competence Questions Evaluation Form

### Competence Questions

A ontologia, no seu conjunto, responde às seguintes questões?

Indicar se sim ou se não para cada uma das perguntas abaixo.

\* Required

1. Preencha seu nome, por favor (basta o primeiro nome). \*

---

2. 1. What is a Startup? \*

*Mark only one oval.*

Sim, responde a pergunta.

Não.

3. 2. What are the key Entrepreneur's roles in a Startup? \*

*Mark only one oval.*

Sim, responde a pergunta.

Não.

4. 3. Who provides Venture Capital to a Startup? \*

*Mark only one oval.*

Sim, responde a pergunta.

Não.

5. 4. Who are the members of the startup team? \*

*Mark only one oval.*

- Sim, responde a pergunta.  
 Não.

6. 5. What are the key resources needed by a Startup? \*

*Mark only one oval.*

- Sim, responde a pergunta.  
 Não.

7. 6. What key information must be increasingly compiled to present to Investors? \*

*Mark only one oval.*

- Sim, responde a pergunta.  
 Não.

8. 7. What are the key evaluation criteria applied by Equity Investors? \*

*Mark only one oval.*

- Sim, responde a pergunta.  
 Não.

9. 8. What is an Investment Assessment Process? \*

*Mark only one oval.*

- Sim, responde a pergunta.  
 Não.

10. 9. What forms the scope of a startup's investment contract? \*

*Mark only one oval.*

- Sim, responde a pergunta.  
 Não.

11. 10. What are the shareholders' agreement key components? \*

*Mark only one oval.*

- Sim, responde a pergunta.  
 Não.

## Annex E Individuals' evaluations of each SO

Table 12 - SO 1: Startup - Evaluation

PT/ CRITERION	COMPLETENESS	UTILITY	CONSISTENCY	UNDERSTAND- ABILITY	GLOBAL
P1	1	1	1	1	100%
P2	1	1	1	1	100%
P3	1	1	1	1	100%
P4	1	1	1	1	100%
P5	1	1	1	1	100%
P6	1	1	1	1	100%
P7	1	1	1	1	100%
<b>GLOBAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Table 13 - SO 2: Entrepreneur - Evaluation

PT/ CRITERION	COMPLETENESS	UTILITY	CONSISTENCY	UNDERSTAND- ABILITY	GLOBAL
P1	1	1	1	1	100%
P2	1	1	1	1	100%
P3	1	1	1	1	100%
P4	1	1	1	1	100%
P5	1	1	1	1	100%
P6	0	0	1	1	50%
P7	1	1	1	1	100%
<b>GLOBAL</b>	<b>86%</b>	<b>86%</b>	<b>100%</b>	<b>100%</b>	<b>93%</b>

Table 14 - SO 3: Equity Investor - Evaluation

PT/ CRITERION	COMPLETENESS	UTILITY	CONSISTENCY	UNDERSTAND- ABILITY	GLOBAL
P1	1	1	1	1	100%
P2	1	1	1	1	100%
P3	1	1	1	1	100%
P4	1	1	1	1	100%
P5	1	1	1	1	100%
P6	1	1	1	1	100%
P7	1	1	1	1	100%
<b>GLOBAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Table 15 - SO 4: Startup Team - Evaluation

PT/ CRITERION	COMPLETENESS	UTILITY	CONSISTENCY	UNDERSTAND- ABILITY	GLOBAL
P1	1	1	1	1	100%
P2	1	1	1	1	100%
P3	1	1	1	1	100%
P4	1	1	1	1	100%
P5	1	0	1	1	75%
P6	0	0	1	1	50%
P7	1	1	1	1	100%
<b>GLOBAL</b>	<b>86%</b>	<b>71%</b>	<b>100%</b>	<b>100%</b>	<b>89%</b>

Table 16 - SO 5: Resources - Evaluation

PT/ CRITERION	COMPLETENESS	UTILITY	CONSISTENCY	UNDERSTAND- ABILITY	GLOBAL
P1	1	1	1	1	100%
P2	1	1	1	1	100%
P3	1	1	1	1	100%
P4	1	1	1	1	100%
P5	1	0	1	1	75%
P6	1	1	1	1	100%
P7	1	1	1	1	100%
<b>GLOBAL</b>	<b>100%</b>	<b>86%</b>	<b>100%</b>	<b>100%</b>	<b>96%</b>

Table 17 - SO 6: Presentations for Investors - Evaluation

PT/ CRITERION	COMPLETENESS	UTILITY	CONSISTENCY	UNDERSTAND- ABILITY	GLOBAL
P1	1	1	1	1	100%
P2	1	1	1	1	100%
P3	1	1	1	1	100%
P4	1	1	1	1	100%
P5	1	1	1	1	100%
P6	1	1	1	1	100%
P7	1	1	1	1	100%
<b>GLOBAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>



**Table 18 - SO 7: Investor's Evaluation Criteria - Evaluation**

<b>PT/ CRITERION</b>	<b>COMPLETENESS</b>	<b>UTILITY</b>	<b>CONSISTENCY</b>	<b>UNDERSTAND- ABILITY</b>	<b>GLOBAL</b>
P1	1	1	1	1	100%
P2	1	1	1	1	100%
P3	1	1	1	1	100%
P4	1	1	1	1	100%
P5	0	1	1	1	75%
P6	0	0	1	1	50%
P7	1	1	1	1	100%
<b>GLOBAL</b>	<b>71%</b>	<b>86%</b>	<b>100%</b>	<b>100%</b>	<b>89%</b>

**Table 19 - SO 8: Investment Assessment Process - Evaluation**

<b>PT/ CRITERION</b>	<b>COMPLETENESS</b>	<b>UTILITY</b>	<b>CONSISTENCY</b>	<b>UNDERSTAND- ABILITY</b>	<b>GLOBAL</b>
P1	1	1	1	1	100%
P2	1	1	1	1	100%
P3	1	1	1	1	100%
P4	1	1	1	1	100%
P5	1	1	0	1	75%
P6	1	1	1	1	100%
P7	1	1	1	1	100%
<b>GLOBAL</b>	<b>100%</b>	<b>100%</b>	<b>86%</b>	<b>100%</b>	<b>96%</b>

**Table 20 - SO 9: Investment Contract - Evaluation**

<b>PT/ CRITERION</b>	<b>COMPLETENESS</b>	<b>UTILITY</b>	<b>CONSISTENCY</b>	<b>UNDERSTAND- ABILITY</b>	<b>GLOBAL</b>
P1	1	1	1	1	100%
P2	1	1	1	1	100%
P3	1	1	1	1	100%
P4	1	1	1	1	100%
P5	1	0	1	1	75%
P6	0	0	1	1	50%
P7	1	1	1	1	100%
<b>GLOBAL</b>	<b>86%</b>	<b>71%</b>	<b>100%</b>	<b>100%</b>	<b>89%</b>

Table 21 - SO 10: Shareholders' Agreement - Evaluation

<b>PT/ CRITERION</b>	<b>COMPLETENESS</b>	<b>UTILITY</b>	<b>CONSISTENCY</b>	<b>UNDERSTAND- ABILITY</b>	<b>GLOBAL</b>
P1	1	1	1	1	100%
P2	1	1	1	1	100%
P3	1	1	1	1	100%
P4	1	1	1	1	100%
P5	1	1	1	1	100%
P6	1	1	1	1	100%
P7	1	1	1	1	100%
<b>GLOBAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>